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**INTERNATIONAL SCHOOL
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MASTER'S DISSERTATION

***“A Study on Portfolio Management of Kazakhstan’s
Unified Accumulative Pension Fund”***

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ABSTRACT

This research work investigates the Unified Accumulative Pension Fund (UAPF) of Kazakhstan, examining its structure and performance, and comparing them with two prominent global pension funds, namely, Norway's Government Pension Fund Global (GPF) and Japan's Government Pension Investment Fund (GPIF). The study sheds light on existing inefficiencies in the UAPF's portfolio asset allocation and investment practices, addressing concerns regarding its complex organizational structure and management decisions. By analyzing public perception and international best practices, the research aims to enhance understanding of pension fund operations and identify potential areas for improvement in the UAPF's operations and policies.

Through a mixed-method approach, which integrates quantitative analysis and qualitative assessment, the study compares key performance indicators, investment strategies, and risk profiles of the UAPF, GPF, and GPIF. It examines how each fund's investment strategy aligns with long-term sustainability and stability goals. Furthermore, the dissertation explores performance strategy frameworks governing the UAPF and explores possibilities for revision to enhance fund performance and transparency.

The findings of this research contribute to the body of knowledge on pension fund management and offer insights into global best practices in portfolio asset allocation and investment strategies. Ultimately, the study aims to provide recommendations for optimizing the UAPF's portfolio asset allocation and investment strategies to ensure the provision of sustainable and stable retirement benefits for the citizens of Kazakhstan.

Keywords: Unified Accumulative Pension Fund, Government Pension Fund Global, Government Pension Investment Fund, portfolio asset allocation, transparency and consistency of asset management reporting, investment performance assessment

TABLE OF CONTENTS

1. Introduction.....	1
2. Research Questions	2
3. Literature review	3
4. Research Methodology	5
5. The Unified Accumulative Pension Fund (Kazakhstan)	6
5.1. Criticism of the UAPF	10
6. The Government Pension Investment Fund (Japan)	13
7. The Government Pension Fund Global (Norway)	19
8. Structure of Three Pension Funds	25
9. Performance of Three Pension Funds.....	31
Bibliography	39
Appendices	44

LIST OF TABLES/GRAPHS

Table 1. Structure of pension assets investment portfolio of the Unified Accumulative Pension Fund under fiduciary management of the National Bank, as of December 1, 2023

Table 2. Top 15 countries by amount invested as of the end of March 2023

Table 3. GPFPG's largest holdings excluding sovereigns, both bonds and equities

Table 4. GPFPG's allocation of equity investments by sector

Table 5. GPFPG's largest holdings within the segment of government bonds

Table 6. The UAPF's asset class allocation for all years, by January of each year

Table 7. GPFPG's asset allocation for all fiscal years

Table 8. GPIF's portfolio allocation of reserve funds for all years

Table 9. Comparison of portfolio structure of three pension funds

Graph 1. GPIF's total value of alternative assets up until fiscal 2022

Graph 2. GPFPG's holdings in equity markets since inceptions (by country/regions) as of 31 December 2023

Graph 3. GPFPG's holdings in fixed-income markets since inception (by country/regions) as of 31 December 2023

Graph 4. Structure of the UAPF's investment portfolio for each year in dynamics

Graph 5. Structure of the GPFPG's investment portfolio for each year in dynamics

Graph 6. Structure of the GPIF's investment portfolio for each year in dynamics

LIST OF ILLUSTRATIONS

Illustration 1. Multi-level system of the UAPF

Illustration 2. Pension payment process of the UAPF

Illustration 3. The process of how GPIF manages pension reserves for future generations

Illustration 4. The current policy asset mix of GPIF

Illustration 5. Infrastructure portfolio breakdown by country and sector

1. Introduction

This study seeks to provide an examination of Kazakhstan's Unified Accumulative Pension Fund (UAPF) in terms of its structure and performance in comparison to the biggest pension funds in the world, namely, Norway's Government Pension Fund Global (GPF) and Japan's Government's Pension Investment Fund (GPIF). In other words, this paper will try to showcase the existent inefficiencies of the UAPF in its portfolio asset allocation strategy and investment declaration.

It is not a secret that Kazakhstan's UAPF is notorious for its quite suspiciously complex structure along with the management's ambiguous decisions to use its funds for purposes other than intended. There is a significant portion of people who believe that the UAPF resembles a scheme for money laundering. Specifically, they claim that the UAPF is a closed and opaque organization where a small group of financiers manages people's money as if it were their "own pocket". In addition, the situation is exacerbated because of people's ignorance of the UAPF and how it operates. This results in the contributors' overreliance on the benefit payouts in the future while ignoring the alternative sources of funds for their retirement such as establishing an emergency fund, creating a budget to track income and expenses, building a personal diversified investment portfolio, and working on planning a retirement lifestyle.

In short, this study will try to make people well-informed about how pension funds work, the UAPF in particular, via a simplified explanation of complex concepts. The results of this study will be a comparison of the UAPF's performance, structure, and investment strategy against the GPIF and GPF. It will help to gain insights into the world's best practices of portfolio management, and possibly yield a strong foundation for the improvement of the UAPF in terms of portfolio asset allocation and investment strategies to secure sustainable and stable retirement benefits for Kazakhstani citizens.

2. Research Questions

This study intends to answer the following research questions:

1. What is the structure, performance and investment strategy of the Unified Accumulative Pension Fund of Kazakhstan?
2. How does the UAPF compare with pension funds in Norway and Japan in terms of structure and performance?
3. What lessons can be learned from the world's best practices in pension fund management such as Norway's Government Pension Fund Global and Japan's Government's Pension Investment Fund?
4. What are the potential areas for improvement in the fund's performance strategy?

3. Literature review

The best international practices of managing sovereign pension funds reveal interesting methodology and structure that can be used as a benchmark for the UAPF. The Thinking Ahead Institute in conjunction with Pensions and Investments published an annual report on the world's largest pension funds in 2023. Due to their substantial size, the largest pension funds wield significant influence in the market. In 2023, Japan's Government Pension Investment Fund (GPIF) became the largest pension fund in the world for the 21st year in a row, with \$1.7T in total assets under management (Ross, 2022). The Japanese public pension system operates on the principle that the pension benefits for the elderly are funded by the pension premiums collected from the current working generations. To clarify, the pension benefits that the present working generations expect to receive in the future will be funded by the pension premiums paid by subsequent generations, including their children and grandchildren (GPIF, 2023). GPIF employs a combination of "long-term investment" and "diversified investment" as a key principal investment strategy in achieving stable results. Particularly, GPIF sticks to the policy asset mix (the principal asset allocation policy) where pension assets are invested equally into foreign equities (25%), domestic bonds (25%), domestic equities (25%), and foreign bonds (25%). GPIF believes that in long-term investments, adhering to a consistent portfolio of asset mix over an extended period tends to generate more favorable outcomes compared to altering the portfolio in reaction to short-term market fluctuations. In 2022, the annualized rate of return for the portfolio was 1.5%, among which domestic bonds represented -1.74%, foreign bonds represented -0.12%, domestic equities returned 5.54%, and foreign equities 1.84% (GIPF 2022, p.23). At one point, the fund held the leading position as the primary owner of domestic stocks in Japan, although the Bank of Japan has now assumed that role. Due to its immense scale, investors closely monitor the GPIF's activities. Notably, the fund garnered attention when it opted to begin investing in startups, as this decision has the potential to inspire other pensions to undertake similar investments.

The second place in the ranking is Norway's Government Pension Fund Global (GPFGL) with \$1.4T total assets under management. In their research on the Norwegian pension fund, Bauer et al. found

that “a large part of the value added for the total portfolio can be attributed to active management in equity” (2022, p.4). Specifically, they evaluated the active management by Norges Bank Investment Management (NBIM) of the Norwegian Government Pension Fund Global. The newly created Fund by the Norwegian government in 1986 was aimed to accumulate surplus from oil revenues, with capital injections commencing in 1996. Since then, the Fund's assets under management (AUM) have consistently increased, primarily driven by both new capital inputs and solid financial returns on investments (Bauer et al. 2022). Initially, the Fund focused on government fixed-income securities. However, in January 1998, it expanded its investment horizon to include equities, starting with a 40% equity and 60% fixed-income target portfolio. Over time, the equity allocation has continued to grow, reaching a current target of 70% (Bauer et al. 2022). In 2010, the Fund diversified further by adding unlisted real estate to its portfolio, and in the summer of 2021, NBIM ventured into renewable infrastructure investments for the first time. This model of investment policy is fairly called the “Norway Model” which is “characterized by an almost exclusive reliance on public equities and fixed income (the traditional 60/40 equity/bond model falls under the Norway model), with largely passively managed assets and with very little to no allocation to alternative investments” (CFA Institute, 2021, p. 956). This method offers the benefits of minimal investment costs, transparent investments, a reduced risk of poor manager selection, and simplicity for a governing board. The drawback, however, is the limited potential for value addition beyond market returns. Nevertheless, Norway's GPFG has started exploring ways to enhance value beyond market-capitalization benchmarks by aiming to capture systematic risk factors.

Overall, Kazakhstan’s asset allocation starkly differs from Japan’s and Norway’s Pension Funds, firstly, on the nature of the investment declaration. Kazakhstan clearly lacks transparency and ethical practices in its investment activities. Kazakhstan’s strategy does not seem to correspond to the long-term horizon due to the lion’s share of investments made into government securities and quasi-governmental agencies while ignoring the problem of rising inflation and managerial negligence about proper investment selections. Thus, this research will try to apply the “Norway model” and Japanese “asset mix

policy” to the UAPF’s asset allocation to forecast potential returns that would be earned in an alternative scenario.

4. Data and Research Methodology

4.1 Data

The data which are used in this research work are taken from publicly available sources. The information on the structure and performance of the UAPF’s portfolio are retrieved from the UAPF’s official website which contains reports on investment activity overview, and annual reports of the National Bank of Kazakhstan (NBK). The monthly data of the UAPF’s structure and returns were composed manually in a time-series fashion from monthly reports on investment management of the UAPF’s pension assets, which yields around 130 data points. The dataset of the pension assets which are managed by NBK yields 10-year information from the inception of the UAPF, i.e. since October 2013 until April 2024, while data of investment management companies (“BCC Invest” JSC, “Halyk Finance” JSC, “Halyk Global Markets” JSC, “Jusan Invest” JSC, “Centras Securities” JSC) that received UAPF’s pension assets under trust management start from April/May 2021 until April 2024. The Fund provides returns in KZT and USD. We used returns in Kazakhstani tenge (KZT). The data on returns and structure for Japan’s Government Pension Investment Fund (GPIF) and Norway’s Government Pension Fund Global (GPFG) are taken from their respective annual reports starting from 2013 until 2023 (the latest available). GPIF provides returns in Japanese Yen, while GPFG provides returns in Norwegian Kroner. To calculate Sharpe ratios for GPFG and GPIF, the monthly US risk-free rates (10-Year Treasury bonds) are used, while for the UAPF, Kazakhstan’s 10 Year Government securities are taken from KASE platform. To calculate Information ratios, two benchmark portfolios are used: FTSE World Government Bond - Developed Markets (government securities sub-portfolio) and MSCI World Index (total portfolio). These two benchmark portfolios are chosen due to possessing valid benchmark properties, and because of data availability.

4.2 Research Methodology

This study employs a mixed-method methodology which combines qualitative assessment of portfolios and the numerical evaluation of portfolio's performance. Overall, there is no consensus in academic literature on ways of measuring and reporting portfolio performance. Firstly, this research work presents performance evaluation without any risk adjustments: realized returns and active returns (portfolio returns minus the benchmark returns). Secondly, this work uses two risk adjusted performance measures: Information ratio (divides mean active returns by its standard deviation or also known as tracking error) and Sharpe ratio (divides mean of the portfolio's excess return by its standard deviation), measures excess returns per unit of risk.

The comparative analysis will be employed as a tool for using quantitative and qualitative metrics for comparison, ensuring a comprehensive understanding of each pension fund's strengths and weaknesses. The data collection method will include analysis of each pension fund's annual report in terms of their investment strategies, return statistics, asset allocation, diversification strategies, managerial approaches, and risk-management practices. In other words, this study will utilize publicly available data, annual reports, financial statements, and regulatory publications. In addition, this research seeks to compare pension funds based on key performance indicators, investment strategies, and risk profiles to make informed recommendations to the UAPF's improved alternative investment strategies.

5. The Unified Accumulative Pension Fund (Kazakhstan)

JSC "Unified Accumulative Pension Fund" (UAPF) was established on August 22, 2013 by the Government of the Republic of Kazakhstan which is the founder and sole shareholder of the UAPF which owns 100% of shares. The fund is essentially represented by the State Institution Committee for State Property and Privatization of the Ministry of Finance of the Republic of Kazakhstan (ENPF, n.d.). Pension assets of the fund are managed by the National Bank of Kazakhstan jointly with the Council for Pension Assets Management under the President of the Republic of Kazakhstan (ENPF, n.d.).

The official mission of the UAPF is to provide a reliable accounting of pension savings and deliver high-quality pension services accessible to every contributor. The official investment declaration of the UAPF states that “the goals of investing pension assets are to ensure the safety of pension assets and obtain real returns in the long term at a level of risk that allows for the preservation of the value of pension assets with a high degree of probability” (NBRK, 2020). Furthermore, it is written in the social code that the government ensures that recipients receive the security of mandatory pension contributions and obligatory occupational pension contributions to the UAPF, based on the actual contributions made, while considering the inflation rate at the moment of qualifying for pension benefits. (ENPF, n.d.). Payments from the UAPF are made per the methodology approved by the Decree of the Government of the Republic of Kazakhstan dated October 2, 2013, No. 1042 (as amended from April 1, 2021).

According to the methodology, payments to retirees are calculated as follows: the amount of pension savings is multiplied by the pension savings payment rate - 6.5% and divided by 12 (ENPF, n.d.). However, from January 1, 2022, payments to pensioners who retired on April 1, 2021, have been increased by 5% due to indexation. It is important to note that monthly pension payments from the Unified Pension Fund are made in the amount of at least 70% of the subsistence minimum.

In short, to calculate the average monthly income of the recipient at the time of pension assignment, the amount of the recipient's actual mandatory pension contributions is used, along with considering the inflation rate for the corresponding period. Now, the retirement age in Kazakhstan for men is 63 years old and for women is 61 years old. At the same time, people who have not retired yet can get one-time pension payments only to improve their living conditions and (or) pay for medical treatment. Yet, the early use of pension funds can be used only if the accumulated amount satisfies the threshold of minimum sufficiency of pension savings.

The current pension system of Kazakhstan is multi-component. In other words, Kazakhstan operates a multi-tiered pension system. As seen in illustration 1, the first level includes pension payments from the state budget (solidarity and basic pension payments). The second level is a mandatory accumulative system, which includes 10% mandatory pension contributions (MPC) from employees and

5% mandatory professional pension contributions (MPPC) from employers based on employees' income, employed in hazardous working conditions. The third level is a voluntary accumulative system, which includes pension payments from voluntary pension contributions (VPC).

Illustration 1. Multi-level system of the UAPF



Illustration 2. Pension payment process of the UAPF



All elderly pensioners are eligible for the basic pension, but its amount since July 1, 2018, depends on the work experience before 1998 and participation in the accumulative pension system. Those with at least six months of work experience before 1998 receive a solidarity pension. Its size depends on both the length of service and the salary. Pension payments from contributions to individual pension accounts in

the NPF, formed from mandatory contributions, are made monthly starting from January 1, 2018. However, if the amount of savings does not exceed 12 minimum pensions, the payment is made as a lump sum. The amount of the monthly pension payment should not be less than 70% of the subsistence minimum and is determined following the Methodology for calculating the size of pension payments, approved by the Resolution of the Government of the Republic of Kazakhstan No. 521 dated June 30, 2023.

The total volume of the UAPF's pension assets as of December 1, 2023, amounted to about 17,364.76 billion tenge. At the same time, the pension assets of the UAPF, which are in trust management of the National Bank of the Republic of Kazakhstan, amounted to 17,347.35 billion tenge. Pension assets managed by the pension insurance company amounted to 17.41 billion tenge. The investment portfolio of pension assets is managed by the NBRK.

Table 1. Structure of pension assets investment portfolio of the Unified Accumulative Pension Fund under fiduciary management of the National Bank, as of December 1, 2023

Item	Present value at January 1, 2022, bln tenge	Share at January 1, 2022, %	Present value at January 1, 2023, bln tenge	Share at January 1, 2023, %	Change over the period, %
Government securities of the Republic of Kazakhstan	5,104.8	39.1%	7,268.5	49.7%	42.4%
Securities of issuers of the Republic of Kazakhstan	3,165.9	24.3%	2,956.0	20.2%	-6.6%
Securities of foreign issuers	2,922.8	22.4%	2,808.8	19.2%	-3.9%
Deposits at banks of the Republic of Kazakhstan	251.7	1.9%	200.4	1.4%	-20.4%
Cash on investment accounts	434.8	3.3%	27.8	0.2%	-93.6%
Assets under external management	1,382.5	10.6%	1,355.4	9.3%	-2.0%
Other assets	215.7	1.7%	4.9	0.0%	-97.7%
Total	13,046.6*	100.0%	14,621.9	100.0%	12.1%

As we can see in the table above, approximately 80% of assets are allocated to domestic issuers, while only 20% comprise securities of foreign issuers. Furthermore, as shown in the table below, the main directions for investing pension assets of the NBRK as of January 1, 2023, are as follows: government securities of the Republic of Kazakhstan - 49.7%, securities of issuers of the RK – 19.2%, securities of foreign issuers – 19.2%, deposits of second-tier banks of the Republic of Kazakhstan – 1.4%. The investment portfolio, broken down by the currencies in which financial instruments purchased from

pension assets are denominated, as of December 1, 2023, looks like this: investments in national currency - 69.29%, in US dollars -30.67%, in another currency - 0.04% of the portfolio of pension assets.

5.1. Criticism of the UAPF

One of the most pressing problems of the UAPF is that the investment income simply cannot keep pace with the growth of inflation. For instance, as of August 1, 2023, the return on investment for UAPF depositors (recipients) over the preceding 12 months, spanning from June 2022 to July 2023, stood only at 7.89% (ENPF, n.d.). At the same time, inflation in August 2023 on an annualized basis amounted to 13.1%, while prices for food products increased by 12.4%, non-food products by 13.5%, and paid services by 13.9% (Bureau of National Statistics, 2023). In other words, the real returns are negative, and retirees may find that their pension fund is not able to maintain the corresponding standard of living due to the increased cost of living.

Pension funds may face challenges in meeting their obligations to retirees, especially if the fund's assets cannot keep up with the rising financial needs of retirees in an inflationary environment. In Kazakhstan, the government guarantees the preservation of pension savings at the inflation level. In theory, this means that contributors should not lose the purchasing power of their accumulated tenge. However, it's not as simple as it seems. If the UAPF does not fulfill its obligations, the state compensates the person from the budget. Yet, this amount is likely to be quite substantial, and it is unclear how the budget will fulfill this obligation. Most likely, these funds will come from the National Fund again.

The Agency for Regulation and Development of the Financial Market (ARDFM) emphasizes that Kazakhstan remains practically the only country in the world where there is a guarantee for the safety of pension savings. Thus, when making payments to each retired person, the state is obliged to add additional money that was lost due to inflation (ARDFM, 2021). Yet, the devil is in the details. Popular Kazakhstani economist, in 2013, quoted the words of the Chairman of the National Bank, Grigory Marchenko, who said that over 14 years of existence of the State Pension Fund, accumulated inflation was 218 percent, accumulated returns was 341 percent, that is, more than 1.5 times. However, Svoik argues that the real level of accumulated inflation was about a thousand percent (Svoik, 2013). Economists, in general, do

not rule out "fabricated" indicators. For example, in 2018, inflation was reported at 5.3 percent, but in reality, it could have been at least 10 percent. In theory, the government can adjust the numbers to fit the desired results (Akaeva, 2022).

The main reason behind the low investment returns is the UAPF's weak investment policy and inefficient management. The salient issue of the weak investment policy of the UAPF is vivid in its portfolio's asset allocation. As of August 1, 2023, the National Bank of the Republic of Kazakhstan (NBRK) made the following investments of the pension assets: 49.14% in government securities of the Ministry of Finance of the Republic of Kazakhstan, 10.42% in bonds of quasi-public companies, and 5.34% in bonds of second-tier banks in Kazakhstan, 4.45% in government securities of foreign countries, 2.26% in securities of international financial institutions, and only 0.10% in corporate bonds and Kazakhstani issuers (ENPF, n.d.). Admittedly, the pension fund's portfolio is composed according to the official UAPF's investment declaration where it is written that investment into non-governmental equity securities cannot exceed 5 % of total pension assets (See 1.6 in Appendix 1).

Such an inefficient composition is said to be dictated by the objectives of the UAPF which seeks to "ensure the safety of pension assets and achieve real returns in the long term at a risk level that allows for the preservation of the value of pension assets with a high degree of probability" (NBRK, 2020). The keywords in this statement are "with a high degree of probability". Yet, it is still hard to justify this conservative strategy because as was already mentioned before the investment returns of the UAPF cannot keep pace with rising inflation thus resulting in negative real returns. Therefore, the investment declaration itself should be adjusted to achieve greater returns to satisfy the retirement income demands of future retirees to level out the consequences of high inflation. In fact, it is more of a necessity rather than a recommendation.

Yet, now, the existing asset allocation of the UAPF's portfolio resembles more an unofficial fund to cover the deficit of the republican budget rather than a reliable accounting of pension savings. It looks as though the main function of the UAPF is to contribute funds to the state budget. Anyone attempting to understand the structure of the investment portfolio of the UAPF has likely pondered the question: why

does the fund purchase so many government securities? As of August 1, 2023, the share of GS in the fund's portfolio is 49.14%, with quasi-state organization bonds ("Samruk-Kazyna" and others) and bonds of Kazakhstani banks occupying the second and third places in terms of shares (ENPF, 2023). The fact that the main function of the UAPF is to inject funds into the state budget is confirmed by the words of the former chairman of the National Bank, Kayrat Kelimbetov, who claimed in 2013 when the fund was created that 90 percent of pension savings would be directed to cover the deficit in the republican budget through the purchase of government securities, quasi-state sector bonds, and second-tier bank bonds (Akaeva, 2020). This is exactly what we observe today.

In fact, one of the UAPF's goals is to invest in domestic infrastructure projects. Just recently, on 21 November 2023, the government announced an allocation of 1.5 trillion tenge of pension savings for infrastructure projects in the energy sector, particularly for the construction of gas power stations. This decision is prompted by the significant "wear and tear of generating capacities and a notable shift in the investment climate towards low-carbon development, necessitating a phased transition away from coal" (KazTag, 2023). However, although the yield on government securities is good (around 13% of annualized return) (ENPF, 2023), it is merely shifting funds from one government pocket to another falsely showcasing profitability. In addition, as part of its program to combat inflation, the National Bank begins to raise the interest rates, thus increasing the cost of money. In other words, the state borrows more expensively, and as a result, citizens as taxpayers end up spending more money simply on servicing debt, while their incomes, once again, are being devalued. Interestingly, in 2013, the World Bank recommended that Kazakhstan invest pension savings abroad to ensure they are in a stable dollar. The government did not take such a step, explaining that it would then be unable to channel funds into the state budget and invest in bonds of organizations such as "Samruk-Kazyna" (Akaeva, 2020). Nevertheless, the investment activities of the UAPF are ineffective because half of the portfolio is in government securities. Pension funds were not created for the state to turn into its "own pocket", especially an inefficient one.

Another problem is a managerial one. Kazakhstan keeps investing in the so-called "junk bonds" which are below investment-grade bonds that were poorly rated by credit agencies thus encompassing a

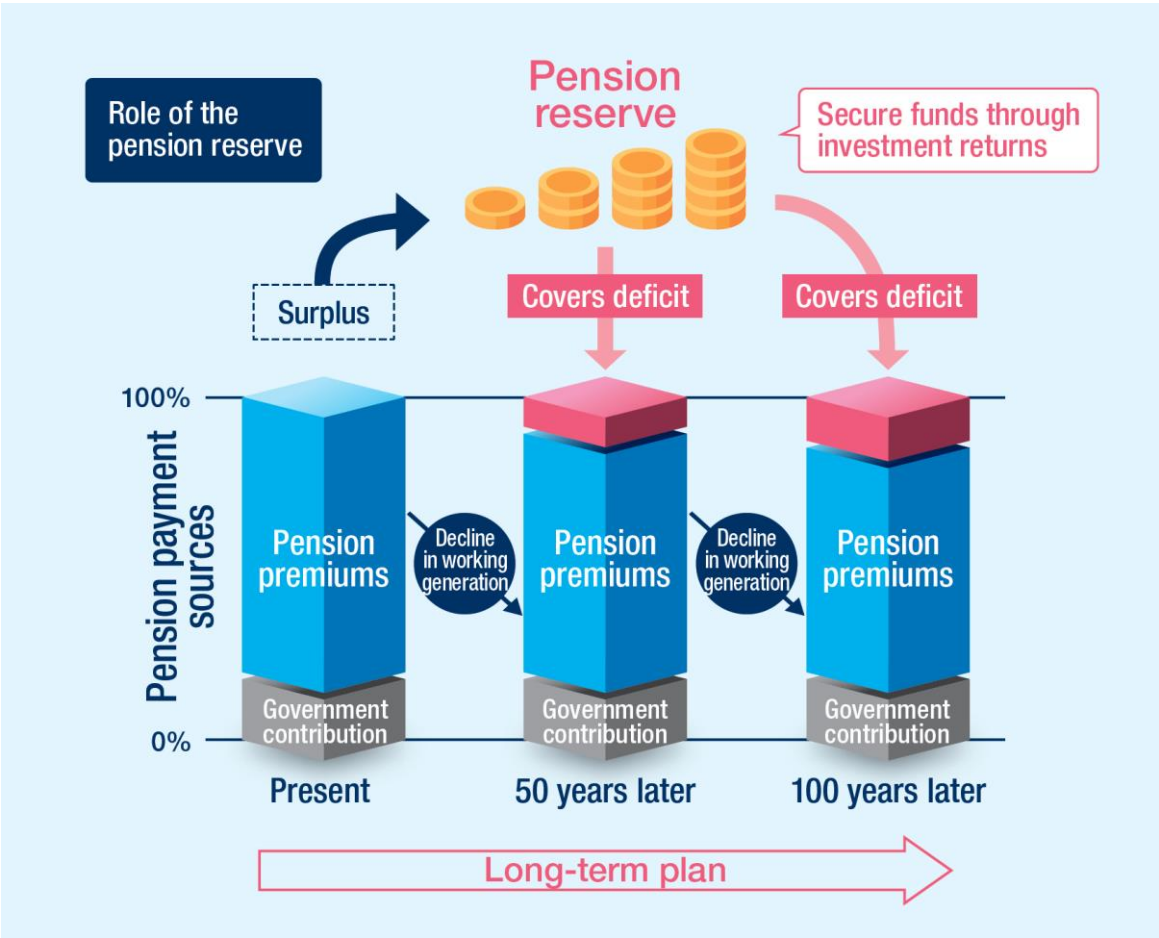
higher risk of default. For example, in 2014, the bonds of "Bank CenterCredit" purchased by the UAPF had a CCC rating on the Fitch Ratings scale, indicating a high probability of default at the time of purchase. The bonds of "National Bank," purchased in 2015, had a rating of B on the same scale, indicating "significant default risk", bonds of other banks, according to Moody's Investors Service, had a rating of Ba3 - "speculative commitments of low quality, subject to very high credit risk" (Akaeva, 2022). Many bonds do not have a rating at all. Furthermore, there have been questions about the actions of the NBRK in failing to manage pension savings properly. The most prominent example is the purchase of bonds issued through an offshore company by the International Bank of Azerbaijan (IBA) in 2014. A year later, the bank encountered problems — the head of the bank, Jahangir Hajiyev, was arrested on suspicion of embezzling large sums of money. The arrest did not serve as a "warning" for National Bank employees, and the IBA bonds were not sold. Two years later, the Azerbaijani bank applied for bankruptcy, posing a threat of losing 71.6 billion tenge for Kazakhstan (Bakhtigareyev, 2017). In short, it can be argued that managers of the UAPF are state officials who are not interested in its efficiency and success as much as private shareholders are interested. There is no competition at all, only one monopolist in the market. There is essentially nothing to lose for the UAPF because all obligatory pension contributions will come to it anyway.

6. The Government Pension Investment Fund (Japan)

Government Pension Investment Fund (GPIF) is the pension fund for public sector employees in Japan, which is the second largest pension fund in the world with around \$1.6 trillion in assets under management (AUM) (SWFI, 2021). The overarching goal of GPIF is to contribute to the stability of the national pension system by securing investment returns with minimal risk and from a long-term perspective, exclusively benefiting pension recipients. Its primary investment strategy is diversification by asset class, region, and timeframe. Despite short-term market fluctuations, the aim is to leverage the long-term investment horizon to achieve stable and efficient returns while ensuring liquidity for pension benefits. The risk management approach involves formulating an overall policy asset mix and managing

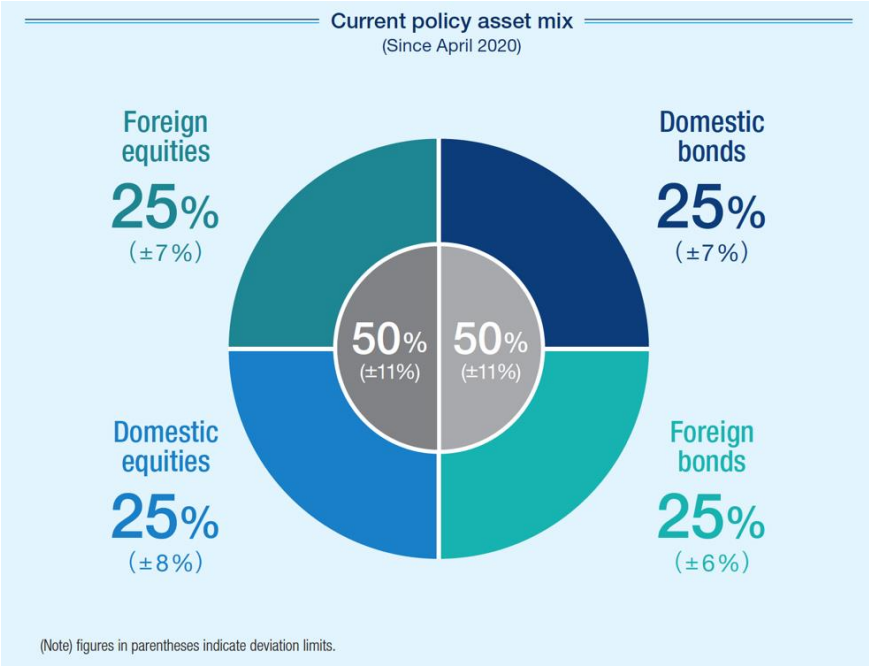
risks at various levels. Both passive and active management strategies are utilized to achieve benchmark returns and identify profitable investment opportunities. Recognizing the importance of sustainable growth, non-financial environmental, social, and governance (ESG) factors are incorporated into the investment process alongside financial considerations. This integration is seen as vital for securing long-term investment returns for pension beneficiaries. Initiatives are advanced to promote long-term and sustainable growth of investee companies and the capital market as a whole. This includes considerations of ESG factors and other measures aimed at enhancing long-term investment returns and fulfilling stewardship responsibilities. Overall, GPIF’s investment principles highlight a commitment to stability, long-term growth, risk management, and the integration of ESG factors in investment decision-making, all aimed at securing sustainable returns for pension beneficiaries.

Illustration 3. The process of how GPIF manages pension reserves for future generations
 (source: GPIF annual report)



Japan’s pension system is structured in ways that the current working generation supports the lives of the older generations. This means that the pension benefits future generations receive will be financed by the contributions also called “pension premiums” made by their children and grandchildren. The system does not rely on individuals' pre-accumulated premiums to cover their pension benefits. Yet, there are concerns over the decreasing birthrate and aging population in Japan. Particularly, citizens are worried about what would happen to the pension scheme as the Japanese population decreases, because it will tremendously increase the burden on future working generations. Indeed, as people's healthy lifespans extend and the rate of female employment rises, the number of elderly workers has grown. As a measure against this threat, Japan’s pension system's sustainability has been enhanced by introducing pension reserves which are aimed at addressing potential deficits in future benefit payments, thereby securing the long-term stability of pension finances. In short, GPIF manages pension reserves for future generations. From the pension contributions made by the active workforce, any surplus not utilized for current pension disbursements will be set aside as reserves for future generations. It is projected that approximately 10 percent of the overall pension funds will derive from these reserves in the future.

Illustration 4. Current policy asset mix of GPIF (source: GPIF annual report)



GPIF sticks to the long-term and diversified investment strategy to achieve stable results. As shown in Figure 1, GPIF invests pension reserves based on the policy asset mix which seeks to encompass 25% foreign equities, 25% domestic bonds, 25% domestic equities, and 25% foreign bonds (around 50% equities and 50% bonds). GPIF has diversified its investments across different asset classes in both domestic and international markets. This strategy aims to enhance opportunities for profit through global economic activities while also mitigating the risk of significant losses by managing fluctuations in the overall value of assets under management. GPIF establishes permissible ranges of deviation from the policy asset mix, known as deviation limits. Given that the long-term investment outcomes largely hinge on the policy asset mix, GPIF considers it as the cornerstone of their management and investment of pension reserve funds. In instances where the asset allocation of actual investments strays from the policy asset mix, GPIF promptly and flexibly rebalances to ensure that the actual allocations remain within the prescribed deviation limits. It's widely understood that maintaining a consistent portfolio of a policy asset mix over the long term tends to produce more favorable outcomes compared to altering the portfolio in reaction to short-term market fluctuations.

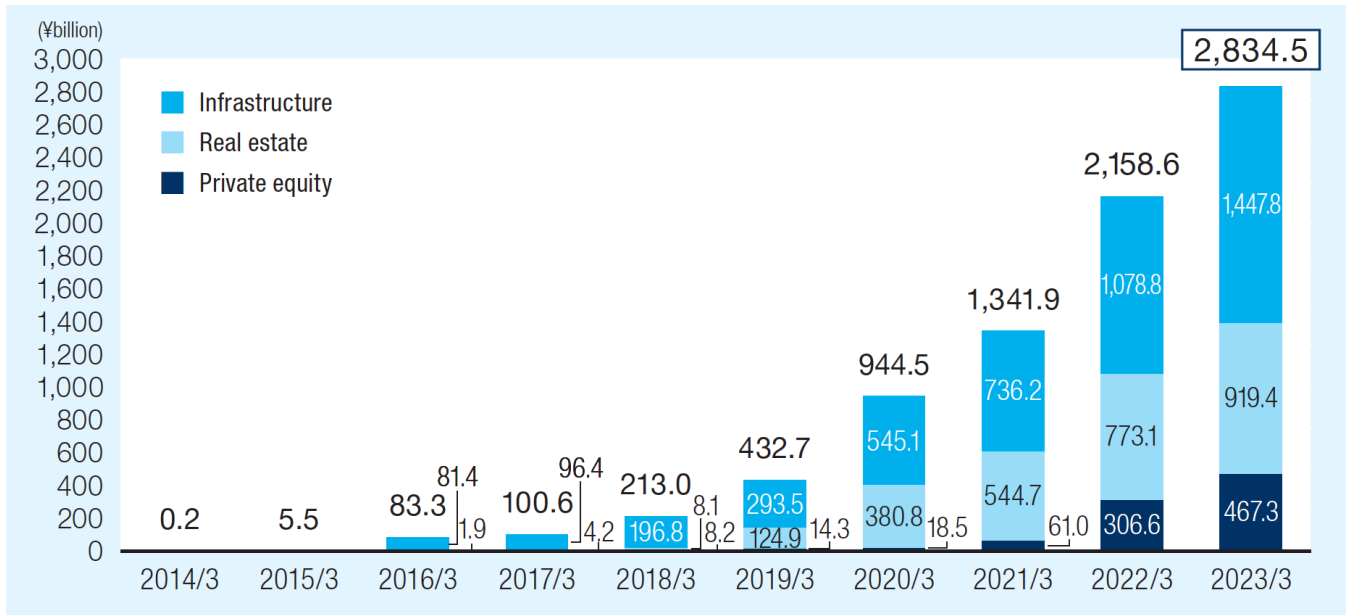
Table 2. GPIF's Top 15 countries by amount invested as of the end of March 2023

#	Country	Amount (¥ trillion)	Bonds (%)	Equity (%)
1	Japan	96,3	48%	52%
2	United States	55,7	43%	57%
3	France	6,3	73%	27%
4	United Kingdom	4,9	57%	43%
6	Germany	4,1	71%	29%
7	Spain	3,2	88%	13%
8	Canada	2,7	41%	59%
9	Australia	1,8	44%	56%
10	Netherlands	1,7	65%	35%
11	China	1,6	0%	100%
12	Switzerland	1,4	7%	93%
13	Belgium	1,1	91%	9%
14	Taiwan	0,9	0%	100%
15	India	0,8	0%	100%

As shown in Table 1, GPIF has diversified its investments across a range of countries, including major economies like Japan, and the United States, and European countries such as France, the United Kingdom, Germany, and Spain. This diversification helps GPIF spread risk and reduces exposure to any single country's economic performance. Generally, the fund has a balanced approach, with allocations to both asset classes in most countries. Notably, some countries have a higher allocation to bonds (e.g., Italy, Spain, and Belgium) while others have a higher allocation to equities (e.g., the United States, Canada, and Australia). This allocation may reflect GPIF's assessment of risk and return potential in each country's market. GPIF's investment strategy appears to be guided by factors such as economic conditions, interest rate outlook, market stability, and growth prospects. The fund may allocate more to bonds in countries with lower risk profiles or when seeking stable income streams, while favoring equities in countries with strong growth potential or when aiming for higher returns over the long term. In short, GPIF's investment strategy demonstrates a balanced approach to diversification across countries and asset classes, aiming to manage risk while seeking attractive returns over the long term. The fund's allocations reflect a combination of strategic considerations, risk management principles, and a commitment to its long-term investment objectives.

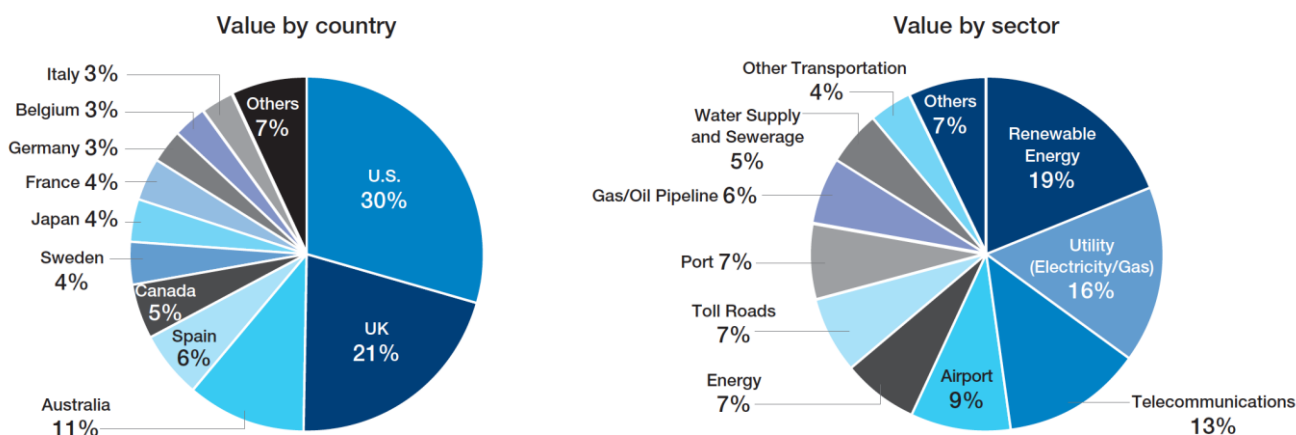
In addition to stocks and bonds, GPIF also allocates investments to alternative assets. As shown in graph 2, among a diverse range of alternatives, GPIF includes investments in infrastructure (such as renewable energy projects), private equity (equity stakes in private companies), and real estate (including logistics properties). As alternative assets exhibit different risk-return profiles compared to stocks and bonds, their inclusion alongside traditional assets is expected to mitigate overall investment volatility. Although alternative assets may have lower liquidity in terms of trading, they typically yield higher investment returns. Many international pension funds advocate diversification through alternative asset investments due to these characteristics and effects. As a super-long-term investor, GPIF aims to enhance investment efficiency by maintaining liquid holdings in stocks and bonds for quick transactions, while steadily accumulating high-quality alternative assets, taking into account market conditions and investment risks.

Graph 1. GPIF's total value of alternative assets up until fiscal 2022



At present, GPIF primarily directs its investment efforts toward core infrastructure funds. These funds target assets crucial for societal and economic functions, operating within established regulatory frameworks and anticipated to yield consistent revenues through long-term contractual agreements. Infrastructure assets acquired through these funds typically have extensive operational lifespans, often exceeding 10 years. Returns on invested capital are anticipated to come from stable revenue streams and asset sales to other investors. As shown in the figure, GPIF's infrastructure portfolio breakdown reveals that the United States holds the largest share at 30%, trailed by the UK at 21% and Australia at 11%. Regarding sector allocation, renewable energy claims the largest portion at 19%, followed by utilities (electricity/gas) at 16% and telecommunications at 13%. GPIF anticipates that its diversified core infrastructure portfolio will predominantly generate stable revenue.

Illustration 5. Infrastructure portfolio breakdown by country and sector



7. The Government Pension Fund Global (Norway)

As an important remark, the Government Pension Fund of Norway comprises two distinct funds owned by the Norwegian government. The first, known as the Government Pension Fund Global (GPF), is the world's largest sovereign wealth fund. The second, the Government Pension Fund Norway, operates as a regular pension fund which was established in 1967 as a form of national insurance fund, and it is managed separately from the GPF and exclusively focuses on domestic and Nordic investments. Consequently, it holds significant stakes in numerous large Norwegian companies, predominantly through the Oslo Stock Exchange. Yet, this research paper will center on the Government Pension Fund Global due to its international scope and superior performance. While the Government Pension Fund Norway is comparable to the UAPF, it exclusively invests in Norway and is considerably smaller than the GPF.

The Government Pension Fund Global, commonly known as the “Oil Fund” (*Oljefondet*), was established in 1990 to manage the surplus revenues from Norway's petroleum sector. By March 2024, it had amassed assets exceeding US\$1.64 trillion and held approximately 1.5% of the world's listed companies, making it the largest sovereign wealth fund globally in terms of total assets managed (SWFI, 2024). This translates to over US\$295,000 per Norwegian citizen. The fund also manages real estate and fixed-income investments while excluding numerous companies on ethical grounds. The Government

Pension Fund Global serves as a repository for surplus wealth generated by Norwegian petroleum income. In other words, its primary objective is to invest a portion of the significant surplus generated by Norway's petroleum sector. This surplus predominantly stems from taxes imposed on companies, license fees for oil exploration, as well as dividends from petroleum refining company, Equinor, a partially state-owned enterprise. Over time, the fund has diversified its investments, allocating funds to more than 9000 companies across 72 countries worldwide. Given projections of a decline in revenue from the petroleum sector, the fund was established in 1990 to mitigate the impact of this anticipated downturn and stabilize the effects of volatile oil prices. As its name suggests, the fund's investments are exclusively overseas. While oil revenue has been crucial for Norway, the fund's establishment underscores the imperative of responsible, long-term planning to safeguard the country's economic future in anticipation of the eventual depletion of oil resources.

Annually, the Norwegian government can allocate only a fraction of the fund, constituting nearly 20 percent of the government budget. Budget surpluses are channeled into the fund, while deficits are covered using its resources. This approach allows authorities to adjust spending according to economic conditions, increasing expenditures during challenging periods and reducing them during prosperous times. To ensure the fund's longevity and benefit future generations, policymakers have established a fiscal rule dictating that expenditure should not exceed the anticipated return on the fund. On average, the government aims to utilize only the real return on the fund, estimated at approximately 3 percent annually (Ministry of Finance, 2022). This gradual approach ensures a phased integration of oil revenue into the economy while preserving the fund's capital, with only the generated returns being expended.

The activities of companies significantly impact both local communities and the environment, with society increasingly expecting responsible behavior from corporations. The Oil Fund considers environmental and social factors and articulates clear expectations for the companies its management invests in. The Norwegian Parliament and the Ministry of Finance have established regulations for the fund's management, entrusting Norges Bank to oversee the management of the fund, with its Executive Board assigning operational management duties to Norges Bank Investment Management (NBIM).

Additionally, the Ministry of Finance has established an independent Council on Ethics to conduct ethical assessments of companies. The Council on Ethics provides recommendations to Norges Bank's Executive Board, which makes final decisions regarding exclusion, observation, or active ownership of companies.

As the largest individual shareholder in global stock markets, the fund maintains diversified investments across various countries, sectors, and currencies. Its portfolio includes stocks, bonds, and real estate worldwide, with a deliberate strategy to invest solely outside Norway to prevent overheating of the domestic economy. For instance, The fund's equity investments are diversified across approximately 9,000 companies globally, comprising about 70 percent of its total investments, aimed at capturing global value creation and mitigating risk. Fixed-income investments consist of government and institutional bonds as well as corporate securities, accounting for around 30 percent of the fund's portfolio. In addition, NBIM allocates investments to high-quality real estate in select major cities and global distribution networks, with unlisted real estate investments comprising up to 7 percent of the fund. Furthermore, NBIM invests in renewable energy infrastructure, primarily wind and solar projects in Europe and North America, with unlisted infrastructure investments for renewable energy accounting for up to 2 percent of the fund.

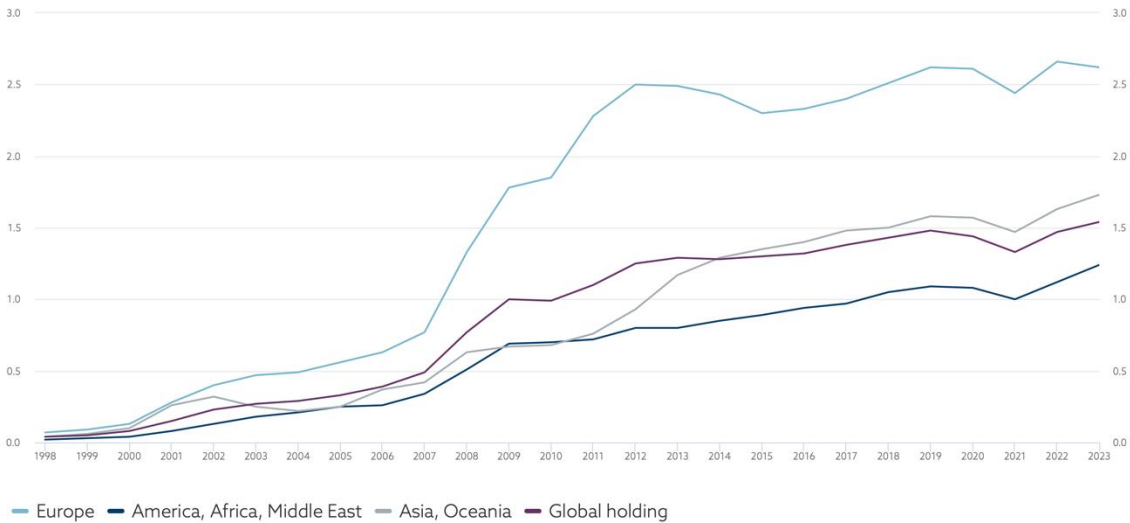
The Ministry of Finance establishes the overarching investment strategy for the fund, with significant changes requiring approval from the *Storting*, Norway's parliament. This strategy is conveyed to Norges Bank through a mandate outlining the operational management of the fund, including permissible investments, performance measurement criteria, and various management requirements. Expressed within a management mandate issued by the Ministry of Finance, the fund's investment strategy delineates permissible markets and asset allocations, encompassing equities, bonds, unlisted real estate, and unlisted renewable energy infrastructure. Performance is benchmarked against an index defined in the mandate, with specified risk parameters guiding Norges Bank's management approach. Norges Bank Investment Management oversees the fund transparently and responsibly, aiming to maximize returns after costs within the confines of the Ministry's mandate. Even on the website of NBIM, the total market value of the fund is updated in real-time, which helps Norwegians directly assess the

performance of the fund. Furthermore, the benchmark index assumes a pivotal role in fund management, derived from indices provided by FTSE Russell Group for equities and Bloomberg Barclays for bonds. While the strategic benchmark index maintains fixed weights of 70 percent equities and 30 percent bonds, Norges Bank constructs a portfolio that diverges slightly from this benchmark to capitalize on the fund's unique attributes and competitive advantages. This includes investments in real estate and renewable energy infrastructure, aligning with environmental and fiscal criteria specified in the mandate while ensuring efficient fund management. Deviation from the benchmark index is constrained by a ceiling for expected relative volatility or tracking error, set at 1.25 percent.

Table 3. GPFG’s largest holdings excluding sovereigns, both bonds and equities

Amounts in NOK million, 31.12.2023	Sector	Equities	Bonds	Total
Microsoft Corp	Technology	358 388	1 717	360 105
Apple Inc	Technology	337 297	5 631	342 929
Alphabet Inc	Technology	195 493	1 948	197 440
Amazon.com Inc	Consumer discretionary	177 283	6 596	183 879
NVIDIA Corp	Technology	145 855	3 230	149 085
Meta Platforms Inc	Technology	113 120	4 198	117 318
Nestlé SA	Consumer staples	91 221	1 527	92 747
Taiwan Semiconductor Manufacturing Co Ltd	Technology	89 218	-	89 218
Novo Nordisk A/S	Health care	88 694	-	88 694
JPMorgan Chase & Co	Financials	59 877	22 686	82 563

Graph 2. GPFG’s holdings in equity markets since inception (by country/regions) as of 31 December 2023

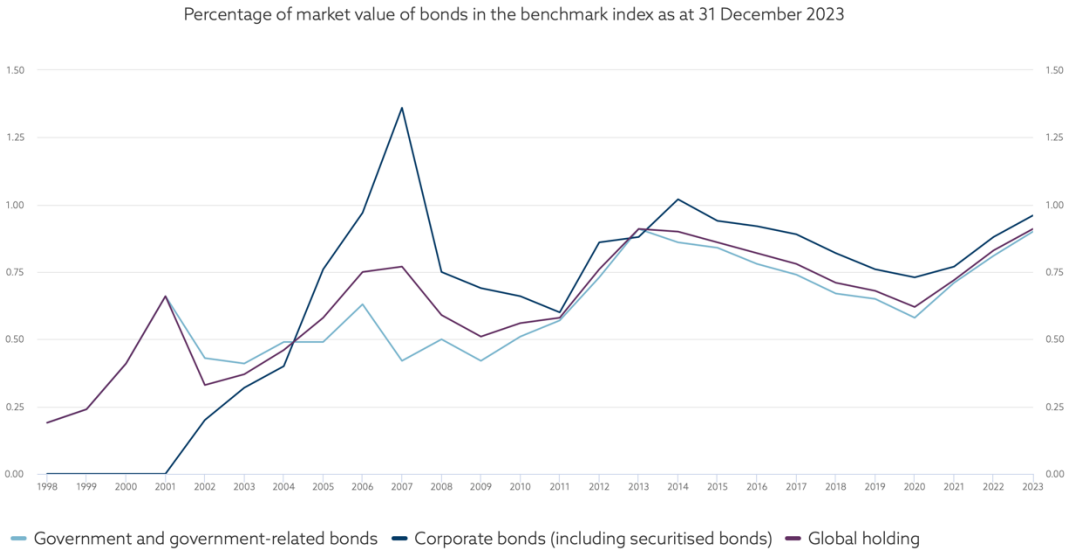


The fund's equity investments encompass approximately 9,000 companies across diverse countries, industries, and currencies worldwide. On average, the fund owns 1.5% of all listed companies. Investments are confined to companies listed on regulated exchanges, with a maximum shareholding limit of 10 percent per listed company, except for real estate firms. The equity portfolio is diversified across various sectors, with predominant exposure to Europe and North America, followed by developed markets in the Asia-Pacific region and emerging markets. The benchmark index for the fund is determined by the Ministry of Finance, with the equity component derived from the FTSE Global All Cap index.

Table 4. GPFG’s allocation of equity investments by sector

Sector	31.12.2023	31.12.2022
Technology	22.3	17.5
Financials	15.0	15.8
Consumer discretionary	14.1	13.3
Industrials	13.1	13.1
Health care	11.1	12.7
Consumer staples	5.6	6.6
Real estate	5.5	5.5
Basic materials	4.0	4.4
Energy	3.7	4.4
Telecommunications	3.3	3.1
Utilities	2.4	2.7

Graph 3. GPFG’s holdings in fixed-income markets since inception (by country/regions) as of 31 December 2023



The fund's fixed-income investments are divided into 70 percent allocated to government bonds and related institutions, and 30 percent to securities issued by the corporate sector. For government bonds, GPFPG's investments are apportioned among countries based on their respective GDPs, with a focus on developed markets. Predominantly denominated in euros, dollars, pounds, and yen, these bonds typically boast high credit ratings and ample liquidity. Additionally, the mandate allows for up to 5 percent of fixed-income investments to be allocated to bonds from emerging market issuers.

Table 5. GPFPG's largest holdings within the segment of government bonds

Amounts in NOK million	Market value 31.12.2023
US	1 344 708
Japan	362 637
Singapore	225 902
Germany	201 925
UK	152 941
Canada	85 209
France	79 170
Italy	60 385
Netherlands	52 858
Spain	49 664

In terms of corporate bonds, the fund invests not only in corporate bonds but also in covered bonds issued by banks, backed by mortgage portfolios. Corporate bonds generally offer higher returns compared to government bonds. All investments in corporate bonds undergo either internal or external credit assessments, with the portfolio managed to ensure that bonds rated below investment grade do not exceed 5 percent of the fund's total bond holdings.

8. Structure of Three Pension Funds

The structure of the three pension funds starkly contrasts with each other. Portfolio allocation of asset classes reflects the philosophy and goals of the fund in the first place which are manifested through the predominance of one asset over the other, and orientation on short or long-term investing.

Graph 4. Structure of the UAPF's investment portfolio for each year in dynamics

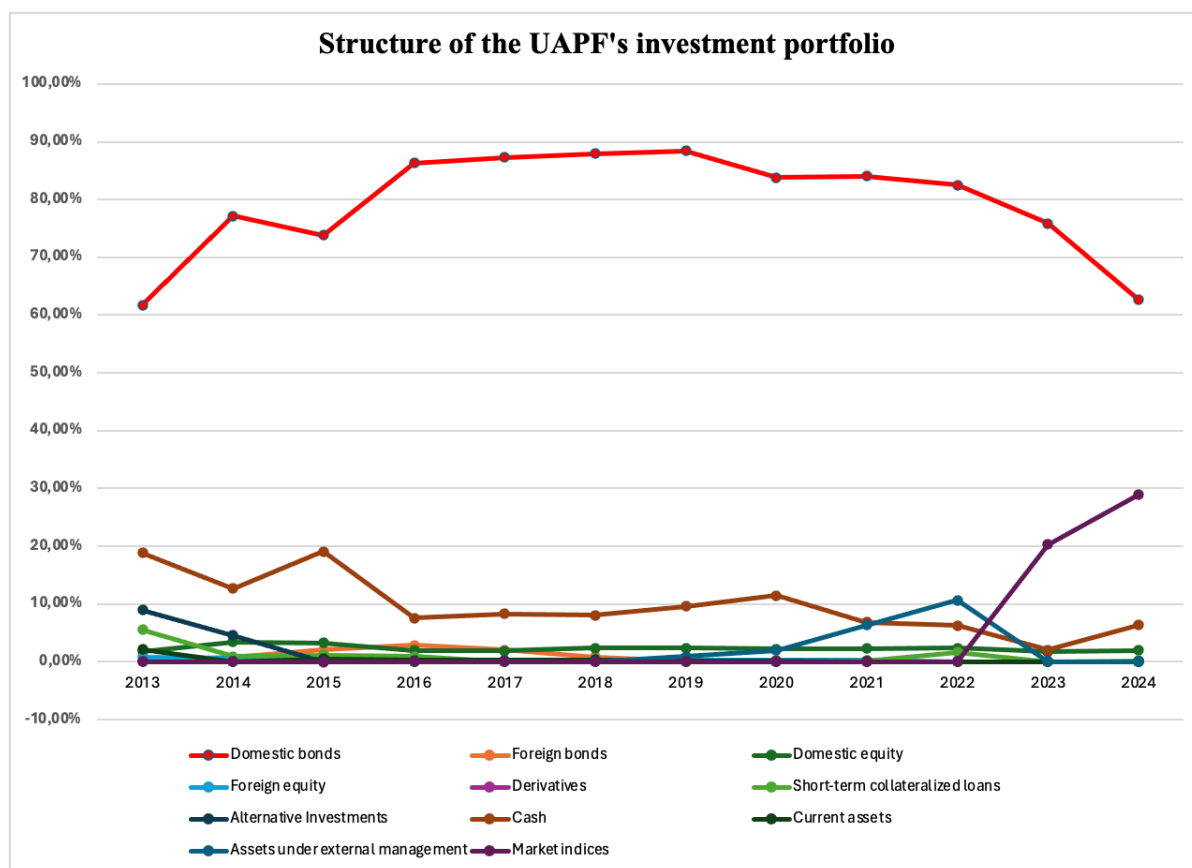


Table 6. The UAPF's asset class allocation for all years, by January of each year¹.

Asset Class	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
Domestic bonds	61,77%	77,11%	73,86%	86,32%	87,25%	87,97%	88,44%	83,76%	84,07%	82,46%	75,85%	62,68%
Foreign bonds	0,14%	0,71%	2,08%	2,84%	2,07%	0,81%	0,09%	0,09%	0,05%	0,03%	0,04%	0,00%
Domestic equity	1,79%	3,40%	3,22%	1,94%	1,91%	2,37%	2,39%	2,22%	2,28%	2,33%	1,69%	1,97%
Foreign equity	0,86%	0,66%	0,20%	0,23%	0,27%	0,30%	0,22%	0,27%	0,24%	0,00%	0,00%	0,00%
Derivatives	0,00%	0,00%	-0,10%	0,00%	0,00%	0,00%	0,00%	0,00%	0,00%	0,00%	0,00%	0,00%
Short-term collateralized loans	5,51%	0,89%	1,18%	0,88%	0,00%	0,14%	0,00%	0,00%	0,20%	1,65%	0,00%	0,15%
Alternative Investments	8,94%	4,53%	0,00%	0,00%	0,00%	0,00%	0,00%	0,00%	0,00%	0,00%	0,00%	0,00%
Cash	18,86%	12,70%	19,05%	7,55%	8,26%	8,03%	9,61%	11,41%	6,81%	6,23%	2,08%	6,30%
Current assets	2,13%	0,00%	0,50%	0,24%	0,24%	0,37%	0,16%	0,12%	0,00%	0,00%	0,01%	0,00%
Assets under external management	0,00%	0,00%	0,00%	0,00%	0,00%	0,00%	0,88%	1,96%	6,33%	10,60%	0,00%	0,00%
Market indices	0,00%	0,00%	0,00%	0,00%	0,00%	0,00%	0,00%	0,00%	0,00%	0,00%	20,33%	28,90%

¹ The table was composed by the author on the basis of yearly structure of the UAPF's portfolio.

We can see from the table, that the UAPF's portfolio asset allocation consists of around 63% domestic bonds, 0% foreign bonds, 1.97% domestic equity, and 28.9% market indices. Yet, official limits on investing pension assets in financial instruments by the UAPF allow not more than 50% of foreign issuers and not more than 10% of foreign shares and depositary receipts for shares out of the total percentage for portfolio (for more details see Appendix I). The main directions for investing pension assets of the NBRK as of January 1, 2023 are as follows: government securities of the Ministry of Finance of the Republic of Kazakhstan - 49.72%, bonds of quasi-state companies - 11.4%, bonds and deposits of second-tier banks of the Republic of Kazakhstan - 6.47%, deposits of the NBRK – 0.55%, securities of international financial organizations - 2.54%, government securities of foreign countries - 5.55% (see Appendix II for more details). Overall, the asset allocation and investment strategy of the UAPF, as outlined in its official investment declaration, emphasizes the safety and preservation of pension assets with a high degree of probability. The heavy allocation to domestic bonds, government securities, and bonds of quasi-state companies seems to align with this objective, as these are typically perceived as low-risk investments. However, the absence of foreign bonds and foreign equities along with the limited exposure to domestic equity suggest a lack of diversification, which could potentially hinder the fund's ability to achieve real returns in the long term. While the stated goal is to obtain real returns, the current allocation may not fully align with this objective, as the portfolio lacks exposure to higher-yielding assets. To better fulfill its mandate of preserving the value of pension assets with a high degree of probability while aiming for long-term real returns, the UAPF may need to reconsider its asset allocation strategy to incorporate a more diversified mix of investments. Here it is worth noting that due to the long investment horizon of pension savings, depositors can comfortably accept a higher level of risk, as it is compensated by higher returns over long periods.

Graph 5. Structure of the GPFG’s investment portfolio for each year in dynamics

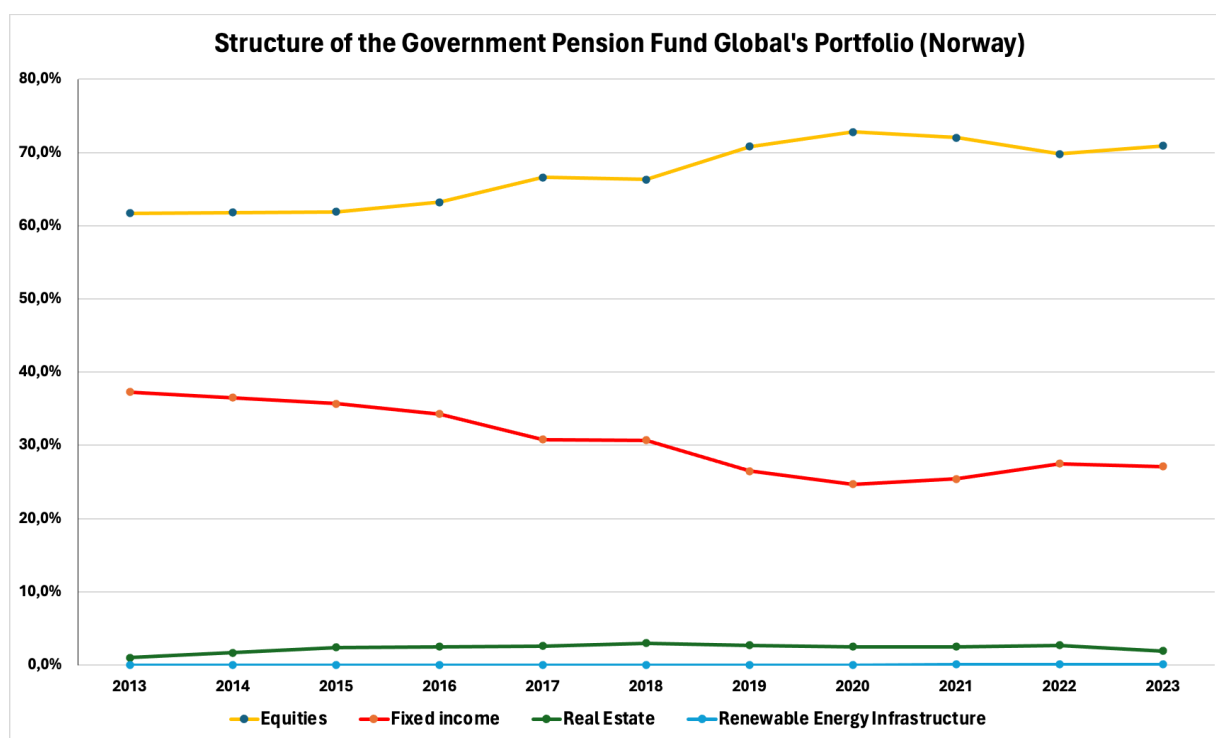


Table 7. GPFG’s asset allocation for all fiscal years

	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Equities	61.7%	61.8%	61.9%	63.2%	66.6%	66.3%	70.8%	72.8%	72.0%	69.8%	70.9%
Fixed income	37.3%	36.5%	35.7%	34.3%	30.8%	30.7%	26.5%	24.7%	25.4%	27.5%	27.1%
Real Estate	1.0%	1.7%	2.4%	2.5%	2.6%	3.0%	2.7%	2.5%	2.5%	2.7%	1.9%
Renewable Energy Infrastructure	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	0.1%	0.1%
Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

The provided asset allocation data in the graph and table for Norway's pension fund from 2013 to 2023 indicates a consistent effort to adhere to the strategic benchmark index, which consists of 70% equities and 30% fixed income. Over the years, the allocation to equities has generally been higher than fixed income, with the equity portion ranging from 61.7% to 72.8%. This demonstrates a tilt towards equities, potentially driven by the pursuit of higher returns and the long-term growth potential of equity investments. However, despite occasional deviations, the overall trend suggests a commitment to maintaining a substantial allocation to equities, aligning with the strategic benchmark. Conversely, the allocation to fixed-income assets has fluctuated within a narrower range, generally hovering around the 30% mark. While there have been slight deviations from the benchmark, such as in 2020 and 2021, the fund has consistently maintained a significant portion of its portfolio in fixed-income securities, contributing to portfolio diversification and risk management. The minimal allocations to real estate and renewable energy infrastructure indicate a conservative approach to alternative asset classes, possibly due

to their relatively higher risk profiles compared to equities and fixed income. Overall, the asset allocation of Norway's pension fund over the analyzed period generally aligns with the strategic benchmark index, with a predominant focus on equities to achieve long-term growth potential while maintaining a balanced exposure to fixed income for stability and risk management.

Graph 6. Structure of the GPIF’s investment portfolio for each year in dynamics

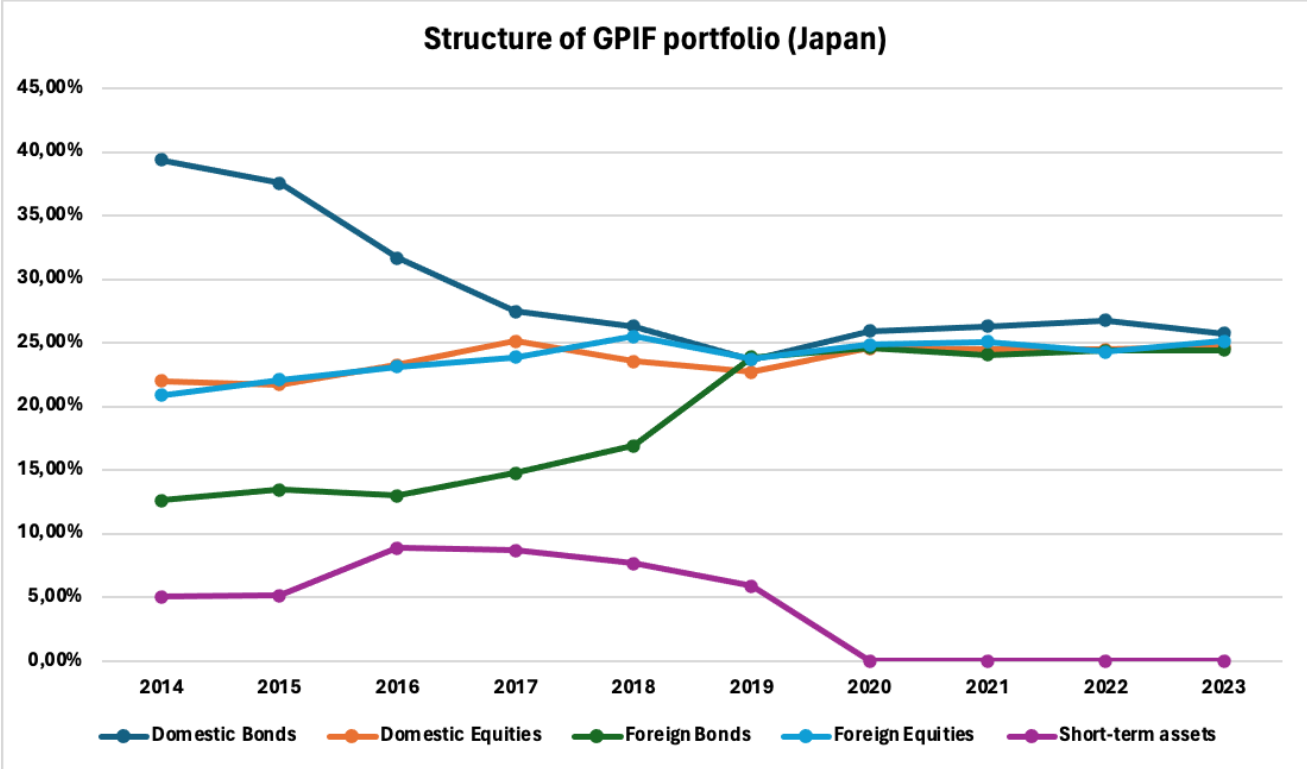


Table 8. GPIF’s portfolio allocation of reserve funds for all years

	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Domestic Bonds	39.39%	37.55%	31.68%	27.50%	26.30%	23.72%	25.92%	26.33%	26.79%	25.77%
Domestic Equities	22.00%	21.75%	23.28%	25.14%	23.55%	22.72%	24.58%	24.49%	24.49%	24.66%
Foreign Bonds	12.63%	13.47%	13.03%	14.77%	16.95%	23.90%	24.61%	24.07%	24.39%	24.44%
Foreign Equities	20.89%	22.09%	23.12%	23.88%	25.53%	23.74%	24.89%	25.11%	24.32%	25.14%
Short-term assets	5.08%	5.14%	8.89%	8.70%	7.67%	5.91%	0%	0%	0%	0%
Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

The Government Pension Investment Fund (GPIF) adheres to a policy asset mix aiming for a balanced allocation of 25% each to foreign equities, domestic bonds, domestic equities, and foreign bonds, effectively maintaining a 50% equity and 50% bond portfolio. This strategy ensures diversification across different asset classes in both domestic and international markets, mitigating risks and enhancing profit opportunities. As we can see from the data above, starting from 2014 to 2023, GPIF's asset allocation fluctuated within permissible ranges, reflecting dynamic market conditions. Notably,

allocations to domestic bonds gradually decreased, while those to foreign equities and bonds increased, possibly reflecting a shift towards global opportunities. This adjustment aligns with GPIF's objective of maintaining the policy asset mix over the long term, despite short-term market fluctuations. GPIF's proactive approach to rebalancing deviations from the policy asset mix underscores its commitment to optimizing long-term investment outcomes while managing risk. By promptly realigning allocations, GPIF aims to ensure adherence to prescribed deviation limits, maintaining stability and resilience in its portfolio. Overall, GPIF's investment strategy emphasizes consistency in the policy asset mix, leveraging global economic activities for profit while safeguarding pension reserves against significant losses.

Table 9. Comparison of portfolio structure of three pension funds

Asset Class	UAPF²	GPIF	GPIF
Domestic Bonds	75%	25%	0%
Domestic Equities	2%	25%	0%
Foreign Bonds	1%	25%	30%
Foreign Equities	2%	25%	70%

This comparison highlights significant differences in the asset allocation strategies of the three pension funds. While UAPF has a heavy emphasis on domestic bonds, with minimal exposure to equities and foreign assets, GPIF and GPIF have more balanced allocations across domestic and foreign asset classes. GPIF and GPIF both allocate a significant portion of their portfolios to foreign equities, with GPIF having the highest exposure to foreign equities at 70%. GPIF also has a substantial allocation to foreign bonds, while GPIF maintains equal allocations to both domestic and foreign bonds.

Thus, the Unified Accumulative Pension Fund of Kazakhstan (UAPF) prioritizes stability and risk minimization through a heavy reliance on domestic bonds, indicating a conservative investment approach. Limited exposure to equities and foreign assets suggests a preference for low-risk, low-return investments, possibly influenced by regulatory requirements with a focus on capital preservation. In contrast, the Government Pension Investment Fund of Japan (GPIF) pursues diversification and global opportunities with a balanced allocation across domestic and foreign asset classes. Equal weighting of

² The percentages represented for the UAPF are approximate.

domestic and foreign bonds indicates a quest for stable income streams and higher yields from international markets. Meanwhile, the Government Pension Fund Global of Norway (GPFNG) demonstrates a higher risk tolerance by significantly allocating to foreign equities, aiming to capitalize on long-term growth prospects in global equity markets. Substantial exposure to foreign bonds reflects a strategy to diversify currency and interest rate risks while seeking superior returns compared to domestic bond markets. In short, these strategies underscore the diverse investment objectives, regulatory environments, and long-term financial goals that shape the approaches of each pension fund.

9. Performance of Three Pension Funds (returns and assessment)

To analyze the annual returns of the three pension funds—Kazakhstan's UAPF, Norway's GPFG, and Japan's GPIF—over the years from 2013 to 2023, it is important to compare their performance in terms of return consistency, average returns, volatility, and overall trends. Overall, looking at the table and graph of annual returns across three pension funds, we can see that UAPF demonstrates the most stable performance with returns consistently within a narrower range compared to GPFG and GPIF. It, again, shows that UAPF's investment strategy is based on a more conservative investment strategy with relatively low-risk investments, while GPFG shows higher volatility with significant peaks and troughs, indicating a more aggressive and risk-tolerant investment approach. GPIF, on the other hand, presents considerable volatility with some years of negative returns, yet strong performance in separate years indicating sporadic high gains. GPIF's moderate performance with some high returns showcases its adherence to a policy asset mix containing both conservative and aggressive investments.

Annual Returns of Three Pension Funds											
%	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
UAPF	5,38	6,30	8,20	7,95	7,92	11,30	6,60	10,92	11,13	6,55	10,11
GPFG	15,90	7,60	2,70	6,90	13,70	-6,10	19,90	10,90	14,50	-14,10	16,10
GPIF	8,63	12,93	-3,81	5,86	6,90	1,52	-5,20	25,15	5,42	1,50	12,00

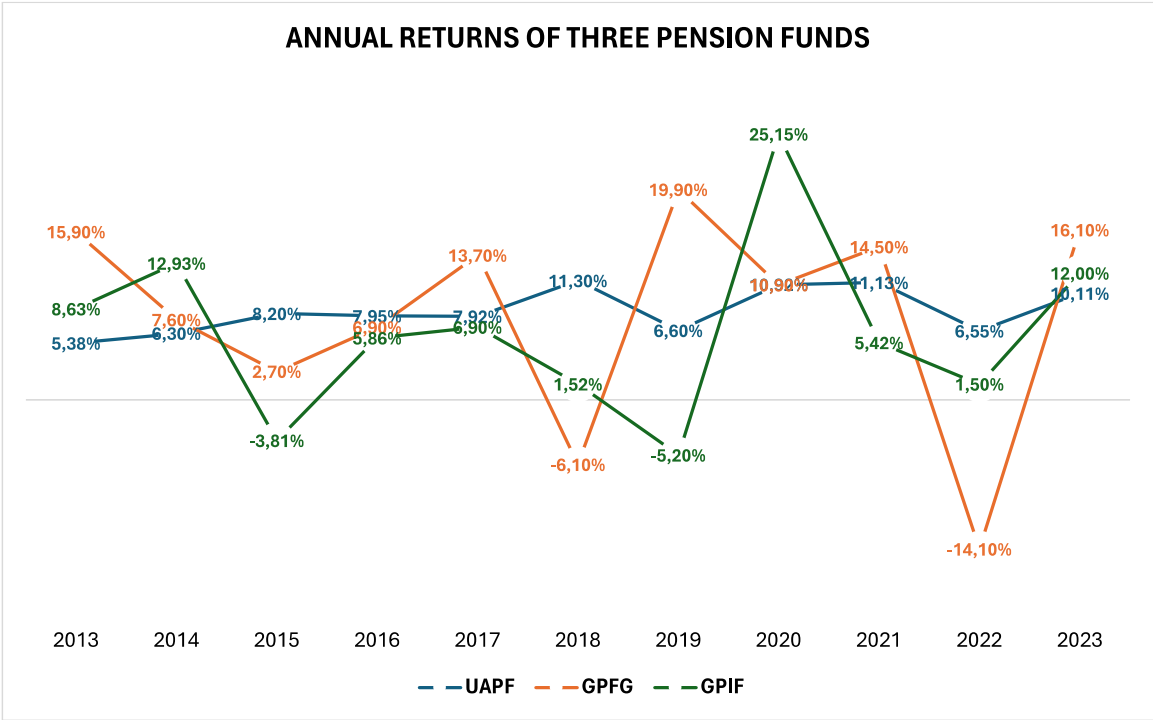
Below, in the table and graph of real returns, we can see that UAPF significantly lags behind GPFG and GPIF in terms of inflation-adjusted returns across three pension funds. As there is already wide criticism regarding UAPF's inability to outpace inflation, we can notice that low real returns with several negative years in 2014, 2016 and 2022 (-1,09%, -0,55%, and -13,75% respectively) indicate that inflation in Kazakhstan has been eroding nominal returns. In short, Kazakhstan's UAPF demonstrates significant challenges in achieving real returns after inflation. The low average real return (0,16%) and multiple negative years indicate that inflation consistently erodes the nominal gains. While Norway's GPFG has the highest volatility and occasional large negative real returns, its overall performance shows

a higher average real return (4,89%), benefiting from the aggressive investment strategy when market conditions are favorable. Japan’s GPIF offers the highest average real return (5,42%) among the three funds, indicating a successful balance between risk and return due to the policy asset mix. It manages to achieve real returns that consistently outperform inflation in most years. This analysis sheds light on the importance of considering inflation when evaluating investment performance. While nominal returns provide a measure of gross performance, real returns offer a clearer picture of the actual purchasing power and value retained by the investments over time.

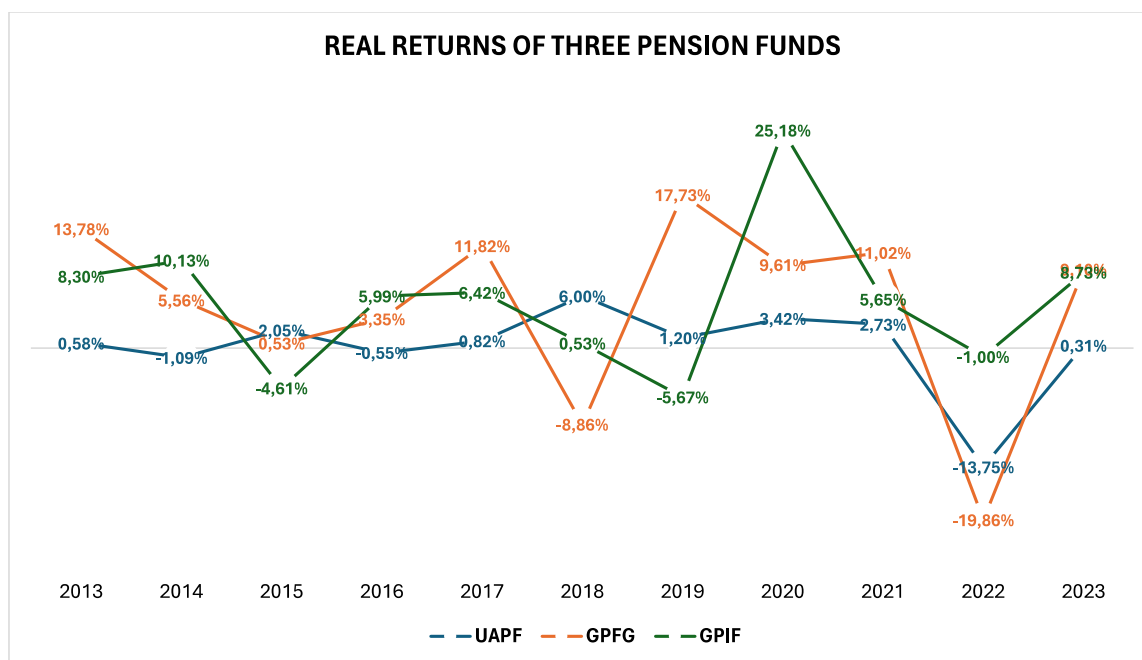
Real Returns of Three Pension Funds

%	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	Average
UAPF	0,58	-1,09	2,05	-0,55	0,82	6,00	1,20	3,42	2,73	-13,75	0,31	0,16
GPFG	13,78	5,56	0,53	3,35	11,82	-8,86	17,73	9,61	11,02	-19,86	9,10	4,89
GPIF	8,30	10,13	-4,61	5,99	6,42	0,53	-5,67	25,18	5,65	-1,00	8,73	5,42

Graph. Annual returns of three pension funds.



Graph. Real returns of three pension funds.



Here, in the table below we can see essential data to evaluate performance for total portfolio in terms of Information and Sharpe ratios. Specifically, there are US risk-free rates based on the 10-year US Treasury, also risk-free rates for Kazakhstan which are represented through Kazakhstan’s 10-year government bond and benchmark portfolio MSCI World index against which the portfolios’ performances will be evaluated. The index's performance reflects global equity market trends, influenced by economic cycles, geopolitical events, and market sentiment. Further, we can clearly see that higher rates in Kazakhstan indicate higher inflation and country risk. The peak in 2022 suggests economic challenges and higher inflationary pressures. Investors would demand higher returns to compensate for higher risk in Kazakhstan, impacting the required returns for pension funds and other investments in the region.

%	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Risk-free rate US (10-year treasury)	2,35	2,54	2,14	1,84	2,33	2,91	2,14	0,89	1,45	2,95	3,96
Risk-free rate (Kazakhstan 10-Year Bond)	5,75	5,27	6,64	10,42	9,14	8,90	8,34	9,30	10,01	14,51	12,94

MSCI World Index (benchmark)	26,68	4,94	-0,87	7,51	22,40	-8,71	27,67	15,90	12,82	-18,14	23,79
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Looking at the table of Informationratios, we can see that all three funds have negative mean active returns, indicating underperformance relative to the MSCI World Index. For instance, GPIF has the worst active return at -4.74%, followed by GPFG at -3.18%, and UAPF at -2.78%. GPFG has the lowest standard deviation (6%), indicating less variability in its active returns. Both UAPF and GPIF have higher standard deviations (16%), suggesting more volatility. Considering the benchmark and information ratios, all three funds demonstrate challenges in achieving positive active returns and effective risk-adjusted performance, highlighting potential areas for review and improvement in their active management strategies.

%	Mean active returns	Standard deviation	Information ratio
UAPF	-2,78%	16%	-17,82%
GPFG	-3,18%	6%	-56,05%
GPIF	-4,74%	16%	-30,20%

Yet, Sharpe ratio measures risk-adjusted returns which indicates how much excess return a portfolio generates for each unit of risk taken. Thus analyzing the results for the Sharpe ratio table below, the first thing that is the most discernable is that UAPF's negative Sharpe ratio of -27.12% indicates that the fund's returns are not compensating for the risk taken. In fact, the returns are below the risk-free rate, highlighting poor performance. The UAPF has a negative average return (-0,80), indicating losses over the period. The GPFG, on the other hand, has a strong positive average return of 5.68%. A Sharpe ratio of 53.82% is quite strong, suggesting that the fund has generated substantial excess return per unit of risk. This indicates effective risk management and a favorable risk-adjusted return. The GPIF also has a positive average return of 4.13%. The Sharpe ratio of 47.36% indicates a good risk-adjusted return. The fund effectively balances risk and return, generating significant excess returns for the risk taken. In short, we can conclude that the negative Sharpe ratio and mean return for UAPF indicate poor performance, i.e.,

the fund has not been able to generate returns that compensate for the risk taken, highlighting the need for a review of its investment strategy, while GPFG exhibits the best risk-adjusted performance, and GPIF demonstrates strong risk-adjusted performance with a solid Sharpe ratio, indicating effective management and good returns for the risk taken.

%	Mean	Standard deviation	Sharpe ratio
UAPF	-0,80%	2,97%	-27,12%
GPFG	5,68%	10,56%	53,82%
GPIF	4,13%	8,71%	47,36%

Below in the table, we can highlight the returns of five investment portfolio managers to whom people voluntarily transferred some assets and with whom National Bank has had an assets trust management agreement since 2021. Interestingly, Halyk Finance (2023) and Halyk Global Markets show the highest individual year returns, indicating strong potential but with less data for Halyk Finance to assess long-term consistency. It is important to note that the majority of the portfolio asset allocation of Halyk Finance and Halyk Global Markets consists of reverse REPO with National Bank (approximately 50% and 40% of the portfolio respectively) with an average annual return of 16,15% and 15,81% respectively. Overall, UAPF and Halyk Global Markets stand out for their consistent and strong average returns, while Halyk Finance shows potential with a standout single-year performance. The other funds demonstrate varying degrees of volatility and recovery, highlighting the importance of assessing both performance and consistency when evaluating investment options.

	2021	2022	2023	Average
UAPF	11,13%	6,55%	10,11%	9,26%
Halyk Finance	N/A	N/A	17,20%	N/A
Jusan Invest	8,08%	3,25%	13,48%	8,27%
Centras Securities	9,37%	4,12%	10,67%	8,05%

BCC Invest	8,37%	2,75%	13,05%	8,06%
Halyk Global Markets	8,41%	4,19%	15,55%	9,38%

Analyzing Sharpe ratios for five external investment managers and the National Bank's management of the UAPF, we can see that Halyk Global Markets has the least negative Sharpe ratio, indicating the best risk-adjusted performance despite still being negative. Centras Securities and National Bank have the most negative Sharpe ratios, indicating the poorest risk-adjusted performance, while Halyk Finance and BCC Invest show higher volatility, whereas Jusan Invest shows the lowest volatility among the institutions. All institutions have negative mean returns and all institutions have negative Sharpe ratios, reflecting poor risk-adjusted performance.

Sharpe ratio (Kazakhstan 10-Year Government Bond) from January 2023			
%	Mean	Standard deviation	Sharpe ratio
National Bank	-6,44%	5,02%	-128,8%
Halyk Finance	-4,06%	6,01%	-67,55%
Jusan Invest	-5,31%	4,61%	-115,31%
Centras Securities	-6,27%	4,80%	-130,42
BCC Invest	-6,31%	5,87%	-107,42
Halyk Global Markets	-3,56%	5,38%	-66,22

Now, let's analyze the information ratios below for the given financial institutions with the National Bank (UAPF) as the benchmark. The information ratio measures the active return of an investment relative to its benchmark (UAPF) and adjusts it by the amount of risk (standard deviation of active returns) taken to achieve that return. Thus, the information ratio analysis reveals that Halyk Global Markets and Halyk Finance are again the most efficient in generating excess returns relative to their risk when compared to the UAPF benchmark. Jusan Invest also performs well but to a lesser extent. Centras Securities and BCC Invest have the lowest information ratios, indicating that their active returns do not adequately compensate

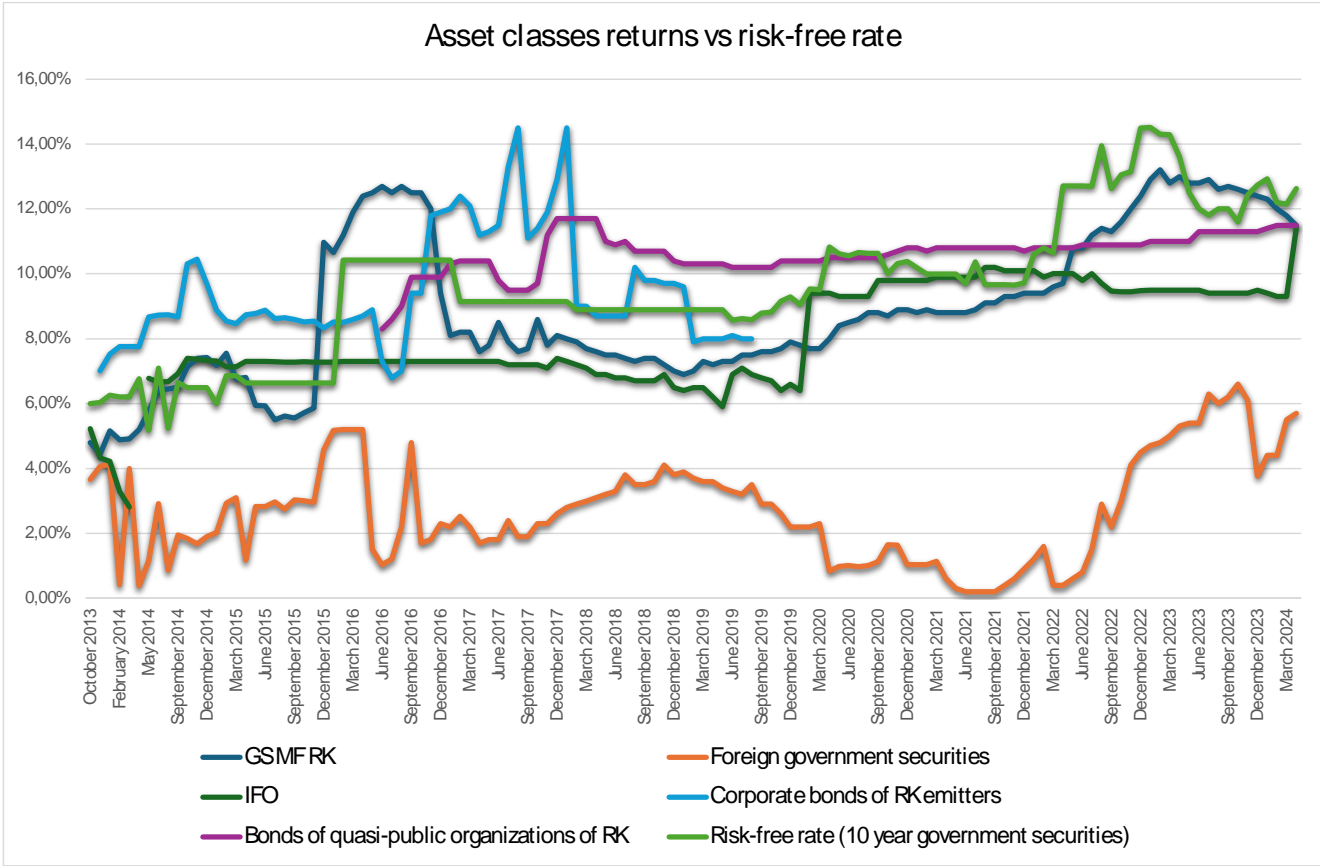
for the risk taken, suggesting a need for reassessment of their investment strategies to improve risk-adjusted performance.

Table. Information ratio (National Bank as a benchmark) from January 2023			
%	Mean active returns	Standard deviation	Information ratio
Halyk Finance	2,39%	4,51%	52,83%
Jusan Invest	1,13%	3,50%	32,36%
Centras Securities	0,18%	3,06%	5,81%
BCC Invest	0,13%	5,31%	2,50%
Halyk Global Markets	2,88%	4,13%	69,78%

Overall, Kazakhstan’s case of managing the pension fund is perplexing and controversial at the same time. It raises important concerns about the National Bank’s active management of portfolios. Since active management implies an investment approach where a fund manager or investor actively buys and sells securities in a portfolio with the goal of outperforming a benchmark, such as a market index, we can see that the lion’s share of the UAPF’s portfolio in government securities and the rest is the foreign government securities, bonds of quasi-public organizations and bonds of second-tier banks of Kazakhstan. It does not show the sentiments of outperforming the benchmark as shown previously. This probably implies that the active management of the fund is very weak and its performance is quite poor. But even more surprisingly, if we look at the graph and table below, we can notice there is an issue of high risk-free rates for Kazakhstan. Government securities typically should offer lower returns than riskier assets because they come with lower risk. However, we can notice that the risk-free rate, represented by the 10-year government securities in this table, has a return that is consistently higher than all the other asset classes except for IFO for the last month (e.g. April 2024). Sometimes, a high risk-free rate can be a sign of higher country risk. Investors might demand a higher return on government securities to compensate for the perceived increased risk of investing in that country. However, it's not the only explanation. Other factors can also cause a high risk-free rate. For instance, if inflation is expected to be high, investors will demand a higher return on their investments to maintain purchasing

power. Government bonds may then offer higher interest rates to keep them attractive. The last reason is limited investment opportunities. If there's a lack of good investment options in a country, investors might be more willing to put their money in government securities, when the interest rates are higher than usual. Therefore, it can be inferred that active management should focus on diversifying the portfolio and investing in foreign equity and bond issuers to increase return and decrease the accumulated risk of a portfolio.

Name	January 2023	February 2023	March 2023	April 2023	May 2023	June 2023	July 2023	August 2023	September 2023	October 2023	November 2023	December 2023	January 2024	February 2024	March 2024	April 2024
GS MF RK	12,90%	13,20%	12,80%	13,00%	12,80%	12,80%	12,90%	12,60%	12,70%	12,60%	12,50%	12,40%	12,30%	12,00%	11,80%	11,50%
Foreign government securities	4,70%	4,80%	5,00%	5,30%	5,40%	5,40%	6,30%	6,00%	6,20%	6,60%	6,10%	3,77%	4,40%	4,40%	5,50%	5,70%
IFO	9,50%	9,50%	9,50%	9,50%	9,50%	9,50%	9,40%	9,40%	9,40%	9,40%	9,40%	9,50%	9,40%	9,30%	9,30%	11,42%
Bonds of quasi-public organizations of RK	11,00%	11,00%	11,00%	11,00%	11,00%	11,30%	11,30%	11,30%	11,30%	11,30%	11,30%	11,30%	11,40%	11,50%	11,50%	11,50%
Risk-free rate (10 year government securities)	14,51%	14,31%	14,29%	13,61%	12,50%	12,01%	11,80%	12,01%	12,01%	11,60%	12,44%	12,73%	12,93%	12,20%	12,15%	12,63%



Since the majority of UAPF's (roughly 70-80%) portfolio consists of government securities, it would be interesting to analyze its government bond returns against the benchmark FTSE World Government Bond - Developed Markets. Here we can see that the UAPF has significantly outperformed a basket of government bonds from developed countries, which are generally considered low-risk investments with modest returns. The portfolio has achieved its outperformance relative to a low-volatility benchmark in a consistent manner. This high information ratio (266,41) again suggests that the returns of government securities are inadequately high, and it is surely not due to active management. In addition, a negative Sharpe ratio implies that the UAPF's returns have been lower than the risk-free rate even after accounting for risk. In other words, for the amount of risk taken (as measured by standard deviation), the UAPF has underperformed the risk-free investment. Again, the controversy of high risk-free rates makes the Sharpe ratio for the UAPF quite low.

Information ratio (Benchmark: FTSE World Government Bond - Developed Markets)			
since October 2013 (monthly data)			
%	Mean active returns	Standard deviation	Information ratio
Bond sub-portfolio (GS MF RK)	8,71%	3,27%	266,41%

Sharpe ratio (Risk-free rate: Kazakhstan 10-Year Government Bond Yield)			
since October 2013 (monthly data)			
%	Mean returns	Standard deviation	Sharpe ratio
Bond sub-portfolio (GS MF RK)	-0,80%	1,37%	-58,07%

Now, we employ the paired sample t-test to check for the active management of the UAPF against its benchmark returns for the MSCI World Index yields important results. The paired observations are UAPF's weighted average yield to maturity of pension assets and the MSCI World Index's annual

weighted average returns. Student's t-test is a statistical test used to determine if there is a significant difference between the means of two groups, or if a single sample mean significantly differs from a known or hypothesized population mean. The following hypotheses are used:

H₀ (Null Hypothesis): The mean difference between paired observations is not zero

H₁ (Alternative Hypothesis): The mean difference between paired observations is zero

The result of the t-test almost equals zero. Normally, a low t-test statistic (close to zero) suggests that the sample data do not provide strong evidence to reject the null hypothesis. This means that two observations are different. In other words, the two sets of returns are not similar, therefore the difference between benchmark returns and UAPF returns is significant, which again shows that Kazakhstan's government securities far outpaced the FTSE World Government Bond returns which is seen in its high active returns.

Discussion of Results

Overall, the Unified Accumulative Pension Fund (UAPF) of Kazakhstan raises important concerns regarding its current performance and potential to deliver promised pension payments to its citizens in the future. It is known that Kazakhstan's UAPF demonstrates significant challenges in achieving real returns after inflation. The low average real return (0,16%) since the fund's inception in 2013, and multiple negative years indicate that inflation consistently erodes the nominal gains meaning that returns cannot outpace inflation. If this trend continues into the future, then the gap between returns and inflation will be compensated from the state budget thus imposing a double burden on citizens thus allocating the money from their taxes. Secondly, there are almost no signs of active management on behalf of the National Bank because there is a lack of diversification of portfolio composition. As was already shown, the lion's share of the portfolio consists of government securities that seemingly and surprisingly yield the highest returns. This is related to the problem of high risk-free rates in Kazakhstan that either happen due to country credit risk or high inflationary pressures. This occasion simply makes other investments within the country less appealing. This was evident when evaluating the returns of Kazakhstan's government securities against the benchmark portfolio of government bonds (FTSE World

Government Bond - Developed Markets), where UAPF yielded 8,71% mean active returns. Furthermore, the extremely low Sharpe ratio for the comparison of returns of government bonds implies that the UAPF's returns have been lower than the risk-free rate even after accounting for risk. The UAPF has been consistently underperforming the risk-free investment. The last issue is related to the opaqueness of the UAPF in general. The data are not transparent and the manner of returns' reporting is inconsistent which is manifested through sporadic omissions of yearly returns for specific fiscal years along with incorrect inflation rates reported that contrast with the data from the National Bureau of Statistics. In short, the reporting style of the UAPF lacks a unified standard which is evident in the annual reports of Norway's GPFG and Japan's GPIF.

Conclusion

To conclude, the Unified Accumulative Pension Fund (UAPF) of Kazakhstan should import the best international practices of investment management and strategy from Norway's Government Pension Fund Global (GPFG) and Japan's Government Pension Investment Fund (GPIF). Firstly, these two biggest pension funds consistently report high real returns and demonstrate diversified and balanced asset allocation that hedges against unexpected global risks. While the National Bank allocates roughly 80% of assets to domestic sovereign issuers, and only 20% to foreign issuers, the GPFG invests in a wide range of assets globally, including equities (70%), fixed income (30%), real estate, and renewable energy infrastructure, thus reflecting a high-risk, high-reward investment strategy aimed at maximizing long-term returns. Japan's GPIF, in turn, employs a balanced policy asset mix strategy which typically includes around 25% each in domestic bonds, international bonds, domestic equities, and international equities. First of all, the strategic position of Kazakhstan in relation to its UAPF should be reviewed, namely, instead of just preserving the value of pension assets into the future, it should focus on value creation on the experience of Norway's oil fund the equity investments of which are diversified across approximately 9,000 companies globally, comprising about 70 percent of its total investments, aimed at capturing global value creation and mitigating risk. Furthermore, to give high risk-free rates in Kazakhstan, the UAPF

should improve or even enact its active management of the portfolio to outpace inflation and consistently perform decently against the MSCI World index benchmark. Lastly, the National Bank should improve its reporting standards and transparency of data, thus making the returns of pension assets available in real-time as it appears in the main website of the Norway's Government Pension Fund Global (GPFG).

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Appendices

Appendix 1. Limits on investing pension assets in financial instruments by the UAPF³

#	Financial instrument	Limits on investment (as a percentage of pension assets)
1	Kazakhstani issuers:	
1.1	Government securities of the Republic of Kazakhstan issued by the Ministry of Finance of the Republic of Kazakhstan, the National Bank of the Republic of Kazakhstan	Not less than 20% Not more than 70%
1.1.1	Government securities of the Republic of Kazakhstan issued by local executive bodies of the Republic of Kazakhstan	Not more than 5%
1.2	Deposits of the National Bank of the Republic of Kazakhstan	Not more than 5%
1.3	Securities of quasi-governmental entities	Not more than 25%
1.4	Financial instruments of second-tier banks of the Republic of Kazakhstan with a security or issuer rating not lower than "B" on the international scale of "Standard & Poor's" agency or a rating of an equivalent level from another rating agency including:	Not more than 30%
1)	debt securities	Not more than 30%
2)	equity securities	Not more than 5%
3)	deposits	Not more than 15%
1.5	Non-governmental debt securities, excluding debt securities of quasi-governmental entities and second-tier banks of the Republic of Kazakhstan, must have a rating for the security or issuer not lower than "B-" on the international scale of the "Standard & Poor's" agency or a rating of a similar level from any other rating agency	Not more than 20%
1.5.1	Non-government debt securities issued under the guarantee and/or endorsement of the Government of the Republic of Kazakhstan	Not more than 5%
1.6	Non-government equity securities, excluding equity securities of quasi-state entities and second-tier banks of the Republic of Kazakhstan, are included in the first category of the official list of the Kazakhstan Stock Exchange	Not more than 5%
1.7	Islamic financing instruments included in the official list of the Kazakhstan Stock Exchange and/or the AIFC Exchange	Not more than 10%
1.8	Mortgage-backed securities (MBS) and asset-backed securities (ABS) with a security or issuer rating not lower than "BB-" on the international scale of "Standard & Poor's" or a rating of a similar level from another rating agency	Not more than 5%
2	Foreign issuers:	Not more than 50%
2.1	Government, agency, and securities of international financial organizations with a security or issuer rating not lower than "BB-" on the international scale of "Standard & Poor's" or a rating of a similar level from another rating agency	Not more than 30%
2.2	Municipal securities within the framework of investing in government and agency securities	Not more than 10%

³ Translated from the official document "Об утверждении Инвестиционной декларации единого накопительного пенсионного фонда."

2.3	Corporate debt securities with a security or issuer rating not lower than "BB-" on the international scale of "Standard & Poor's" or a rating of a similar level from another rating agency	Not more than 20%
2.4	Mortgage-backed securities (MBS) and asset-backed securities (ABS) with a security or issuer rating not lower than "BB-" on the international scale of "Standard & Poor's" or a rating of a similar level from other rating agencies	Not more than 10%
2.5	Convertible securities as part of investments in corporate securities with a security or issuer rating not lower than "BB-" on the international scale of "Standard & Poor's" or a rating of a similar level from another rating agency	Not more than 10%
2.6	Shares, depositary receipts for shares	Not more than 20%
2.7	Deposits (deposits) in foreign banks with a rating not lower than "A-" on the international scale of "Standard & Poor's" or a rating of a similar level from another rating agency	Not more than 20%
2.8	Structural products issued by organizations with a rating not lower than "BBB-" on the international scale of "Standard & Poor's" or a rating of a similar level from another rating agency	Not more than 5%
2.9	Islamic financing instruments with a rating not lower than "BB-" on the international scale of "Standard & Poor's" or a rating of a similar level from another rating agency	Not more than 2%

Appendix 2. The UAPF's investment portfolio structure for all fiscal years (2013-2024)

Asset name	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
State securities of the RK	38,52%	49,35%	42,35%	45,13%	43,57%	46,14%	43,27%	40,45%	43,80%	39,13%	49,72%	46,55%
NBRK notes	0,00%	0,00%	0,00%	0,00%	0,00%	0,00%	0,00%	0,00%	0,63%	0,00%	0,00%	0,00%
Government securities of foreign countries	2,85%	1,70%	1,64%	0,87%	5,46%	12,20%	12,71%	11,44%	9,93%	19,17%	5,55%	0,13%
International financial organizations	2,44%	1,94%	1,82%	1,46%	1,30%	2,22%	1,82%	3,35%	4,12%	3,12%	2,54%	2,02%
Corporate bonds of issuers of the RK	16,91%	23,42%	26,98%	37,94%	1,26%	0,75%	0,45%	0,26%	0,23%	0,14%	0,11%	0,08%
Bonds of quasi-state organizations of the RK	0,00%	0,00%	0,00%	0,00%	13,48%	10,18%	13,86%	14,86%	14,13%	12,80%	11,40%	9,10%
Bonds of second-tier banks of the RK	0,00%	0,00%	0,00%	0,00%	21,71%	16,03%	13,49%	10,96%	8,98%	8,02%	6,47%	4,76%
Corporate bonds of foreign issuers	0,14%	0,71%	2,08%	2,84%	2,07%	0,81%	0,09%	0,09%	0,05%	0,03%	0,04%	0,00%
Bonds of foreign issuers of the quasi-public sector	0,00%	0,00%	0,00%	0,00%	0,00%	0,00%	2,48%	2,15%	1,99%	0,00%	0,00%	0,00%
PPN (structure notes)	1,05%	0,70%	1,07%	0,92%	0,47%	0,45%	0,36%	0,29%	0,26%	0,08%	0,06%	0,04%
Shares and depositary receipts of issuers of the RK	1,79%	3,40%	3,22%	1,94%	1,91%	2,37%	2,39%	2,22%	2,28%	2,33%	1,69%	1,97%
Shares and depositary receipts of foreign issuers	0,86%	0,66%	0,20%	0,23%	0,27%	0,30%	0,22%	0,27%	0,24%	0,00%	0,00%	0,00%
Derivatives	0,00%	0,00%	-0,10%	0,00%	0,00%	0,00%	0,00%	0,00%	0,00%	0,00%	0,00%	0,00%
Precious metals (gold)	8,94%	4,53%	0,00%	0,00%	0,00%	0,00%	0,00%	0,00%	0,00%	0,00%	0,00%	0,00%
Deposits	18,86%	10,96%	15,71%	6,24%	5,99%	4,19%	2,96%	2,36%	1,95%	1,93%	1,37%	1,11%
NBRK deposits	0,00%	0,00%	0,00%	0,00%	0,00%	0,00%	1,64%	1,28%	2,58%	0,97%	0,55%	4,92%
Deposits in foreign banks	0,00%	0,00%	0,00%	0,00%	0,00%	3,57%	3,66%	3,04%	2,19%	0,00%	0,00%	0,00%
Swap	0,00%	0,00%	0,00%	0,00%	0,00%	0,00%	0,00%	0,17%	0,00%	0,00%	0,00%	0,00%
Cash in investment accounts	0,00%	1,74%	3,34%	1,31%	2,27%	0,27%	1,35%	4,73%	0,09%	3,33%	0,16%	0,27%
REPO transactions	5,51%	0,89%	1,18%	0,88%	0,00%	0,14%	0,00%	0,00%	0,20%	1,65%	0,00%	0,15%
Other assets (accounts receivable, overdue debt, provisions)	0,00%	0,00%	0,00%	0,24%	0,24%	0,37%	0,16%	0,12%	0,00%	0,00%	0,01%	0,00%
Overdue debt, provisions	2,13%	0,00%	0,50%	0,00%	0,00%	0,00%	0,00%	0,00%	0,00%	0,00%	0,00%	0,00%
Other assets (money in payout accounts)	0,00%	0,00%	0,00%	0,00%	0,00%	0,00%	0,00%	1,96%	6,33%	10,60%	0,00%	0,00%
Assets externally managed by Aviva Investors Global Services Limited	0,00%	0,00%	0,00%	0,00%	0,00%	0,00%	0,88%	0,00%	0,00%	0,00%	0,00%	0,00%
Index asset management	0,00%	0,00%	0,00%	0,00%	0,00%	0,00%	0,00%	0,00%	0,00%	0,00%	20,33%	28,90%