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TITLE

"A Comparative Analysis of the Two Largest SWFs (GPGF and CIC) and Assessing the Impact of EGS Factors on Return Performance & Asset Size: Analysis of Nine Sovereign Wealth Funds"

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Abstract

This paper aims to explore the distinctive characteristics and sustainability practices of Sovereign Wealth Funds (SWFs), with a focus on the two largest SWFs in the world, China Investment Corporation (CIC) and Government Pension Fund Global (GPFG). There are two sections to this study. The first section compares GPFG and CIC to examine the elements that set these top-ranked SWFs apart, despite their prominent positions. Examining crucial elements, including investment strategies, degree of transparency, the origin of the fund, asset mix and other pertinent features gives us the opportunity to understand how these SWFs manage wealth management and approach sustainable investing.

The hypothesis that SWFs with higher degrees of asset consistency show a more substantial alignment with Environmental, Social, and Governance (ESG) aspects, is the focus of the second section of this study. Thus, the hypothesis can be structured as: *"Sovereign Wealth Funds that perform better in terms of assets and returns show a stronger adherence to ESG considerations."* This specific hypothesis suggests that SWFs with more assets or performed better in terms of returns are more likely to include sustainable investing strategies in their portfolios. The degree of asset consistency and ESG characteristics are evaluated to test this theory by inspecting a chosen sample of nine SWFs in total from the top ten largest SWFs. The analysis employs lag data to evaluate potential causative links and determine how much asset consistency affects sustainability practices within the analyzed SWFs.

It is vital to acknowledge that the limited data availability restricts the study's scope. Despite significant attempts to gather data from online resources, the focus of this analysis had to be reduced due to the absence of public disclosures and the challenge of accessing full SWF data. However, the research's conclusions and revelations have valuable ramifications.

Keywords: *Sovereign Wealth Fund (SWF), Government Pension Fund Global (GPFG), China Investment Corporation (CIC), Environmental Social Governance (ESG)*

Contents

Abbreviation	Meaning
SWF	Sovereign Wealth Fund
GPFG	Government Pension Fund Global
CIC	China Investment Corporation
ESG	Environmental Social Governance
IMF	International Monetary Fund
SAFE	SAFE Investment Company
ADIA	Abu Dhabi Investment Authority
KIA	Kuwait Investment Authority
GIC	GIC Private Limited
PIF	Public Investment Fund
HKMA	Hong Kong Monetary Authority Investment Portfolio
TSK	Temasek Holdings
QIA	Qatar Investment Authority
NBIM	Norges Bank Investment Management
NZ Super Fund	New Zealand Superannuation Fund
RDIF	Russian Direct Investment Fund
IFSWF	International Forum of Sovereign Wealth Funds
PBoC	Peoples Bank of China
OPSWF	One Planet Sovereign Wealth Fund Working Group
ISIF	Ireland Strategic Investment Fund
Bpifrance	Banque publique d'investissement
COFIDES	Compañía Española de Financiación del Desarrollo
FONSIS	The Fonds Souverain d'Investissements Stratégiques
NSIA	Nigeria Sovereign Investment Authority
FGIS	Fonds Gabonais d’Investissements Stratégiques
NIIF	National Investment and Infrstucture Fund
Mubadala	Mubadala Investment Company
KIC	Korea Investment Corporation
TSFE	The Sovereign Fund of Egypt
NIC NBK	National Investment Corporation of National Bank of Kazakhstan
CDP Equity	Cassa Depositi e Prestiti Equity S.p.A.
Growthfund	The National Fund of Greece

Introduction

Sovereign Wealth Funds (SWFs) are a part of sovereign or national savings, including everything from central bank reserves, stabilization or commodity savings funds, national pension funds, or social security funds to other government-holding management organizations well. Another practical definition of an SWF is an investment fund that is controlled by a government and invested either partially or wholly in foreign assets. SWFs are grown significantly in importance over the last decade due to numerous factors. Many SWFs were already established as oil price stability funds about three decades ago to help avoid disruptions from fluctuating oil prices on the budget, monetary policy, as well as the economy of oil exporting nations (Jen, S., 2007). However, many largest SWFs are quite secretive and operate in not a very transparent manner. For instance, Pihlman et al. (2011) investigate that the diverse types of SWFs experience crucial differences in terms of their investment goals and behavior. While SWFs are projected to have longer investment horizons than stabilization SWFs, pension reserve funds, on the other hand, can decide their investment horizons based on when future expected liabilities fall due, which may be decades in the future.

Financial markets are significantly impacted by how SWFs operate, including both how they manage their portfolios, as well as how their managers engage with private sectors. Additionally, SWFs have changed from being stabilization funds to wealth creation and protection funds because of recent dramatic changes in oil prices (Jen, S., 2007). To meet their balance in terms of payment needs, central banks, for example, often invest their foreign exchange reserves carefully in safe and marketable securities. However, SWFs, on the other hand, often invest in a broader range of asset classes, such as longer-term government bonds, corporate bonds, both agency-and asset-backed securities, equities, real estate, commodities, and foreign direct investment, with the aim to diversify their foreign exchange assets and increase returns (Aizenman & Glick, 2009).

1.0 Sovereign Wealth Funds (SWFs)

SWF is a concept that has been introduced previously. In a simple definition, SWFs are invested in a long-term manner by the government in foreign assets to avoid the country's financial instability by the state's financial policy for the future benefit of its citizens. Either indirectly or directly controlled by the government, SWFs are investment funds that are invested in accordance with the goals and interests of the sponsoring government and have neither liabilities nor beneficiaries other than sponsoring the government (Monk, 2008). In addition, state-owned SWFs invest in various financial assets, such as stocks, bonds, gold, real estate, and other financial instruments (Statista, 2023).

Historically, SWFs have existed since the 1950s, even though most of them have been established since 2000. For instance, many SWFs have existed since 2005. However, due to their recent establishment and, thus, short histories, most of these SWFs remain quite small. Countries such as China, Kazakhstan, Dubai, Singapore, Qatar, Norway, and Abu Dhabi have all built up a sizable surplus of domestic savings, where many of these countries also have large, persistently significant current account deficits. Thus, these key factors allow them to create and accumulate an SWF. On the other hand, stabilization funds have existed since the 1953; thus, the modern SWF differs significantly compared to its stabilization-focused forerunner. By protecting domestic consumption and public investment from the boom-and-bust periods that come along with variations in commodity prices, stabilization funds were established to encourage local economic growth. In contrast, SWFs have investment mandates that require them to focus on achieving a specific yearly return compared to a given benchmark. Thus, Stabilization Funds and Sovereign Wealth Funds are not different when it comes to their existence, but their activities (Balding, 2012).

Additionally, the surplus revenue of the government that supports each SWF is where its assets come from. In terms of commodity and non-commodity SWFs, the source of their assets, and economic motives is the main difference between these two. The surplus of non-commodity export income is used to finance non-commodity SWFs, while surplus commodity export income is used to finance SWFs in commodity-rich governments (Bazoobandi, 2013). However, similar financial goals, such as stabilization of fiscal revenue, the balance of payment sterilization, and intergenerational saving, are the driving forces behind establishing commodity and non-commodity SWFs. Moreover, governments can use commodity-based SWFs as a defensive measure to protect current consumption from oil price changes while saving the country's wealth for future generations (Bazoobandi, 2011).

Furthermore, economic theory, such as the Hotelling Rule and arbitrage arguments, could explain the most efficient use of natural resource management. According to the Hotelling Rule, in terms of efficient exhaustion, a country exporting oil, or any other exhaustible resource should not be concerned whether it sells the oil at a market rate of return or keeps it under the ground, in which case the return is the anticipated increase in oil prices in the future. In other words, oil exporters will either consume the revenues rather than reinvest them in the market or leave the oil in the ground if the market return on reinvesting the revenues of extracted oil is low. Thus, capital protectionism, such as limits on SWFs from oil-rich countries, will tend to lower the risk-adjusted return for oil exporters, which may result in higher oil prices as the oil supply is held back. In terms of non-commodity SWFs, such as East-Asia, on the other hand, are financed through transfers from foreign exchange reserves, in contrast to oil-rich countries, such as Norway, Abu Dhabi, and Saudi Arabia (Reisen, 2008). However, in the case of commodities, there is an effect that can be called the ‘’Dutch Disease’’, or the natural resource curse, which means that often, in a case of an unexpected discovery of a natural commodity, it can disturb private investment leading to underinvest in education, for instance. The Dutch disease also occurs when unexpected foreign currency inflows into one industry result in the national currency appreciating; thus, making exports more expensive for other countries to purchase, lowering competitiveness in other industries, such as manufacturing or agriculture.

During the most recent Financial Crisis, SWFs serve as a unique economic policy instrument and a significant class of institutional. According to Bazoobandi (2013), despite the effects of the global financial crisis, it is believed that SWFs will increase their impact on global financial markets and that their asset portfolio will expand over the coming decades. Additionally, based on IMF (International Monetary Fund), SWFs can be categorized into three types based on their objectives: 1) stabilization funds, 2) savings funds, and 3) reserve instrument corporations. In accordance with their goals, there are significant differences between the strategies of asset mix, risk-return policy, investment horizon, risk tolerance, etc. (Carson & Litmann, 2008). In addition, SWFs can also be seen as sustainable long-term capital growth for target countries. Furthermore, these state-run institutions are expected to manage a more significant portion of foreign currency reserves in the future, which may influence the value of global assets and financial imbalances (Urban, 2016).

In terms of comparison, between the average institutional investor, for instance, and an SWF, many differences can be pointed out to clarify the advantages of an SWF. For instance, the average institutional investor, and the enormous industry funds have a limited horizon, regardless of the capital. Also, risk tolerance tends to vary over time, in addition to limited liquidity. On the other hand, SWFs have a long horizon, sufficient liquidity, and solid risk aversion. In terms of firm value, SWFs offer the opportunity to investigate how a particular class of large shareholders affects firm value. The motivations, along with activities, could be different from those of private investors, as the government organizations control them. For instance, as the size of SWFs is increasing, policymakers are worried that their controlling governments may intentionally take advantage of these enormous pools of cash to achieve their political goals. In other words, major SWF transactions may have different signaling impacts than significant private investor transactions, and their resulting ownership positions may have different monitoring benefits and tunneling costs (Dewenter et al., 2010). Table 1 underneath presents a brief overview of the top 10 SWFs based on total assets in USD million as of 2021.

SWFs	DBA	Established Year	Total Asset (in million)	Region	Country
Norway Government Pension Fund Global	Norway GPFG	1990	$1,350,865	Europe	Norway
China Investment Corporation	CIC	2007	$1,350,863	Asia	China
SAFE Investment Company	SAFE	1997	$979,700	Asia	China
Abu Dhabi Investment Authority	ADIA	1976	$790,000	Middle East	UAE
Kuwait Investment Authority	KIA	1953	$750,000	Middle East	Kuwait
GIC Private Limited	GIC	1981	$690,000	Asia	Singapore
Public Investment Fund	PIF	1971	$607,418	Middle East	Saudi Arabia
Hong Kong Monetary Authority Investment Portfolio	HKMA IP	1935	$514,223	Asia	Hong Kong
Temasek Holdings	Temasek	1974	$496,593	Asia	Singapore
Qatar Investment Authority	QIA	2005	$475,000	Middle East	Qatar

Table 1. Overview of top ten SWFs by total assets.
Data source: Sovereign Wealth Fund Institute - SWFI.

2.0 The World's Largest SWFs

The SWF concept began in 1953 with the establishment of the Kuwait Investment Authority, meaning that SWFs have been around since at least the 1950s. However, their overall size has significantly expanded globally in the past ten to fifteen years. For instance, following the price increase in the 1970s and 1980s, oil-producing countries established the first wave of SWFs. The importance of SWFs is vital not only because of economic development but also in transitioning wealth from one generation to another. Following the rise of SWFs, governments were driven by the desire to extend the advantages of this endowment across generations. An additional wave of SWFs was established as a response to the East Asian crisis in the late 1990s, where most of the region's growing markets changed from being debtors to creditors. Thus, in terms of today, many of these nations, effectively maintain a surplus of reserves. For instance, China's substantial manufacturing expansion has not been matched by increased domestic consumption nor investment, as has happened in many other markets, which, thus, eventually resulted in savings starting to build up in an SWF (Fernandes, 2011).

To begin with, a modern investment model was established to assure Kuwait's sustainable long-term success when it became an independent sovereign nation in 1961. This model was based on the fundamental investing ideas that would later give rise to the Future Generations Fund (FGF). A couple of years later, in 1965, Kuwait implemented an asset and portfolio diversification policy, which resulted in the Kuwait Investment Office (KIO) replacing the Kuwait Investment Board (KIB) established in 1953. As the country continued to grow, a new framework for managing the reserves was established and led to the creation of the Kuwait Investment Authority (KIA). The primary responsibility of the fund is to manage the State's Reserve, the FGF, as well as any other funds assigned to KIA by the Ministry of Finance (Kuwait Investment Authority, n.d.). The government of Kuwait was the first in the world to create a commodity-based SWF to not only protect the nation's heavily dependent economy on oil in the case of oil shocks but also to protect the nation' wealth for future generations (Bazoobandi, 2011). The purpose of establishing the fund was to manage the surplus funds collected from the sale of oil, with the goal of generating profitable returns through long-term investments using a variety of investment strategies across different countries. Furthermore, these investments aim to generate income for Kuwait, distinct from oil revenues. Given the General Reserves Fund's (GRF) purpose, which is to provide the state with the liquidity it needs to stabilize its overall balance, the GRF is considered as the state treasury, while the FGF's primary purpose is to invest money globally. Other main purposes and values of the fund are based on integrity, knowledge, collaboration, leadership, as well as accountability, where their Code of Conduct is based on professional behavior, carefulness, and an organized approach to risk management (Kuwait Investment Authority, n.d.).

Furthermore, another SWF, considered one of the world's largest SWFs, is the Public Investment Fund (PIF), located in Saudi Arabia and established in 1971 as part of the Ministry of Finance. The fund can be defined as a worldwide investor with an outstanding investment portfolio focusing on domestic and international sustainable investments (PIF – Public Investment Fund, n.d.). The central bank of Saudi Arabia (SAMA) has direct management of the SWF, in contrast to Kuwait, where the central bank is not the organization in charge of managing the SWF (Bazoobandi, 2011). Moreover, the fund is keeping with the goals of its Vision 2030, which is based on using both its investment power to build a more diversified and sustainable economy, as well as its location to strengthen its position as a critical driver of global trade and to connect the three continents of Africa, Asia, and Europe. In other words, PIF encourages strategic and sustainable diversification locally. At the same time, it also supports essential sectors through investment possibilities, and in terms of internationally, PIF invests globally across a variety of asset classes in a diversified portfolio. Other essential factors in PIF's Vision 2030 include a successful economy, a vibrant society, and an ambitious nation (PIF – Public Investment Fund, n.d.).

Moving forward, Abu Dhabi Investment Authority (ADIA), a globally diversified investment institution founded in 1976, has a long-term wealth development strategy to invest funds on behalf of the Abu Dhabi government responsibly. Since the fund was established, the investments have been based on equities, treasuries, fixed income, real estate, private equity, as well as hedge funds. Although ADIA is less transparent than for instance, GPFG, the fund releases annual reviews yearly and detailed breakdowns by asset class. For instance, based on the detailed breakdown of the fund as 2021, ADIA's most significant investment is developed equities, holding between 32% and 42%. Additionally, their second largest investment is based on emerging market equities, as well as government bonds. On the other hand, small-cap equities are shown to be their smallest investment category, investing only 1 to 5%. Furthermore, the mission of ADIA is to maintain Abu Dhabi's long-term stability through careful capital growth, as well as a disciplined investment method and hard-working team members that follow the cultural values of the fund (ADIA, n.d.). To prevent the economy from experiencing an increase in liquidity, eventually leading to higher inflation, the government of Abu Dhabi moves the surplus revenues to its investment funds. An additional goal of the fund is to diversify the economy, besides the oil industry and thus, generate additional revenue from investment returns, which will eventually help to protect the natural wealth for the upcoming generations. Such strategy differs from other SWFs, such as those of Saudi Arabia and Kuwait, where the primary goal is to increase income for current and upcoming generations (Bazoobandi, 2011).

Another SWF that falls under the world's largest SWFs category is the Government Investment Corporation (GIC), established in 1981. Along with Temasek Holdings (TSK) and the Monetary Authority of Singapore (MAS), GIC is one of the three investment companies in Singapore and can be described as a worldwide, long-term investor and was established to manage the foreign reserves of the country, where in terms of today, the fund has investments in more than 40 different countries. Regarding resources, reserves play a key role in the future of Singapore, primarily because they serve as an essential shield against downturns that cannot be avoided. Additionally, the stability of the Singapore dollar is increased by a solid national balance sheet, thus improving investor confidence. Moreover, the purpose of the funds is based on maintaining and improving the purchasing power of the funds on a global basis (GIC, n.d.). Both GIC and TSK are examples of the country's history of good macroeconomic fundamentals and strong fiscal control. However, the two fund's operational features and governance policies are quite different. For instance, TSK tends to be used as an equity investment company with a high level of transparency and is independent of the government in terms of daily operations. On the other hand, GIC is used as an asset management company under the government' strict control and with a low level of transparency (Elson, 2008).

Similarly, Norway's discovery of oil in the North Sea in 1969 led to the establishment of the GPFG in 1990. Historically, when the National Insurance Act was authorized in

1996, the National Insurance Scheme Fund was created, and its main goal was to reserve funds from the National Insurance Scheme Fund that would not be used for meeting current social security expenses. Thus, to support the long-term management of Norwegian's petroleum income, the Government Petroleum Fund was created later in 1990, which was used as a tool for fiscal policy, where the fund's first net transfer was in 1996. However, in 2006, the National Insurance Scheme Fund and the Government Petroleum Fund were renamed to Government Pension Fund Norway (GPFN) and Government Pension Fund Global (GPFG) by the government (Bazoobandi, 2011). It is fair to state that the discovery of oil and gas transformed the Norwegian economy. Today, the country produces millions of barrels of oil daily for the global market. The fund's purpose was to protect the economy from fluctuations in oil revenue. Its main goal is to serve as a long-term savings strategy and financial reserve so the Norwegian current and future generations can benefit from the country's oil wealth. Additionally, the revenue generated from oil tax and the direct ownership of the state has had an enormous impact on the country's economy. However, it has been carefully managed by the government. To add, GPFG is owned by Norwegian citizens and managed by Norges Bank, the central bank of Norway, on behalf of the Ministry of Finance. In managing the fund, many important factors are central, such as transparency, responsible investments, and ethical guidelines. Furthermore, the investments are global and are mostly based on real estate, equities, fixed income, and renewable energy infrastructure. For instance, as of the end of 2022, the asset allocation of GPFG included 69.8% in equities, 27.5% in fixed income, 2.7% in unlisted real estate, and 0.1% in renewable energy infrastructure. The goal of GPFG is also to achieve a real long-term return more than the growth of the global economy, where Norges Bank Investment Management (NBIM) is an active investor who encourages valuable standards in terms of corporate governance and motivates businesses to enhance environmental, as well as social standards (Norges Bank Investment Management, n.d.).

In contrast, CIC, located in Beijing, was established in 2007 with a registered capital of $200 billion and is the SWF of China. The main purpose of establishing CIC was to diversify the country's foreign exchange assets, and maximize shareholder returns while maintaining a reasonable level of risk. SAFE used its foreign exchange reserves to provide the first registered capital of $200 billion. It was later exchanged for renminbi (RMB) for 1.5 trillion in special bonds issued by the Ministry of Finance. Additionally, another significant financial institution, Central Huijin, was moved from the SAFE to the CIC at the same time CIC was established. However, it is crucial to point out that although CIC was founded in 2007, in contrast to most of the largest SWFs in the world, which were established much earlier, the fund has grown significantly. Moreover, CIC's global investment activities, which CIC International and CIC Capital usually undertake, include public equity, and bond investments, hedge fund and multi-asset investments, and industry-wide private equity and private credit investments. Other investment activities also include direct investments and fund investments in a variety of sectors, such as real estate, infrastructure, resources and commodities, and agriculture, in addition to managing bilateral and international funds as well (China Investment Corporation, n.d.; Chuen & Gregoriou, 2014). Furthermore, the mission of CIC is to maximize shareholder returns while maintaining an acceptable risk tolerance and to diversify the country's foreign exchange investments. Additionally, the vision of the fund is to develop into an internationally recognized SWF. At the same time, the core values are based on responsibility, constructive collaboration, aspiration, and professionalism and are supposed to serve as their guiding principles (China Investment Corporation, n.d).

Another large SWF worth mentioning is the New Zealand Superannuation Fund (NZ Super Fund), established in 2001 to invest the government's money, increase its value over a long period and lower future superannuation expenses. Although the fund is still held accountable by the government, The Guardians of NZ Super Fund, an independent crown institution, is responsible for investment decisions and overall managing the fund. In contrast, the GPFG, for instance, has a strong connection with the government, as there are three governmental institutions responsible for its administration, unlike NZ Super Fund, and other major SWFs as well (Richardson, 2011). In terms of mandate, the Guardians should thus, manage and administer the fund based on best practices in portfolio management, return maximization without excessive risk, and avoid harm to the country as a responsible member of the global community. Additionally, the Guardians determine the investment policies, standards, and methods of the fund, decide how much money will be allocated to different types of assets, and select foreign investment managers to oversee various parts of NZ Super Fund. On the other hand, their sustainable finance strategy is based on three key principles, such as raising awareness through governance, leadership, and communication, making changes in terms of finance by long-term ESG performance improvement, and undertaking investments that have a beneficial sustainability impact. Furthermore, the fund applies a Reference Portfolio, which was established by the Guardians' Board and is based on listed investments that are passive and suitable in terms of long-term investment horizon and risk profile, with an asset allocation of 80% equities and 20% bonds, where all foreign currency exposures are fully hedged against the New Zealand dollar. On the other hand, the Actual Portfolio represents the actual portfolio of the NZ Super Fund at any given time. In other words, the Reference Portfolio is based on all investments the fund has made, whereas in the Actual Portfolio, the investments are based on what extra activities could be both achievable and will add additional value to the Reference Portfolio. Based on their annual report, as of 30 June 2022, the Actual Portfolio contains 48% global equities, 21% debt securities, and 9% alternatives, along with rural and timber, NZ equities, private equity, infrastructure, and property which have, however, resulted in 5%, or less each. (NZ Super Fund, 2014; Gelb et al., 2014).

Another large worth mentioning SWF is QIA. It is a government-owned entity of Qatar that was established in 2005 with the aim to diversify the economy of the country, as well as protect its financial assets. The fund's additional goal is to provide profits for its future stakeholders. Furthermore, the strategy of QIA is to invest in different markets, asset classes, and sectors in many countries, collaborating with leading institutions, and increasing their chances for global expansion that will benefit the State, and future generations. In terms of mandate, QIA supports local economic growth by, for instance, investing in businesses that fill market gaps and supplying liquidity when needed. Additionally, there are no mandated limitations in the investment's activities of the fund, meaning that QIA invests in domestic and foreign marketable securities, real estate, alternative assets, and private equity funds. The values of the fund include respect, integrity, and responsibility while focusing on having sustainability principles included in their portfolio with the Qatar National Vision 2030 as well. Moreover, the source of QIA is excess oil and gas revenues from the growth of the country's oil and gas reserves. However, it is important to point out that the QIA does not publish its holdings to the market, meaning that there is no transparency, in contrast to, for instance, GPFG (Qatar Investment Authority, n.d.).

HKMA, on the other hand, a central bank institution in Hong Kong, is also known as the Hong Kong Monetary Authority, which was established in 1993 by combining the Office of the Exchange Fund and the Office of the Commissioner of Banking. Its main purposes are to maintain currency stability within the parameters of the Linked Exchange Rate System, encourage the integrity and stability of both the financial and banking systems, support the expansion of the financial infrastructure, as well as managing the Exchange Fund. In terms of the asset allocation of the fund, the decisions and investment process of the Exchange Fund are based on two types of asset allocation, strategic (SAA) and tactical (TAA), where the SAA is reflected in the investment benchmark and drives the medium-to long-term investment strategy when it comes to asset distribution and maturity profile. On the other hand, investment positions may be changed under the TAA to take advantage of short-term market opportunities or lower risks while remaining within the allowed tracking error limit (Authority, n.d.). Table 2 below illustrates once again the top ten largest SWFs. However, it differs from Table 1, as this table shows each SWF's equity investment activity, purpose, and the authority. All information included in the following table is collected from annual reports and the official website of each SWF.

As presented below, most of these SWFs are administrated by their governments and managed by the central banks, whereas the main purpose of the SWFs is to protect both current and upcoming generations. However, the SWFs of CIC, SAFE, PIF, HKMA show different purposes, such as expanding their foreign holdings etc. Additionally, based on the information below, equity investment activities are highest in the oil-rich countries, such as GPFG, including ADIA, in contrast to CIC, GIC, and Temasek Holdings.

SWFs	Source	Equity Investment	Authority	Purpose
Norway Government Pension Fund Global	Oil	72%	Central Bank, Ministry	Safeguard to future generation
China Investment Corporation	Non-commodity	35.40%	Government	Expand foreign holdings
SAFE Investment Company	Non-commodity	Not available	Central Bank	Expand foreign holdings
Abu Dhabi Investment Authority	Oil	42%	Government	Safeguard to future generation

Kuwait Investment Authority	Oil	Not available	Ministry	Safeguard to future generation
GIC Private Limited	Non-commodity	17%	Government	Future generation & Increase International Purchasing power
Public Investment Fund	Oil	Not available	Government	Transforming the country's economy
Hong Kong Monetary Authority Investment Portfolio	Non-commodity	Not available	Hong Kong Monetary Authority	Monetary and Banking Stability
Temasek Holdings	Non-commodity	18%	Government	Empowering future generation
Qatar Investment Authority	Oil	Not available	Government	Growth of future generation

Table 2: Summary of ten largest SWFs
Source: Official websites of each SWFs.

3.0 How do SWFs act to maintain wealth?

As mentioned, SWFs have gained significant power, specifically over the last two decades. For instance, as of February 2023, SWFs combined oversee over $11.5 trillion in assets under management (Megginson et al., 2023). In terms of wealth development, governments typically invest money in companies, as well as real estate globally, to benefit the economy of their country and citizens. Additionally, the specific country acquires money in its central bank reserves from its budget and trade surpluses, along with other sources of revenue as well. For instance, most efficiently managed governments tend not to have big surpluses of money in their reserves unless they have abundant income, such as the oil-rich countries as Norway, Russia, and countries in the Middle East. In other words, these countries have established SWFs with the main purpose of investing the money coming into their countries from oil, such as Kuwait, which was the first country to establish an SWF in 1953, right after the discovery of oil. The main goal of the fund was to invest its excess oil revenues, which led to its being one of the wealthiest countries in the world. In terms of today, it is ranked as number five among the top hundred SWFs by total assets (SWFI, n.d.). According to Aizenman & Glick (2007) central banks usually invest their foreign exchange reserves carefully in secure and marketable instruments to meet the needs of the balance of payments. Meanwhile, SWFs usually invest in a broader range of asset classes. However, oil-producing nations have been receiving an enormous amount of income since 2003, and the Gulf Cooperation Council (GCC) nations, such as Oman, Bahrain, Kuwait, Qatar, Saudi Arabia, and the United Arab Emirates are all excellent examples that benefited from this. These countries have also created unique opportunities for huge-scale international investments (Raphaeli & Gersten, 2008). On the other hand, East-Asian countries, such as China, Hong Kong and Singapore got their excess reserves from the Asian export boom since they began exporting more than they imported, which led to the establishment of their SWFs, to send their excess funds to financial markets on a global level. However, as shown in the previous chapter, each SWF was established for its purposes and each fund has its own goals. Moreover, these goals are equivalent to one another and can change over time depending on the demands of the economy and the status of the financial markets. For instance, in response to the Covid-19 pandemic, many countries have started to borrow money from their SWFs to help reduce the impacts of the global reduction in oil prices. In terms of how SWFs have been responding to the crisis, the International Forum of Sovereign Wealth Funds (IFSWF) states that the SWF of Russia, the Russian Direct Investment Fund (RDIF), for instance, has contributed to the overall production of medicine that helps fight the virus. In contrast, TSK has been focused on providing money to the affected countries, while CIC and GIC, as well as major financial institutions have been discussing an investment plan and, thus decided to increase collaboration to help repair the global economy (Černohorský & Tesnerová, 2021).

Furthermore, in terms of GPFG, due to the fund being entirely focused on foreign investment activities, GPFG represents the country’s commitment to international, social, and environmental justice. Additionally, although GPFG’s investments are based on stocks, bonds, and real estate, supporting cross-generational justice at a local level, while seeking to influence social and environmental responsibility globally, this leads to a fulfilled welfare function for GPFG. Another key factor worth mentioning for how the fund manages to maintain its wealth is its openness and accountability, as it allows the citizens of the country to understand how and where the wealth is being invested. Thus, it is fair to state that GPFG is a unique example of how nations could plan for future financial stability. In contrast, Dixon & Monk (2011) argues that CIC is an SWF based on productivism while describing GPFG as a moralist. Regarding the SWF of China, as a diversified global portfolio investor, the fund is invested across different types of asset classes and locations. The fund also focuses on significant strategic investments that contribute to economic growth (Dixon & Monk, 2011). In contrast to Norway, Castelli & Scacciavillani (2012) argue that China has engaged in a rapid expansion program over the past decades. However, neither modern social services, nor a public pension system that would ensure people sufficient living standards have been implemented.

In terms of investment strategies, as already mentioned, most SWFs use different investment strategies that include equities, private equity, fixed-income instruments, as well as other key asset classes. However, besides Norway, most of the SWFs are skeptical when it comes to revealing governance and investment strategies. Thus, although governance challenges could often be defined as microeconomic, they could potentially lead to major macroeconomic consequences and put at risk the stability of the global financial system. For instance, research shows that the possibility that a financial downturn may worsen and potentially lead to a financial crisis would decrease if the proper disclosure of governance and investment strategies of SWFs has taken place. This would also help in terms of information asymmetries and gaps (Lam & Rossi, 2010).

However, the wealth of these countries is managed through more than just the SWF of the specific country, as mentioned earlier. The careful and risk-averse management of reserves by central banks coordinates goals with monetary and fiscal policy based on the national level. Additionally, treasury and debt management sections, whose activities are limited by government budgets and civil service compensation, are another aspect of finance ministries' management of the country's resources. Thus, SWFs are adaptable and innovative entities for governments, where these often report to established institutions, such as finance ministries or central banks, such as in the case of Norway. On the other hand, specific new institutions were established entirely to manage the fund, such as in the case of Singapore, China, and the Middle East (Santiso, 2009). Furthermore, to effectively investigate the sovereign assets and liabilities of China, and Russia, along with their macroeconomic repair and worldwide socially responsible investments, led to the establishment of CIC and RDIF. Additionally, based on the research of Balding (2008), the two largest funds with the strongest domestic focus are namely CIC and RDIF, and thus, serve as the investment regulator of the country (Peaucelle, 2010; Balding, 2008). Moreover, Sharma (2017) indicates that a fund's amount of assets often impacts the access an institution has in terms of opportunities as well as governance and internal ability when evaluating investments.

4.0 The two largest SWFs

According to the SWFI rankings regarding assets under management, the largest SWF in the world is the GPFG, with more than $1.3 trillion, almost $1.4 in it. Following as ranked number two SWF is CIC, which also manages well over $1.3 trillion worth of assets, which is a significant amount, considering that it was established in 2007, seventeen years after the establishment of GPFG. In contrast, other major SWFs which are ranked within the top ten are not as large as GPFG and CIC. Most SWFs are based in Asia and the Middle East, specifically in Kuwait, Hong Kong, the United Arab Emirates, Singapore, and China. However, besides CIC, the assets under management of these SWFs vary between $500 and $900 billion. As mentioned, each SWF has its objectives and vision and tends to differ in investment strategies (SWFI – n.d.). Thus, the first part of this paper aims to focus mainly on GPFG and CIC, and the following subchapters provide more detailed information based on these top two largest SWFs, including their differences.

4.1 Government Pension Fund Global (GPFG)

Off the coast of Norway, one of the biggest offshore oilfields in the world was discovered in 1969. Suddenly, Norway had much oil to sell, which significantly increased the nation's economy. The discovery of oil in the North Sea in Norway led, thus, to the establishment of the GPFG, supported by the Norwegian parliament, where the first money was deposited into the fund in 1996. To add, the fund aimed to avoid the boom-and-bust cycle caused by the volatility of the commodity market and its impact on the oil price fall, as in the Financial Crisis in 1986 and the banking crisis of 1991 (NBIM, n.d.; Bergman et al., 2018). As mentioned, the GPFG is regulated by the Ministry of Finance, which administrates the strategy, policies, as well as goals of the investment, where the Norwegian economic policy must be planned, implemented, and coordinated with the Fiscal Budget by the Ministry of Finance. Moreover, the fund is famously known for its transparency, where the quarterly and annual financial reports show all the listed investments along with their financial performance, published by the operation manager of the fund, which thus, allows the fund to show its excellent governance policies. During an economic downturn, the fund's revenues can be transferred, used to stabilize the nation's economy, and transferred to the national budget. To improve the effectiveness, and maintain the fund's value, the Ministry of

Finance set the strategy for withdrawing the fund up to 3% annually. In addition, this policy allows Norway to avoid lending from the global market and, thus maintain an effective fiscal policy (Norwegian Ministry of Finance, 2019).

The management body of the GPFG consists of; 1) The Storting, 2) The Ministry of Finance, 3) Norges Bank Executive Board, 4) The head of Norges Bank Investment Management, and 5) The management group in Norges Bank Investment Management. In terms of the investment policy evaluation of the fund, GPFG has 72%, which consists of equity, with no outside shareholders, which thus, makes it less volatile and controlling over managing short-term capital losses. Prior to 1996, the GPFG invested significantly in government bonds. However, after 1998, the fund changed its investment policy and decided to include equities in the benchmark, managing the portfolio with 40% equity. Following 2007, the Ministry of Finance decided to invest mostly in equity, resulting in 60% of the portfolio. In addition, in terms of their investment policy, it is essential to mention that in 2004, the Ministry of Finance established ethical guidelines to ensure the invested fund's ethical commitments and, thenceforth, avoid investments that include violating human rights, as well as environmental degradation (Ministry, 2007). However, in 2010, the Ministry of Finance decided to change the mandate to invest in real estate based on the portion invested in bonds, which resulted in 25% of the fund being invested in fixed-income assets with initial purchases incurred with famous companies such as Apple, Blueberry, Hamleys, etc. Moving forward, the Ministry of Finance intended to reduce three European investments to 40% and 10% in developing companies in 2012. A year later, as the fund steadily grew, they began investing in real estate in the USA market, specifically in cities such as Boston, New York, and Washington DC. Up until 2014, all decisions on the negative exclusion of companies were made by the Ministry of Finance. However, in 2015, the responsibility for these decisions was moved to the Norges Bank's Executive Board. As of 2017, the authority entered the Asian market and acquired 70% of five properties in Toyoko, Japan. Later in 2017, on October 25th, the fund reached its greatest value of $10,000 billion, where in contrast, the world struggled to recover from the Covid-19 crisis (NBIM, 2022).

In terms of what kind of equity or stocks investments are central, it shows that the strategies used by NBIM to manage the fund are described in the strategic plan of the Executive Board, where the three main factors that impact whether the investing methods are successful are market exposure, security selection, and money allocation. Furthermore, the fund is invested in 70 different countries and has over 9000 stocks to mitigate the risk, where most of the equity is European with approximately 50%, American, Middle East, and African with 35% and 15% in Asian and Oceania stocks. Most of the stocks and fixed assets are based on the European market as the Norwegian krone is less volatile in the European currencies (NBIM, 2022).

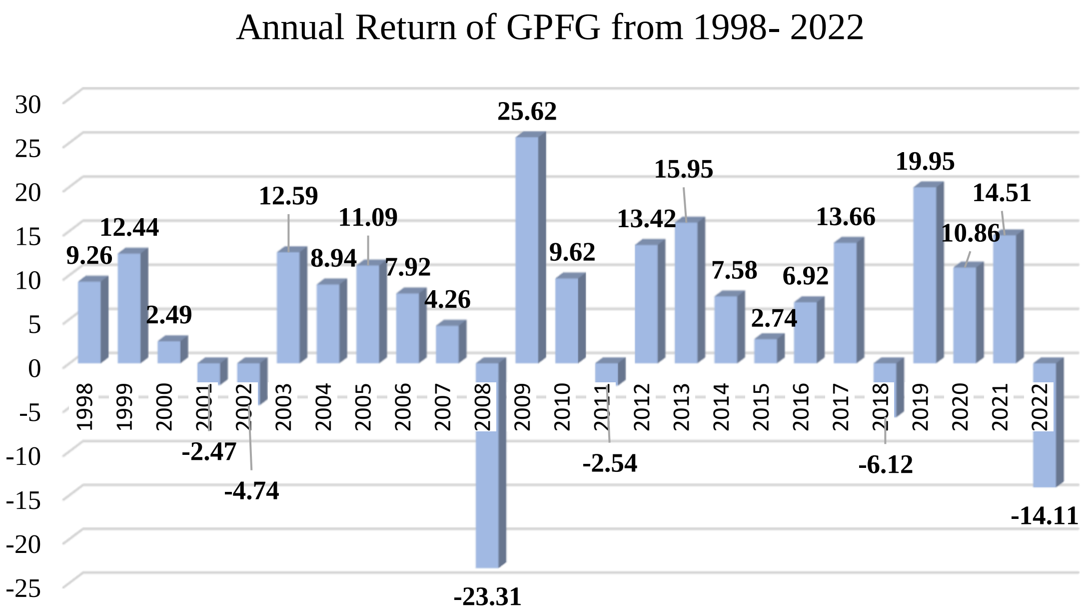

Figure 1. Annual Return of GPFG from 1998-2022 (in percentage as of 31 December 2022).
Source: NBIM (2022)

Above, the bar chart illustrates the annual return from the inception of GPFG until 2022. As of 2009, GPFG achieved their highest return of 25.62%, whereas of 2008, it shows that the fund achieved their lowest return of -23.31% due to the global financial crisis in 2008, which resulted in various difficulties for GPFG, according to NBIM.

4.2 China Investment Corporation (CIC)

The Chinese government implemented economic changes from state-planned development and international trade policies in 1978 when the country opened to the rest of the world. Furthermore, China developed neo-mercantilist trade policies to control most of the international trade However, the country was able to keep government control over foreign currencies. For instance, one of the outcomes of the country's successful attempts to promote overseas trade was the growth of foreign exchange reserves. In addition, the devaluation of the Chinese renminbi (RMB) compared to the US dollar, China's re-entry into the World Trade Organization (WTO) in 2001, and the appreciation of the RMB against the US currency in 2005, all led to success in foreign exchange accumulation (Thomas & Chen, 2011). However, since the East Asia Financial crisis 1998-2000, the country has been concerned about the requirement for enough foreign exchange reserves to protect its currency against potential international impacts on its unstable capital markets. Additionally, since July 2005, China has been preparing for market disruptions that could occur from a sudden withdrawal of foreign investment capital, specifically short-term investment funds.

The CIC was established to diversify the country's foreign exchange assets and maximize shareholder returns while keeping a manageable level of risk. Through its three subsidiaries, namely CIC International, CIC Capital and Central Huijin, the fund is required to undertake investments abroad and equity investments in Chinese financial institutions, where the official foreign exchange reserves of the country are managed by SAFE, an agency under the People's Bank of China (PBoC), which is the central bank of China (China Investment Corporation, n.d.). Furthermore, PBoC, SAFE, the Ministry of Commerce, the Ministry of Finance, as well as other major financial institutions serve on the top management team of CIC. Moreover, the capital of CIC was acquired by the Ministry of Finance (MOF), which issued special RMB treasury bonds, used the profits to purchase foreign currency from the SAFE, and finally, lent the foreign funds to CIC to undertake alternative investments (Thomas & Chen, 2011). Additionally, by purchasing US dollars, SAFE protects the appreciation of the renminbi against the dollar and, thus, maintains the competitive advantage of the country's exports (Wu & Frøystadvåg, 2015).

As mentioned, the purpose of the CIC is to maximize shareholder returns while maintaining an acceptable risk tolerance, as well as to diversify the country's foreign exchange investments. However, SAFE continues to carry out its purpose by undertaking low-risk and high-liquidity investment activities, particularly by purchasing government bonds (Zhang & He, 2009). On the other hand, the vision of CIC is to also develop into an internationally recognized SWF. At the same time, the fund's core values are responsibility, constructive collaboration, professionalism, and aspiration. CIC's overseas investment activities are 1) public equity and bond investments, 2) hedge fund and multi-asset investments, 3) industry-wide private equity and private credit investments, and 4) direct investments and fund investments. In addition, the sectors where these investment activities are implemented in real estate, infrastructure, resources, agriculture, and commodities, as well as managing bilateral and multilateral funds, which are carried out by CIC International and CIC Capital (China Investment Corporation, n.d.).

Since 2009, the new investment strategy of CIC has been defined by aggressive global portfolio distribution in terms of geography, sector expansion, and growth with a focus on reducing risks and increasing returns in a long-term perspective. For instance, the fund significantly increased its investment activities to equities regarding the global portfolio distribution, resulting in 3.2% in 2008, 36% in 2009 and 48% in 2010. Additionally, CIC spread its risk by purchasing more fixed-income securities offering steady returns (Wu et al., 2012). In terms of ESG performance, Wurster & Schlosser (2021) argues that SWFs seem to be less attached to liquidity and short-term liabilities, which thus allows them to encourage sustainable investment activities and achieve long-term objectives (Wurster & Schlosser, 2021; Chen et al., 2022). In contrast to Norway, SWFs from Gulf countries, such as Abu Dhabi, Saudi Arabia, Kuwait, Qatar, and Asian growing economy, such as China and Singapore, all do not have any specific rules or guidelines in terms of sustainability investments besides mentioning sustainable long-term returns in their annual reports (Yin, 2017). Based on the annual reports of CIC, no ESG activities or strategies are mentioned until 2020. In 2020, the fund established an ESG investment policy framework, which will be presented in further detail later in this paper (China Investment Corporation, n.d.).

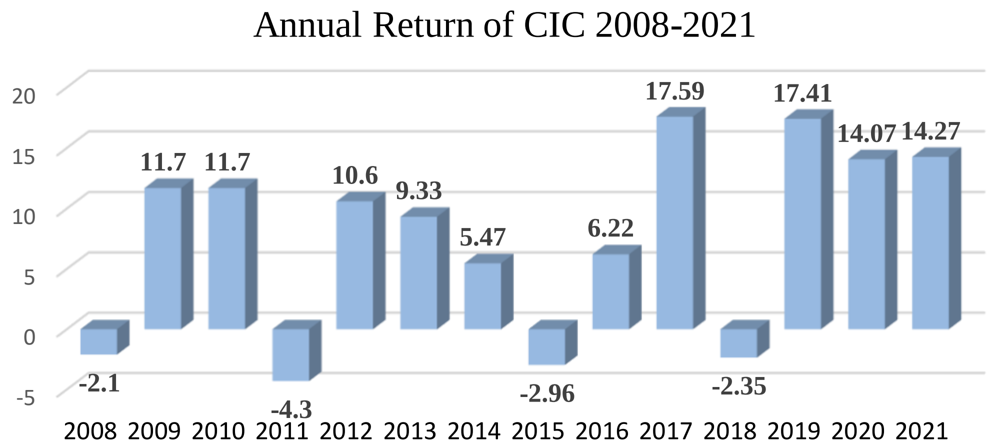

Figure 2: Annual Return of CIC 2008-2021 in percentage.
Source: China Investment Corporation (n.d.).

The bar chart above presents the annual return of CIC since its establishment in 2008 up until 2021. In the last five years, CIC has constantly achieved a high annual return between 14% and 18%, except for 2018, when the fund faced a negative return of -2.35%.

5.0 Literature Review

First, it is essential to point out that the governance of pension fund management is crucial for each country, as well as for investment performance, as it determines the success of policies aimed at pre-funding liabilities (Hu et al., 2009). For example, the board of the Norwegian Central Bank imposes on invested portfolios, such as the product-and conduct based observation and exclusion criteria. Additionally, ESG factors are combined as well into risk management activities. According to research, all these investment activities, as well as divestment decisions, are released to stock markets and communicated in specific formats to guarantee an ongoing and consistent attachment to ESG criteria (Miglietta et al., 2022).

Furthermore, based on the research paper of Sun et al. (2014), China, which contains the largest SWF in the world, has been struggling with serious energy resource shortages while trying to pursue social and economic development goals. Thus, energy security is a motivational factor regarding the energy investment policy in China, making the fund’s investment activities more challenging, and politically sensitive. In contrast, in terms of Norway and its SWF, the fund’s main source of investment capital is the petroleum revenue, along with other countries, such as Russia, Qatar, and Saudi Arabia. However, in terms of other nations, such as China, as well as Singapore, these countries have developed significant foreign exchange reserves by consistently running current account trade surpluses, which are unrelated to oil exports (Sun et al., 2014).

Moreover, there has been a lot of discussion regarding establishing SWFs among participants in the global financial industry. Based on Zhang & He (2009), although CIC’s main goals are to diversify its foreign reserve investment activities and increase investment revenue, the SWF of China seems to have significant internal challenges, due to some conflicts of interest and restrictions in terms of the organization’s design. Although SWFs have been around for a while, what is new seems to be their rapid growth (Lachman, D.,2008). As an example, in 1990, SWFs held at most $500 billion, however, in terms of later, that figure has been estimated at from $2 to $3 trillion. In addition, research shows that around 70% of those assets are held by the top funds' countries such as the United Arab Emirates, Singapore, Kuwait, Russia, as well as Norway. In contrast to Zhang & He (2009), according to Lachman, D. (2008), many public statements by the officials of China expressed their dissatisfaction with the poor return on their dollar reserves led to the belief that China's SWF would grow significantly.

However, based on the research of Temjanovski (2013), the capital of GPFG is invested overseas in foreign equities, bonds, as well as real estate. In addition, Norwegian SWF investments have a very extended time horizon and are managed with a moderate amount of risk, aiming to achieve the highest return over time. On the other hand, in terms of challenges, as CIC, Temjanovski (2013) shows that the GPFG also presents some drawbacks, meaning that the currency market in Norway is less liquid than other reliable markets. Many SWFs acquire assets from a natural resource, which later results in accumulating the so-called excess wealth. For example, the development of the Norwegian SWF's assets is mainly driven by the oil and gas reserves of the country (Clark & Monk, 2010). However, research shows that CIC is not acquired from natural resources, unlike most SWFs. The assets come from the accumulated foreign currency in dollars, which the Chinese government has built up because of the export of consumer goods by both state-owned companies and Western corporations to the consumer markets of developed economies. Thus, the assets of CIC could be viewed as earned money from the development strategy of the country, as well as its exports to the United States of America (Clark & Monk, 2010). However, in terms of research shows that in countries that are not tied to the dollar, a major U.S. dollar depreciation eventually would lead to appreciation in their currencies, impacting their ability to compete as exporters of goods. For instance, China is among the SWFs that are tied to their exchange rates to the U.S dollar, where thus, research shows that major U.S. dollar assets are damaging to Sovereign Wealth Funds, rather than beneficial, which potentially leads to global imbalances (Gomes, n.d.).

As Zhang & He (2009), in terms of funding and governance of CIC, Clark & Monk (2010) show that there is a much more complicated relationship between trade, foreign earnings, as well as the funding of CIC. Considering the size of the local economy, research shows that some countries use SWFs as deposit accounts for excess foreign revenues, such as the SWF in Norway. However, compared to the total value of foreign reserves, the nominal allocation of assets for CIC has been low. In addition, the plan for CIC was to adopt the same investing strategies as other large SWFs, turning into a worldwide portfolio investor and relying on global financial markets, such as Norway (Clark & Monk, 2010). Furthermore, Lenihan (2013) and Wu & Seah (2008) argue that governments establish SWFs for two reasons, where the first is political with the aim to achieve both local, as well as international goals, while the second is connected to the development of the nation and its economic growth (Bahoo et al., 2020). However, research shows that concerns of SWFs on corporate governance, protectionist responses, as well as other issues have all been triggered by their growth, where transparency and sovereignty are the underlying factors for these issues. With the size and sovereignty of these investment activities, the lack of transparency creates challenges. For example, in Norway, democratically elected parliaments would have to approve if adjustments were to be made in the investment strategies; however, in countries such as China and Russia, the lack of transparency presents a much bigger issue (Drezner, 2008).

Based on further research, SWFs must be more transparent to be successful, or else it would lead to experiencing significant financial protectionism (Gieve, 2009; Alhashel, 2015). More profound research investigates that the ability of CIC to generate revenues in overseas markets seems to be questioned by the Chinese public, as its investment in Blackstone made this doubt even worse after the market value loss of this investment. Thus, this is understandable, both inside and outside of China, in terms of an internal weakness of the fund, along with other challenges since its establishment (Zhang & He, 2009). While the overall goal of an SWF is to maximize long-term returns while maintaining an acceptable risk, the success of SWFs also depends on having a practical investment guideline. As for the GPFG, the establishment of rules from the Ministry of Finance, including 60% of fixed income and 40% equities, which was changed in July 2007 to 40% fixed income and 60% equities, a maximum ownership shares of 5% for any other company, a risk limit of 1.5%, as well as other considerations are included in the overall goal of protecting the petroleum wealth for future generations of the country. However, for CIC, such practical guidelines are still lacking, which played a key role in ‘slipping’ the investment strategy and the early investments of the fund, based on (Zhendai, Y.,2008).

Additionally, even though SWFs share a common goal in terms of increasing national wealth, their potential impacts on labor are quite different. For instance, Cumming et al. (2020) investigates that the GPFG considers employees as a significant stakeholder group whose interests should be considered in terms of investment decision-making. However, research shows that CIC pays significantly less attention in terms of both concerns, as well as the demand of the employees. Thus, CIC might experience major long-term consequences in terms of lack of strategic flexibility, in contrast to Norway (Bell et al., 2014; Cumming et al., 2020). Zhang & He (2009) states that the amount of capital CIC owns is unknown, as well as the actual shareholder of the fund, which is also unknown. However, it is undeniable that the fund owes an enormous amount in debt, $200 billion, which leads to CIC being under severe pressure to repay the principal and interest since its establishment, research shows. Due to the unclear orientation of CIC, the extensive debt weight prevents the free portfolio allocation of the fund for longer-term diversified assets. Thus, the interest for the special government bonds must first be paid by CIC, which will have to make more risky high-income investments to generate a profit after paying interest (Zhang & He, 2009). In contrast to CIC, the SWF of Norway established the fund focusing on many essential factors, such as precise guidelines for fund savings, investment strategies, and scenarios in which the government in a case of an economic downturn. According to research, the Norwegian SWF assets increase almost perfectly with overall foreign portfolio investment (O’Brien, 2011).

Based on the research of Green & Forry (2010), CIC lacks in terms of corporate governance and internal constraints, in contrast to the GPFG, which leads to the fund falling under stricter observation in terms of overseas investment regulation by host countries. Additionally, the fact that China is not dependent on a single resource or industry leads to the incentive of the fund to diversify less than for commodity SWFs is also a concern for host countries. In contrast, one of the reasons for petrodollar SWFs to invest in international markets is to diversify and achieve stability when petroleum resources can no longer generate enough income. Similarly, Li (2009) investigates that CIC must deal with additional negative publicity from both host countries and domestic public opinion due to a lack of appropriate legal accountability. Any defense or explanation is seen as an excuse for the wrong decision of the fund due to a lack of explicit legal mandates and investment policies, which eventually leads to doubting the limited expertise and the loyalty of the fund. Thus, this diminishes market accountability function during investments and causes excuses for trade protectionism (Li, 2009). In Norway, the government-owned petroleum is the origin of the fund, which the Ministry of Finance transfers to the SWF and then manages on the open market, resulting in half of the Norwegian SWF's assets invested in Europe, primarily in fixed-income and equity securities (Green & Forry, 2010).

Furthermore, according to Torvik (2001), the Dutch disease not only involves an increase in the real exchange rate, but also makes it more volatile. As a result, the traded sector, and consequently productivity growth, is further reduced because of fewer investments. Additionally, real appreciation may happen through nominal wage and price inflation or the nominal exchange rate. For instance, James et al. (2022) argue that hedging can help to lower overall uncertainty in government revenues by using an equity and bond mix instead of individual stocks if transaction costs and ambiguous correlations make doing so too challenging. Thus, since most of the resource is still underground, the overall share of stocks should be low at first, and as the resource becomes available and the money is invested in the SWF, the equity share should then increase over time. The SWF of Norway, for example, has increased its equity and bond mix while also decreasing its allocation to stocks that are most vulnerable to oil prices in recent years (James et al., 2022).

6.0 Differences Between GPFG and CIC

As mentioned, SWFs have been the key players in the development of the global financial market. Over the past decades, SWFs have grown significantly and have had been a tremendous impact on the international market and capital flow. Additionally, it has been shown that the total size of the SWFs worldwide has doubled since the Financial Crisis. SWFs are especially favored in some emerging markets and play a more prominent role in their economic and social development. Thus, due to a long horizon, SWFs are more favored in long-term and strategic investments focusing on equity as a vital source of long-term and stable capital. Based on the statistics of the SWF Institute (SWFI), the largest SWF is the GPFG regulated with around $1.4 trillion in assets by 2021, while CIC, which is the second largest SWF had controlled more than $1.2 trillion (SWFI, n.d.). Although both funds are very similar in asset size, they are, however, quite different when it comes to how they are being managed, such as their investment policies, governance structure, transparency, and ESG priorities. The following sub-chapters provide more detailed information based on these key factors for both GPFG and CIC, including the fiscal policy framework.

6.1 Investment Policy

Regarding the investment policy of both GPFG and CIC, in 2017, a new benchmark index comprising global equities and bond indices and incorporating real estate assets was allocated to the Government Pension Fund Global Composite. Later, on May 1, 2019, the strategic benchmark index weights were adjusted to be 30% fixed income and 70% equities. The real estate element of the fund has no acceptable benchmark before 2017. However, the FTSE Global All Cap Index, with extra country components included, makes up the equity element of the benchmark index. Furthermore, the benchmark index's fixed-income component, which uses indexes from Bloomberg Barclays, comprises up to 30% of corporate debt and 70% of government debt. For instance, the fixed-income benchmark included 22 currencies and over 15,500 assets, while the equity benchmark included 46 nations and about 8,600 securities (GIPS Report, 2021). Additionally, ethics are a key element of GPFG's investment policy, where from one perspective, the fund interacts with companies to encourage common optimal standards in terms of corporate governance, whereas on the other hand, the fund's mission is not to be linked with companies that negatively impact the environment and society (Clark & Monk, 2010). In contrast to GPFG, the annual report of CIC shows that alternative assets, which include private equity, real estate, and infrastructure, are the largest asset class for CIC, followed by public stocks and fixed-income instruments. Additionally, CIC also keeps a percentage of its assets in cash and cash equivalents and the fund has indicated that it diversifies its portfolio across several geographic locations, industries, and currencies, such as the USD, EUR, and JPY, to control risk and take advantage of international investment possibilities. Also, liquidity, safety and profitability are the three guiding principles for CIC's foreign reserve investments (Sekine, 2015). According to the 2021 annual report of CIC, the fund has also established a sustainable investment policy with the aim to seek investment possibilities in energy transition and low-carbon technology by collaborating with other SWFs, as well as asset managers and building a global green partnership (China Investment Corporation, n.d.). Figure 3 below illustrates the allocation of assets as of 2020 for GPFG, while Figure 4 presents the asset allocation for CIC in 2020. There is a clear difference between the priority of holding equity in their portfolios, where GPFG, for instance, holds 73% equity, while CIC holds 35%.

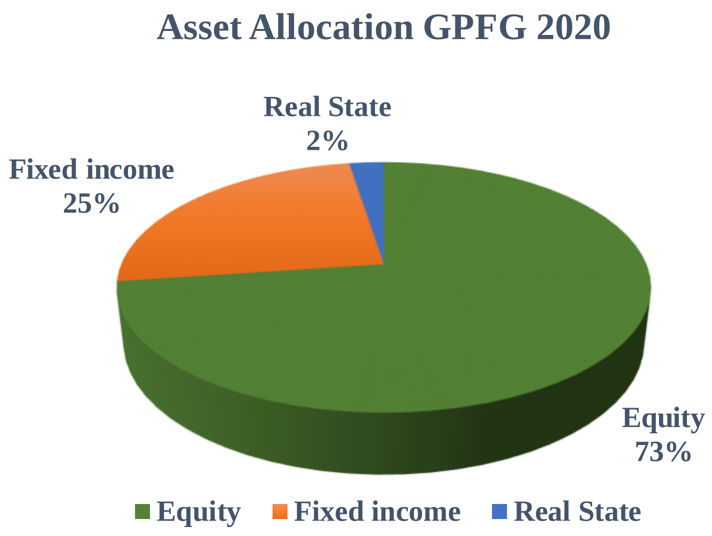

Figure 3: Asset allocation of GPFG as of December 2020, by asset class.
Source: NIBM, (n.d.)

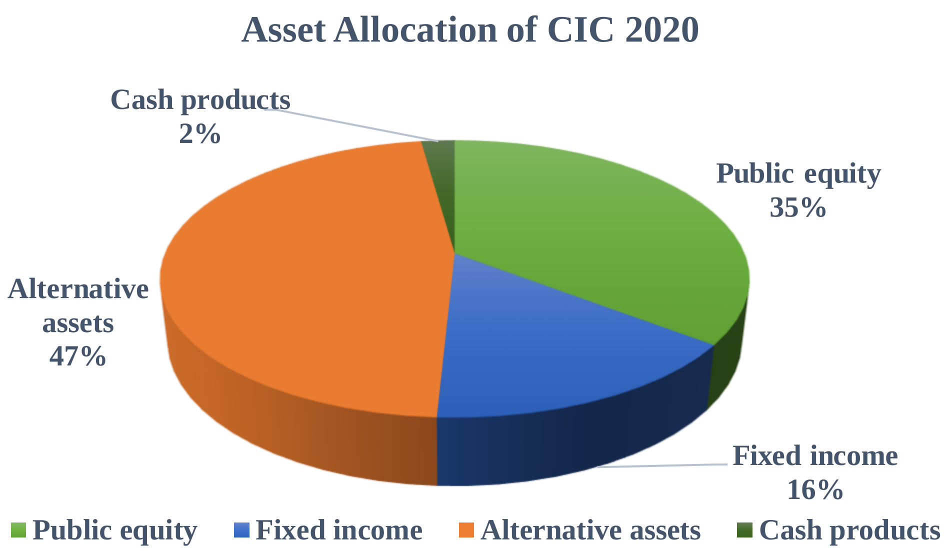

Figure 4: Asset allocation of CIC as of December 2020, by asset class.
Source: CIC, (n.d.)

6.2 Administration and Governance

Regarding governance and administration, most of the SWFs are usually controlled by the government while GPFG's administration, for instance, is controlled by three different government entities, namely the Ministry of Finance, the Central Bank of Norway, and the Council of Ethics for different activities of operational control, external fund management and decisions about ethical investments (Richardson, 2011). Additionally, NBIM has a key role in encouraging ethical investment, by maintaining high standards regarding corporate governance, implementing ownership rights of the fund by corporate engagement, proxy voting, and sponsoring, as well as supporting shareholder decisions. Thus, GPFG governance focuses less on assuring efficiency and more on serving the public interest (Clark & Monk, 2010). In contrast, CIC is a ministry-level organization and State-Owned Enterprise that reports directly to the State Council, making it an equivalent to the PBoC (People s Bank of China), the Ministry of Finance (MOF), and the State-owned Asset Supervision and Administration Commission (SASAC). The State Council, its only shareholder with decision-making authority, is represented by the board of directors in its operations. The management committee reports to the board of directors and is responsible for CIC's day-to-day operations. There is also a supervisory board, which regulates the work of the management committee and the board of directors (Zhang & He, 2009). Also, the Board of Directors determines the development strategies, operational, and investment policies for CIC, where their responsibilities and positions are well-defined across all departments. Based on Santiago Principles, which is a set of 24 principles in total, provides a better understanding in terms of the management of different SWFs, whereas with respect to GAPP 16, for example, it indicates that the governance structure and goals of SWFs should be transparent to ensure that investment decisions are made independently, without the influence of politics. By doing so, everyone would be aware of what the specific SWF is trying to accomplish, and it would also lead to a more safe, and more open investment environment (International Forum of Sovereign Wealth Funds, n.d.)

6.3 Transparency

Transparency is an essential requirement for comprehensive financial regulation, good governance, and accountability to the nation. It becomes a major concern of SWFs, as most of those are established for the well-being of the country's people and economy.

Based on the Linaburg-Maduell Transparency Index (LMTI), developed by Carl Linaburg and Michael Maduell in 2008, it presents 10 major principles for achieving transparency of SWFs where the minimal rating a fund could obtain is a 1. However, the SWFI recommends a minimum rate of 8 to claim acceptable transparency. Thus, according to LMTI, GPFG scored 10 as the most transparent band, while for China, CIC scored 7. Although being the top two largest funds, GPFG is undoubtedly the more transparent SWF, providing all public information (Linaburg & Maduell, 2008). Publishing all the reports by Norges Bank and being as transparent as possible to the public, as in the case of GPFG, they are, thus, responsible for submitting quarterly reports to the Ministry of Finance, showing costs and revenues. In addition, an independent party is engaged by the Ministry of Finance to determine the value of the actual return, as well as the benchmark return (Skancke, 2003). Furthermore, Eaton and Ming (2010) discovered that Norway ranked well in transparency and government accountability. In contrast, to a growing dictatorship, China's transparency and accountability rankings trail well below the others based on the rankings. Moreover, Ahearne et al. (2003) argue that investment instruments should operate as transparently as possible and thus require quarterly reports and annual reports. Similarly, Gieve (2008) indicates that increased transparency from SWFs could make host countries feel more secure, which would thus, reduce protectionist pressure, along with improving how information is shared with market participants and its own citizens.

6.4 Fiscal Policy Framework

In theory, there are three options for funding fiscal expenditure during an economic downturn: increasing taxes, issuing treasury bonds, and printing money. Raising taxes is not an option in a financial crisis, and direct printing of money will result in inflation, leading to an asset price boom. Issuing treasury bonds was a feasible option before the concept of SWFs assistance and its impact on fiscal policy stabilization (Ming, 2010). The SWF's annual transfer to the Treasury for minimizing the budget deficit, originates apart from the oil revenue in the fiscal budget and comprises its spending (Skancke, 2003). The Fiscal rule enables extra flexibility regarding the impact of unexpected, substantial variations in the value of GPFG. It should be spread over several years, and a fiscal stimulus could support monetary policy for stabilization reasons when appropriate (Bergman et al., 2018). Furthermore, authorities issued a regulation in 2001, allowing up to 4% of that annual fund asset to be withdrawn to reduce the deficit and mitigate economic fluctuation at its best. This fiscal rule to minimize deficit was reformed in 2017 and determined at 3%. By doing so, the transfers from the fund to the fiscal budget would be leveled in time to the fund's predicted real rate of return (Norwegian Ministry of Finance, 2019). On the other hand, although CIC's main objective is to maximize return by investing in a diversified foreign portfolio, indirectly, CIC also works as a cushion in financial distress. Injecting foreign currency reserves into CIC would lower the stock of reserves and assist in stabilizing the yuan exchange rate because SWF-managed foreign exchange is not included in the country's foreign exchange reserves (Liew & He, 2012). Most of its investments are strategic in traits rather than meeting the requirements for portfolio investment management that support its main competitors in the global economy (Clark & Monk, 2010).

6.5 EGS, Sustainable Finance and Exclusion Strategies

In terms of an economic and financial perspective, although SWF's main concern is to invest in profitable sectors, GPFG, on the other hand, started early to focus on investing in a diversified mix of portfolios in companies that are related to green, sustainable investment, have a positive environmental impact and divesting excluded ones (Richardson, 2011). The Council on Ethics and Norges Bank have independent mandates with different intentions; however, they both chase the same determining goal of managing the fund as effectively as possible on behalf of current and future generations. While Section 2 of the Government Pension Fund Act defines one obligation as ''The objective of the Government Pension Fund Global's investments shall be to achieve the highest possible return at an acceptable risk.'', the other obligation denotes to exclude investing in such companies those are associate with unethical conditions like violating human rights, producing or relates to any weapon manufacturing, producing tobacco, related with severe environmental damage or CO_2 emission and related to economic crime (The Committee's report, 2020). On the other hand, CIC has not imposed any exclusion policy in its investment strategy; however, they have formulated an ESG investment policy framework with guiding principles, including sustainability in the investment's lifecycle, investing in long-term opportunities that satisfy its ESG standard, raising employee awareness, investing on projects focused on climate change etc. (Annual Report CIC, 2020).

For instance, according to a letter sent to the Ministry of Finance regarding Russia's invasion of Ukraine on February 24, 2022, the Ministry of Finance thus, resolved on February 28, 2022, to halt all investments in Russia by withdrawing all funds. The investment in equity in Russia was around 27 billion NOK at the end of 2021. The Ministry mandated that the divestiture occurs in accordance with legal sanctions and to protect the Fund's other interests. The Ministry of Finance demanded that Norges Bank must guide a disposal strategy as soon as the market had been adequately normalized, as the Moscow Stock Exchange has been closed since February 28, 2022. As of March 2023, the market for trading Russian financial instruments is still subject to comprehensive sanctions and has not been normalized and not possible to execute any transactions (Norge Bank, 2022; Report to Storting, 2023). On the other hand, according to CIC's annual report 2021, CIC set up a framework to achieve carbon neutrality and lower carbon emissions throughout its portfolio by adopting a Sustainable Investment Policy and Guidelines. Carbon accounting assessment, and information exchange are currently doing research and building skills. Strategic allocation choices consider climatic aspects and risk management includes climate risk. CIC pursues collaborations with other SWFs and participates in global green finance governance. CIC encourages emission-reduction initiatives in public and commercial sectors and focuses on sustainable investments. (Annual report CIC, 2021).

It has a promising future in terms of sustainable investment, but not without its challenges and issues. For instance, although China Investment Corporation (CIC) has been focusing on sustainable investing, the fund has yet to develop and establish a related methodology and ESG evaluation. Thus, to encourage ESG development, investors should be something more than just a provider of capital. In addition, they must also encourage investment through, for instance, voting, or engagement in corporate governance, which also requires them to find a suitable way to participate. However, it is crucial that all this work should be done to address these issues in the first place. On the other hand, policymakers, as well as regulators, must first continue to enhance information disclosure in terms of sustainable investment.

Finally, to analyze the return trends of GPFG and CIC by looking at Figure 1 and Figure 2 presented earlier in this paper, GPFG and CIC are moving in a similar direction regardless of their different inception time and fund value at that moment: reflecting the returns of the funds' movement might show the world's economic-financial difficulties. There are some significant differences noticeable between GPFG and CIC. In inception, while GPFG initiated the investment of excess oil funds and safeguarded for future generations, CIC initiated after the financial downturn to invest its accumulated foreign reserve and generate more profit than before to support the economy. Also, a couple of notable distinctions may be seen in terms of investment policy, transparency priority, engagement in fiscal policy, exclusion policy in mandate etc.

7.0 Sustainability and EGS Factors

Regarding sustainable development, Brundtland (1987) defines it as meeting the needs of current generations, without compromising the ability of future generations to meet their own needs. In general, individuals who want to interact with companies that care about sustainability have been increasing significantly. Moreover, climate change could be pointed out as our main challenge in terms of sustainability. However, it has been shown that finding a solution only on a local level has not been enough. Thus, to achieve sustainable development, it is crucial to take into consideration such challenges on a global level and focus on worldwide interests as well. Additionally, as the environmental aspect could be defined as the most important aspect in terms of sustainable development, there are other factors which should be taken into consideration. Other aspects which are crucial to achieving sustainable development are namely the governance and social ones. Furthermore, to better understand the whole concept of sustainable development, these main aspects combined have also been known as the framework of ESG factors. The environmental criteria are, based on the impact of investing in terms of climate change, whereas the social criteria focus on the working conditions, relationships, and relations, and finally, the governance criteria take into consideration for instance, transparency, risk management, as well as shareholder rights (CFA Institute, 2020). The number of investors who care about environmental, social, and governance issues has also been increasing rapidly. Thus, investors have begun choosing to invest in companies that consider ESG issues, as it is a major factor in their investment approach. The expansion of SWFs, where some claim to invest ethically by considering the environmental and social impact of their investment activities, has shown to be a notable trend in the global financial markets (Richardson, 2011). Additionally, SWFs are an ideal fit for financing sustainable development, specifically because of their unique long-term and large-scale features. For instance, due to how

SWFs are structured, they usually have liabilities that are longer-term, or well-defined, which thus allows them to invest in more illiquid assets. Moreover, many SWFs have a particular purpose of investing in industries that contribute to the social and economic growth of local economies, such as GPFG (Sharma, 2017). However, many SWFs see themselves as financial organizations seeking to increase investment returns as private investors. Thus, there could be a conflict to take into consideration in terms of the ethical and financial goals of SWFs (Richardson, 2011). Similarly, Sharma (2017) argues further that although SWFs have been defined as significant long-term investors, it is, however, possible that because of their specific functions, this may lead to preventing them from investing in long-term assets as they might wish or including ESG considerations in their decision-making.

In terms of ESG criteria, the measurements for the social aspects have comparable regional and cultural differences. Additionally, many SWFs tend to have difficulties when it comes to defining and implementing the S pillar into their investment policies due to their own view in terms of local culture, vision, and level of maturity. Thus, finding and implementing excellent and optimal practices on a global level are more challenging, compared to environmental standards. As for SWFs, which are defined as long-term investors, this specific aspect has been a major challenge, as societies continue to change. However, it has been an essential factor when it comes to accomplishing their mandates (International Forum of Sovereign Wealth Funds, n.d.). Additionally, the impact of SWFs has been significantly increasing in terms of corporate governance policies because of their increased amount of assets invested both in public and private equity holdings. Moreover, as mentioned, the Santiago Principles establishment focuses on good governance structures, investment, and risk management practices. With respect to GAPP 6, to encourage independence, as well as accountability in the specific SWF management and eventually achieve its goals, the governance framework for each SWF should be stable and ensure a governance policy based on precise and efficient allocation of roles and responsibilities (International Forum of Sovereign Wealth Funds, n.d.). Similarly, Sharma (2017) argues that the most important element when it comes to establishing powerful investment strategies for SWFs and a major deciding factor for long-term investment perspective shows to be good corporate governance. As good corporate governance is closely linked to the government's function, namely, to promote the agenda of the specific SWF, it is thus essential to establish independence. By doing so, this would prevent political influence that might otherwise result in hindering the ability to achieve the fund's financial and economic goals. However, SWFs based on separate legal operations, such as those in Singapore's Temasek Holdings and GIC, ADIA, QIA, along with the SWFs of United Arab Emirates, have a governance structure that separates the owner of the specific SWF, governance department and management. On the other hand, in countries such as Chile, Canada, Russia, and Norway, SWFs are formed as pools of assets without separate legal entities. Thus, the owner might carry out the responsibilities of the governance department through one or more organizational sections, such as a parliamentary committee or ministry. For instance, an independent organization, such as the central bank, could be given control over the SWF's operation management, like GPFG. In contrast, a board of directors, as in China, along with Singapore's Temasek and GIC, or ADIA, can serve as the group in charge (International Forum of Sovereign Wealth Funds, n.d.).

As known, the role of SWFs management is to provide financial support for national strategic development, including fulfilling their essential demands. Thus, as long-term public investors, their social responsibility is based on using capital in ways that include extra-financial measures in the evaluation of industries. By doing so, this would lead to favoring those who provide less of a risk to society, the environment, and sustainable development (Peaucelle, 2010). For instance, the ''One Planet Sovereign Wealth Fund Working Group (OPSWF)'' is a framework established in 2017 with the purpose of speeding up efforts to incorporate financial risks, along with opportunities in climate change in the management of major, long-term asset pools. Its purpose was also focused on establishing and publishing an ESG framework in 2018, including climate change challenges, along with strategies and measurements that can guide investors' priorities as shareholders and market participants. The OPSWF framework was, to begin with, signed by QIA, PIF, ADIA, KIA, NZ Super Fund, as well as NBIM. Since its establishment, the OPSWF network has experienced rapid growth as more SWFs have joined the network, such as the ISIF, Bpifrance, COFIDES, FONSIS, NSIA, FGIS, NIIF, Mubadala, KIC, TSFE, NIC NBK, CDP Equity, and Growthfund. However, regarding CIC and GIC, there is no information on whether they are planning to join the network as the rest of the SWFs. The framework of OPSWF was created to describe the guidelines SWFs should follow to effectively include climate change in their decision-making, as well as how they could potentially collaborate to support powerful global climate action, where thus, the three guiding principles are based on alignment ownership, and integration (Capapé & Santiváñez, 2017; One Planet Sovereign Wealth Funds., n.d.).

As already mentioned, responsible investing is an essential part of the management of Norway's SWF, namely NBIM, who is responsible for managing the fund. Additionally, it is fair to state that due to its transparency, strong corporate governance, and socially responsible investing approach, GPFG has consistently outperformed the expectations of institutional investors. The Norwegian SWF serves as a fiscal policy instrument, a government instrument for regulating taxation borrowing and public expenditure to affect the economy, which has been effective for the nation. To increase awareness in terms of environmental, social, and governance concerns, NBIM applies two different strategies. As an active owner, and a long-term fund for the benefit of upcoming generations, NBIM thus focuses on long-term return, which is dependent on sustainable development, good governance structure and well-functioning markets. Through its divestment policy, NBIM eliminates firms from the investment portfolio, due to product, or conduct risks, involved with the development of nuclear weapons, coal and tobacco, or serious violations of human rights and environmental harm. Furthermore, to achieve a more forward strategy regarding sustainability and long-term value, NBIM applies two methods, where one of which is based on portfolio allocation and the roles NBIM adopts to guarantee a long-term sustainable risk-adjusted return. On the other hand, voting rights are used to protect the long-term value of the fund, along with raising ESG challenges through active communication. Additionally, by having access to company boards, meeting these companies is an important part of NBIM's investment process, which allows them to not only get a deeper understanding of the companies but also establish long-term relationships with the management of each company and discuss ESG issues as well (Capapé & Santiváñez, 2017).

CIC, on the other hand, has continuously presented itself as a responsible investor since its founding. Their Sustainable Investment Policy, developed by the fund recently in years 2021 and 2022, respectively, is based on its practices and methods, including ESG issues, to achieve both investment returns, and sustainable performance. Additionally, there are three main guiding principles which CIC has implemented into its investment process. Those principles are based on first and foremost including ESG factors, investing sustainably by identifying appropriate ESG factors based on global and domestic levels and improving employee engagement by increasing awareness of ESG factors among employees. In terms of the strategy on how to implement sustainable investing, CIC's main key tools include investigating investment possibilities, including ESG factors in the investment process, optimizing the negative list effectively, and working with different stakeholders. Furthermore, as a top priority, climate risk management is included in overall risk management. In terms of public markets, the fund developed a sustainable investing strategy to establish a climate action portfolio by combining both mandated and private investments and collaborating with ESG managers. On the other hand, while CIC has focused on sustainable investments, the fund has also explored climate change and energy transition deals in the private sector. In other words, by interacting with external partners, including internal training, CIC helps the companies they invest in to reduce their emissions while guiding their team to include sustainable practices in their investment process (China Investment Corporation, n.d.).

Sustainable development and the focus on ESG factors have also been increasing among other large SWFs, as mentioned. Additionally, whether through green bonds, sustainability-linked loans, or other financing arrangements, financial instruments with a sustainability focus help companies finance their transition toward net zero, manage climate risks and increase revenues. Regarding other major SWFs, such as PIF, for instance, the goal is to achieve net zero emission by 2060, announced during the Saudi Green Initiative (SGI). Additionally, PIF aims to focus on six key ESG components, such as environmental impact and biodiversity, carbon emissions and energy management, clean technology and renewable energy, corporate governance, social and economic impact, as well as water and waste management. Similarly, as GPFG, PIF has decided to avoid and exclude funding for any projects or expenditures associated with using fossil fuels, transportation and coal mining, military operations, and others, as part of their integrated Green Finance strategy (Public Investment Fund, 2022). As PIF is ranked among the top ten SWFs in terms of assets under management, the fund is clearly developing its ESG strategy as part of its long-term strategy. As for ADIA, on the other hand, the fund tends to have specific criteria for direct investments, specifically in Asia, for instance, because of risk in terms of child labor. In terms of environmental concerns, the fund is contributing to the development of renewable energy investments and other commitments, such as the ‘One Planet Summit’. Finally, in terms of ESG, ADIA focuses on two specific areas, the Public Private Partnership (PPP) program and looking at what long-term infrastructure means when it comes to ESG factors, in addition to how the fund builds into the processes, documentation, audit and overall investment approach with respect to major infrastructure projects. The PPP guidebook, which is a guidebook that directs the private sector in partnership with the government in terms of both policy process and government expectations, helps ADIA achieve these goals and a long-term sustainable infrastructure asset in the future (Abu Dhabi Investment Office, n.d.).

8.0 Data and Methodology

8.1 Data

For conducting a thorough examination of SWFs and the sustainability standards they adhere to, data for this study was gathered from a variety of sources. The research study *"Sovereign Wealth Funds as Sustainability Instruments? Disclosure of Sustainability Criteria in Worldwide Comparison"* written by Wurster and Schlosser in 2021 and published in Sustainability MDPI, served as the main source of data for this paper. Additionally, the study served as a valuable and primary resource for understanding the disclosure of sustainability criteria by SWFs on a global scale.

In furtherance of Wurster and Schlosser's study, information on asset holdings and rate of return was gathered for 2021 and 2022 from individual websites and annual reports of nine Specific SWFs. The asset size, return statistics, investment methods, and financial performance of the SWFs under scrutiny were all thoroughly described in these sources. Additionally, data on factors were gathered for the regression analysis from the official website of SWFI. The SWFI is a trustworthy and well-known source for comprehensive data on SWFs, including their investing approaches, asset allocations, and performance indicators. While every attempt was made to obtain the data from reliable sources, it is crucial to keep in mind that there may be restrictions on the data's availability and accuracy. Using individual SWF annual reports and public disclosures might induce biases or discrepancies. This study attempted to address these issues and thoroughly examine the chosen SWFs and their sustainability criteria by using various sources by the mentioned authors.

8.2 Methodology

This study's data analysis was performed using RStudio, which is a reliable and adaptable framework for the data editing process, visualization, and statistical analysis. Data was gathered from the required sources and then imported to RStudio for preprocessing and exploratory analysis. Handling missing information, assuring consistency, and changing variables as necessary were all part of the data-cleaning process. The large selection of R packages and RStudio's data manipulation tools made these preparation jobs more convenient.

Figure 5: Flowchart of Approach

Firstly, ESG factors of SWFs are determined by adding different sustainability criteria based on environmental, social, governance, and economic points. If certain criteria are present to the specific SWF, 1 point has been added to the score otherwise, it is 0. According to the paper of Wurster & Schlosser (2021), to calculate the environmental_score promotion of renewable energy, supporting fossil energy, reduction of pollution, and encouragement of sustainable agriculture are added. Protection of human rights, education, reducing poverty, and encouraging sustainable health services is the component of social_score. Furthermore, governance_score means how transparently one SWF is conducting the organization. Thus, SWF's Board composition, degree of financial risk management, business ethics, transparency in the investment process and responsible owner are included in these criteria. The last and fourth criteria is the economic_score, where the advertisement of sustainable innovation, sustainable infrastructure, banning unsustainable business practices, supporting the local economy and investments which encouraging emerging nations are added. The final overall score is the total score of these four criteria combined (Wurster & Schlosser, 2021). Consequently, the overall score is the reflection of the comprehensive ESG scores of the chosen SWFs. The table below presents how the top-ranked chosen SWFs performed regarding ESG scores. As shown, among top SWFs, GPFG has the highest overall score of 15, in contrast to CIC, which scored only 5. This is due to the lack of transparency, responsible ownership, promotion of sustainable innovation etc. Although the asset size of GPFG and CIC is almost identical, their ESG scores show to be, however, the exact opposite. CIC, KIA, QIA and HKMA have achieved a relatively low overall score, whereas Temasek Holdings, PIF, ADIA, and GIC resulted in a better overall score, close to GPFG.

Selected nine SWFs based on top performances and available data	**environmental score**	**social score**	**governance score**	**economic score**	**overall score**
GPFG	3	2	6	4	15
Temasek Holdings	3	2	6	2	13
Public Investment Fund	3	2	3	3	11
ADIA	1	2	5	3	11
GIC	1	2	5	1	9
Hong Kong Monetary Authority	0	0	6	1	7
Qatar Investment Authority	0	2	3	1	6
Kuwait Investment Authority	0	1	5	0	6
CIC	0	2	3	0	5

Table 3: ESG Score calculation for 9 SWFs.
Source: Wurster & Schlosser (2021).

Wurster & Schlosser (2021) investigates over 68 SWFs with other multifactor criteria. In contrast, this paper focuses only on 9 SWF selected from the top 10 SWFs according to their total asset. To add, due to data unavailability, it was not possible to include SAFE to the analysis along with the other top nine SWFs.

It is to be determined if the ESG scores have a certain effect on the return on SWFs or the asset size of the SWFs. In our opinion, it is normal to be curious about whether the SWFs which are more invested in ESG factors are more successful and profitable. In this paper, the models are based on using lag data for asset and return. Wurster & Schlosser (2021) also argued that they used the lag data of AUM where they used the latest data as explanatory variables in their analysis. In this paper, the total assets of the SWFs, and the rate of return of SWFs are collected for 2022 and 2021 respectively. Total asset is shown in trillion USD. The idea of using the lag data, is to investigate if the specific SWFs were ‘green or sustainable’ (according to the calculated scores). If they were, then it must reflect on their future asset size, or rate of return, meaning there is a significant relationship between these factors. It is reasonable to impose a time lag on the variables to guarantee that we can see a causal influence on the dependent variable. This takes into consideration the potential for several independent variables to have an effect after certain periods of time. Besides that, we were unable to get more current data for several of the independent variables due to data availability restrictions, as mentioned. Thus, this resulted as the following models listed below. Here, total_asset_tri_2022 and rate_of_return_21 are the independent variables in the models, and ESG factors are considered as explanatory variables.

total_asset_tri_2022	~	environmental_score + social_score + economic_score + governance_score
rate_of_return_21	~	environmental_score + social_score + economic_score + governance_score

9.0 Analysis and Result

Building upon the data and research provided by Wurster and Schlosser (2021), the primary objective of this study is to examine the potential relationships between ESG factors and other independent variables. Wurster and Schlosser's (2021) dataset encompassed a comprehensive diagnosis of 68 SWFs, ranging from the largest to the smallest in terms of asset size. While considering the whole spectrum of SWFs, this study intends to narrow the focus down to top SWFs, acknowledging their potential influence due to their substantial asset size and potential consistency in profitability.

One underlying idea is that larger SWFs are more likely to make investments with sustainability and the EGS goals in mind. Thus, this investigation examines whether these larger SWFs show a better affinity for sustainability and adherence to ESG standards. This study intends to identify any discernible patterns or impacts of size on ESG concerns within the nine chosen SWFs. The main purpose is to analyze the link between asset size and profitability of the SWFs with sustainability indicators. This study strives to shed light on if larger SWFs contain a better intention to follow sustainability goals, invest in ESG-aligned assets, and have a higher rate of return by investing in greenways. With the stargazer function, the result of two regression analyses has been put into one table to understand it more easily. The environmental_score, social_score, governance_score, and economic_score are the independent variables as the reference of ESG factors of the selected 9 SWFs. Finally, the regression, where asset data and return data have been used, is stated below, and is presented in a Stargazer table from R studio.

	Dependent variable:	
	total_asset_tri_2022	rate_of_return_21
	(1)	(2)
environmental_score	-0.086	0.028
	(0.210)	(0.022)
social_score	0.210	-0.074*
	(0.321)	(0.034)
economic_score	0.054	0.016
	(0.191)	(0.020)
governance_score	0.041	-0.057**
	(0.158)	(0.017)
Constant	0.257	0.462**
	(1.032)	(0.110)
Observations	9	9
R^2	0.128	0.756
Adjusted R^2	-0.745	0.511
Residual Std. Error (df = 4)	0.451	0.048
F Statistic (df = 4; 4)	0.146	3.090
Note:		*p<0.1; **p<0.05; ***p<0.01

Table 4: Result of Regression analysis of asset data and return data of SWFs with ESG factors, Significance level: *** 1%, ** 5%, * 10%.

Table 4 above presents the results of the regression analysis and provides a brief explanation of the key findings. In the first model, which is the total asset, the coefficients for the independent variables are not statistically significant. This indicates that the relationship between the independent variables and the explanatory variable, the total assets of the SWFs cannot be explained. Thus, the changes in the independent variables do not have a meaningful or discernible effect on the asset data in the given analysis.

On the other hand, in the second model, which is the rate of return, the coefficient for the explanatory variable social_score, shows to be statistically significant at the 10% level, as shown by a single asterisk (*), which determines the importance of these effects. Additionally, the double asterisks (**) indicate that the coefficient for the explanatory variable governance_score in the rate of return model is statistically significant at the 5% level. In other words, both single and double asterisks evaluate the accuracy of the estimated effects with the support of these significance levels.

Furthermore, looking at the rate of return model above, the R-squared value is shown to be 0.756. This means that approximately 75.6% of the variance in the dependent variable, rate_of_return_21, is explained by the independent variables included in the model. Additionally, this indicates a relatively high level of explanatory power, suggesting that the independent variables collectively have a strong association with the variation in the dependent variable.

Compared to the R-squared value, in the model rate of return, the adjusted R-squared value is shown to be 0.511. This implies that some of the R-square's explanatory power may be attributable to the increase of additional independent variables, which may or may not have a substantial impact on the model's predictive potential. This result thus suggests that the adjusted R-squared, which considers the degrees of freedom and potential overfitting, gives a more precise evaluation of the model's goodness of fit.

However, the adjusted R-square value signifies that there could be potential for improvement in the model, such as considering more variables or modifying the current collection of independent variables. To confirm the robustness and effectiveness of the model, it is crucial to interpret these measurements in connection with other statistical diagnostics and to conduct additional research.

10.0 Limitation and scopes

The lack of extensive and in-depth information on SWFs, notably those from the Middle East and Asia, is a fundamental drawback of our study. These SWFs frequently display a higher degree of reticence when asked for details regarding their assets, rate of return, investment strategy, the geographical mix of investments etc. The scope and depth of the research done in this study are considerably impacted by the lack of transparency and the restricted access to data from these SWFs. The limited generalizability of the results and introduction of a possible source is biased due to the absence of comprehensive data from these SWFs. Thus, this study would be much more viable and reliable if additional non-public data, especially from SWFs in the Middle East and Asia, were accessible. Additionally, this would provide a more thorough understanding of

SWF performance and characteristics in general. Furthermore, to acquire a fuller understanding of the investment activities and repercussions of these less transparent SWFs, it is imperative that future research attempts address these data restrictions and investigates alternate approaches or data sources. To provide a more detailed knowledge of the possible impacts of the perspective of ESG goals on return performance, subsequent studies might add more factors or use alternative methodology or involve a larger sample of SWFs, if they disclose more public information in the future. By being more open and transparent about their SWFs, this study could have, thus provided a much more detailed analysis based on different factors and perspectives.

11.0 Discussion

Being the two largest SWFs in the global economy, GPFG and CIC, each of them has shown to have specific goals and objectives. Also, these two SWFs have demonstrated divergent development strategies and adherence to sustainable practices, transparency, and ESG goals, despite being established at different times and with contrasting objectives. While established in 1990, GPFG aspires to provide long-term profits, offer a steady income to the Norwegian population, and uphold ESG standards, as mentioned. The GPFG has been known for its open investment philosophy, stringent ethical standards, and dedication to ethical investing. In contrast, the CIC, which was established much later in 2007, acts as a mechanism for managing China's foreign exchange reserves and bolstering its influence on the world economy. Although CIC was established approximately 17 years after the creation of GPFG, it is notable how CIC has quickly expanded to rank among the biggest SWFs worldwide. Contrary to the GPFG, the CIC's main objective is not explicitly focused on intergenerational wealth preservation. Instead, it seeks to maximize investment returns and utilize funds in a manner that would advance China's economic interests overseas, as mentioned earlier in this paper.

Besides that, as of the global economy, it has been stated that SWFs serve as significant players with a variety of purposes in consideration, including protecting funds for future generations and strengthening foreign exchange possessions. Revenue generating and maximizing profits are still SWFs' primary objectives, however, there is a rising tendency for them to incorporate ESG factors into their investment strategies. Although the financial return is the primary consideration, it is, nonetheless, possible to wonder and be curious about why SWFs are so focused on ESG. SWFs acknowledge ESG integration for a multitude of reasons. By considering ESG aspects, SWFs may manage environmental and social risk efficiently, safeguarding their investments against regulatory changes, harm to their reputations, and operational interruptions. By integrating ESG standards and considering factors such as climate change, resource scarcity, human rights in terms of labor practices, and corporate governance, companies that can be subject to regulatory, reputational, or operational concerns can be avoided by SWFs. SWFs may invest in assets and companies that are well-positioned for sustainable growth over several generations. This corresponds with SWFs' long-term sustainability aims. By addressing stakeholder expectations, ESG integration enables SWFs to exhibit responsible investing practices and responsibility for governance, social, and environmental repercussions. Additionally, adopting sustainability goals aligns SWFs with global trends and legislation, lowering the possibility of criticism and regulatory intervention. The theoretical framework for ESG integration has been established by much research. For instance, research has shown that businesses with superior ESG performance are more likely to outperform their competitors in terms of financial performance, stock returns, and credit ratings. Additionally, SWFs, such as the NZ Super Fund and GPFG, have shown the advantages of incorporating ESG principles into their investment strategies by generating high returns while upholding a commitment to sustainability (Richardson, 2011).

The profitability of SWFs is affected by a variety of variables other than ESG concerns, which must be acknowledged. Performance tends to be influenced by asset allocation, diversification, macroeconomic factors, and investment mandate. Furthermore, it is possible that the post-COVID-19 economic downturn has had less impact on SWFs with an emphasis on oil and gas, or natural resources. Nevertheless, greater knowledge and acceptance of the long-term advantages of sustainable investment can be linked to the increased emphasis on ESG goals in recent years.

It is essential to highlight that, based on the analysis conducted, the study's governance_score and social_score variables have significant p-values with respect to the rate of return in the SWFs under examination. These results indicate that there is clearly a statistical association between ESG traits, particularly governance and social variables, and SWF financial performance. Drawing definitive inferences about the direct impact of maintaining greater ESG and sustainability goals on return performance, it is, however, important to point out that it must be done with careful consideration. It is vital to consider other factors that could have the capacity to impact this connection as well. The statistical significance that has been seen may be influenced by several factors, including asset size, investment techniques, market circumstances, and external influences. In considering the availability of accurate data, it is prudent to note that the study is unable to completely ascribe the observed consequences to the SWFs' devotion to more ambitious ESG goals.

Conclusion

As mentioned, SWFs have shown to be an essential part of generating profit through diversification and benefiting both current and upcoming generations. This study is based on two parts, where the first part is focused on the two largest SWFs, GPFG and CIC. By doing so, this study has examined the differences, and similarities between GPFG and CIC. Considering their similar total asset size, these two SWFs are quite different, especially in terms of transparency, ESG aspects, investment policy, strategy, asset allocation, governance etc. In contrast, the second part has aimed to investigate whether ESG factors have an impact on the return performance or profitability of SWFs. This has been achieved by selecting 9 specific SWFs from the highest ranked SWFs. The hypothesis behind this study is to find any significant relationship the return or asset size of the SWFs has with integrating ESG objectives into the SWFs. By using a regression model, this study identifies statistically significant p-values for the governance_score and social_score in connection to the rate of return. ESG integration may not always result in increased profitability. However, it does connect SWFs with global trends, improve risk management, and place them favorably in areas with sustainable growth. By implementing ESG guidelines, SWFs support a more sustainable and ethical global economy while preserving their long-term financial goals. However, this paper nonetheless points out that it cannot be proved beyond a reasonable doubt that SWFs retaining greater ESG targets affect the performance of their return. Although, other factors might have greater effects on the rate of return. To conclude, as many SWFs are not transparent enough to disclose all data, this paper faced numerous challenges due to data limitations and lack of information availability.

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