

Pension funds in the context of globalisation: Legal regulation and challenges in countries with different pension systems

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Abstract. The purpose of the study was to identify key issues in the legal regulation of the pension fund of the Kyrgyz Republic and to develop proposals for their effective resolution based on the analysis of international practices in various economic systems. The study involved an analysis of legislation using the formal-legal method, a comparison of pension systems in Germany, Sweden, Chile, and Canada through the comparative method, and modelling potential development scenarios for pension legislation using legal forecasting. The main findings demonstrated that the pension system in Kyrgyzstan remains reliant on state sources, limiting its capacity to adapt to changing international financial conditions. The primary challenges in legal regulation included the lack of flexible investment mechanisms and weak control over asset management. Comparative analysis also revealed that countries with diversified pension systems, such as Germany and Canada, pension systems are more resilient due to asset diversification and the utilisation of private investment funds. In countries like Sweden and Chile, there is a growing interest in private pension savings and the implementation of digital technologies for managing pension assets, contributing to greater transparency and efficiency in pension systems. Based on the analysis of international practices, recommendations were developed to strengthen the legal regulation of the Kyrgyz pension fund, including the adoption of international standards of financial transparency and the development of mechanisms to attract private investments into pension assets. The findings indicated the necessity for modernisation of the legal regulation of pension funds in Kyrgyzstan, considering international practices to ensure resilience, transparency, and the protection of participants' rights

Keywords: international practices; legislative mechanisms; social security; asset management; investment strategies; accumulation models

Introduction

In the context of growing globalisation and the integration of national economies, pension funds play a crucial role in ensuring long-term financial stability and the social protection of citizens. Constant changes in global financial markets have a substantial impact on pension assets, necessitating the adaptation of management mechanisms. The development and implementation of more flexible and effective legislative norms, based on successful international practices, will help minimise risks and enhance the resilience of pension funds. However, within the framework of research on legal methods for regulating pension funds, there are issues that require further investigation.

Studying Kyrgyzstan's pension system's 2025 issues is important for many reasons. First, Kyrgyzstan, like many

transitional economies, must maintain the long-term financial stability of its pension funds amid global economic swings. A large section of the population relies on pensions that often fall below the living wage, underlining the urgent need for pension system reforms to improve adequacy and sustainability (Aliev *et al.*, 2024). The global trend toward aging populations and rising life expectancy requires a strong pension system to support more retirees. Kyrgyzstan's pension system must adjust to demographic shifts by adopting more flexible and effective laws that can withstand economic challenges and protect citizens' investments. The 2025 pension rise of 7% is a good start, but it also highlights the ongoing pension stability issues (Pension to increase by..., 2024). As a growing economy struggles to manage

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pension funds, Kyrgyzstan's pension system is relevant to the region and the world. The insights can help establish best practises and novel solutions for similar settings, strengthening pension systems worldwide. Kyrgyzstan can learn from worldwide experiences and effective practices as it modernizes its pension system. Scientifically, this research is crucial for understanding pension fund management in transitional economies. It allows researchers to study how legislative and institutional frameworks affect pension systems and generate theoretical models for policymaking. The study also contributes to social security and welfare economics by examining the difficulties and solutions to aging populations' financial stability.

L. Clark (2023) emphasised that such funds play a key role in the global economy, but their effectiveness depends on a sustainable legal and institutional context. The author argued that unstable legal systems can hinder the effective management of fund assets and reduce their profitability. The study by M. Badrizadeh *et al.* (2023) underscored the importance of a regulatory framework in improving the efficiency of pension funds, demonstrating that clear and adaptive legal norms have a direct impact on their performance. S. Yakubu *et al.* (2023) highlighted the relationship between the resilience of funds and the capital market, where unstable legal norms weaken the integration of pension funds into financial markets, hindering their development and reducing the sustainability of pension systems in countries with diversified pension systems. Despite the valuable findings of these authors, questions remain regarding the need to modernise supervisory mechanisms and develop strategies for adapting legal systems in countries with transitional economies to improve transparency and protect pension assets amid global financial changes.

M. Brough and A. Kaur (2024) highlighted the growing demand for international pensions and savings plans due to increasing economic and political instability. The study emphasised that cross-border pension plans are becoming more crucial in protecting local employees from economic volatility and sovereign defaults, especially in countries with higher risks. This trend underscores the need for robust global pension frameworks to ensure financial security for employees amidst global uncertainties. According to A. Gogoi (2023), globalisation has introduced both opportunities and challenges for pension provision. It has facilitated the movement of capital and labour across borders, influencing pension systems' design and sustainability. However, it has also created issues such as increased competition and the need for international coordination to ensure the portability of pension rights.

Another issue in this field is the lack of effective mechanisms for protecting participants. In many countries, such as Georgia and Moldova, there is insufficient legal protection for participants in funded pension schemes, which increases the risk of loss of savings during economic crises or financial abuse. To mitigate these risks, the implementation of more robust legal mechanisms is required to ensure the security of pension assets and the protection of participants' rights. D.T. Syamsudin and R. Saraswati (2022), examining this issue, also highlighted the deficiency of legal mechanisms, failing to provide an adequate level of protection for employees under pension schemes. The authors emphasise the need for improved legal regulation to ensure more reliable protection of participants' savings. A. Kabašinskas (2024) focused on systemic risks to pension funds, noting that inadequate

regulation can lead to a decline in their financial stability, ultimately weakening the protection of participants' rights. The study by H.P. van Dalen and K. Henkens (2023) stressed that trust in pension funds is directly linked to their financial stability, and the lack of reliable protection mechanisms reduces this trust, leading to decreased public participation in pension programmes. However, digitalisation and the introduction of modern technologies to improve monitoring and ensure transparency in pension fund management remain insufficiently explored. These could significantly enhance participant protection and minimise the risks of abuse.

Another problem to note is the lack of effective long-term investment strategies. In diversified pension system, many funds face limited access to long-term investment mechanisms, which restricts their ability to maintain high returns and resilience. Investments are often concentrated in government bonds, resulting in insufficient portfolio diversification and increased risks for participants. Research by other authors also highlights the importance of effective long-term investment strategies for the sustainability of pension funds, particularly in developing countries. N.H. Twalib and M.T. Jilenga (2024) noted that limited access to diversified investment opportunities and dependence on government bonds negatively impact the financial stability of funds, reducing their capacity to generate high returns. The study by M.N. Nwala *et al.* (2024) similarly found that investments in low-yield instruments, such as government bonds, limit the efficiency of pension funds, thereby increasing risks for participants. P. Tomassetti (2023) draws attention to the importance of sustainable investment strategies in the context of social responsibility and sustainable development, highlighting that pension funds focused on short-term or poorly diversified investments risk losing financial stability and failing to meet contemporary sustainable investment standards. Despite the important findings presented by these authors, the development of innovative financial instruments and technologies that could enhance the accessibility and efficiency of long-term pension fund investment remains underdeveloped.

The analysis of the studies of the aforementioned authors allows concluding that there are a number of unresolved issues in the regulation of pension funds in the context of globalisation. Therefore, the purpose of the study was to identify the main legal challenges associated with the regulation of the pension system of the Kyrgyz Republic and develop recommendations for improving the regulatory framework based on international experience. The main objectives of the study included: analysing the legislative mechanisms for regulating the pension system in the Kyrgyz Republic; identifying and structuring problems and shortcomings in existing regulations; examining international experience in regulating pension systems in various economic contexts; and developing recommendations for improving the regulatory framework of pension provision in the Kyrgyz Republic based on global practices.

Materials and methods

In the course of the study, the formal-legal method was applied to analyse the legislative mechanisms for regulating the pension system in the Kyrgyz Republic, which is one of the key tools for evaluating and interpreting legal norms. As part of this method, the laws and regulations governing the pension system of Kyrgyzstan were examined, such as Law of the Ministry of Justice of Kyrgyz Republic No. 20

“On State Social Insurance” (1996), Law of the Ministry of Justice of Kyrgyz Republic No. 57 “On State Pension Social Insurance” (1997), Rules for Payment by the Social Fund of the Kyrgyz Republic of Pension Savings of the State Accumulative Pension Fund (2012), as well as Decision of the Ministry of Justice of Kyrgyz Republic No. 670 “On Approval of the Concept of Development of the Pension System of the Kyrgyz Republic” (2014). These regulations were analysed to identify their compliance with the principles of the country’s legal system and international pension provision standards. The formal-legal method allowed for a detailed analysis of laws in terms of their internal logic, legal technique, and the precision of formulations. In addition, this method enabled an assessment of how well the existing regulations align with the goals of social protection and provide guarantees for the stability of the pension system.

A comparative method was applied for analysing international practices, which allowed for a comparison of the legal mechanisms regulating pension systems in different countries. The comparative method was used to examine in detail the regulations governing pension systems in countries with different pension models, such as Germany, Sweden, Chile, Canada, and Kazakhstan. These countries were selected due to their diverse pension structures, representing different approaches to state and private pension schemes, as well as their involvement in international pension cooperation. Germany was chosen due to its well-established multi-tier pension system, which combines statutory, occupational, and private pensions. Sweden’s pension model is of interest due to its notional defined-contribution system, which includes automatic balancing mechanisms. Chile represents a pioneering case of pension privatisation, transitioning from a pay-as-you-go (PAYG) system to a fully funded model (OECD..., 2016). Canada offers a mixed pension system that integrates state-funded pensions with employer-based schemes, and Kazakhstan was included as a post-Soviet country with a reformed pension framework based on mandatory individual accounts (Old Age Security Act, 1952; Treaty on the Eurasian..., 2014).

The following legal documents were analysed: Social Code of Germany (1989), the Law of Germany “On Improve Company Pension Provision” (2018), the Retirement Assets Act of Germany (2001), Law of Sweden No. 230 “On the Pension Authority’s Insurance Activities in the Premium Pension System” (2017), No. 674 “On Income-Based Retirement Pension” (1998); Law of Sweden No. 125 “On the Transfer of the Value of Pension Rights to and from the European Communities” (2002), Decree Law of the Ministry of Labour and Social Security No. 3.500 “On Establishes New Pension System” (1980), Law of the Ministry of Labour and Social Security, Undersecretariat of Social Security No. 20.255 “On Establishes Pension Reform” (2008), Law of the Ministry of Labour and Social Security No. 20.894 “On Extends the Obligation to pay Contributions for Self-Employed Workers and Adjusts the Pension Regulations that Indicates” (2016), Law of the Ministry of Labour and Social Welfare No. 21.419 “On Creates the Universal Guaranteed Pension and Modifies the Legal Bodies that it Indicates” (2022), Canada Pension Plan (1985), Income Tax Act (1985), Old Age Security Act (1952), and Pension Benefits Standards Act (1985). This enabled the identification of successful practices used in these countries to ensure the stability of pension funds, effective asset management, and protection of the rights of

pension system participants. A detailed analysis of the approaches to regulating pension assets was conducted, with particular attention paid to the diversification mechanism of pension portfolios.

The study analysed current trends and reforms in pension legislation both in Kyrgyzstan and internationally using legal forecasting. This method allowed for not only evaluating the current state of legal regulation of the pension system but also modelling possible scenarios for the development of legislation, based on global economic trends, changes in the labour market, and demographic changes. International reforms in countries with stable pension systems, such as Sweden, Germany, Canada, and Chile, were analysed to identify key legal tools that could be adapted for the Kyrgyz Republic. In addition, factors such as the increasing proportion of the elderly population, decreasing youth employment rates, and changes in the state’s social policy were considered in the forecasting. The forecast included an assessment of how these factors might affect the long-term sustainability of the pension system and lead to the need for a revision of current legal norms. Special attention was given to the prospects for improving the legislation regulating the investment activities of pension funds, as the effective management of pension assets is becoming increasingly important in the context of global economic changes.

Results

Pension funds are specialised financial institutions created for the accumulation, investment, and distribution of citizens’ pension savings, providing financial protection during retirement. The main objective of pension funds is to provide individuals with the opportunity to build long-term savings that will ensure a stable income in old age. Pension funds accumulate resources through regular contributions from participants (employees and employers) and invest these resources in various financial instruments to increase their value (Hammond *et al.*, 2023). The funds play an important role in the social and economic life of the state, as they contribute not only to the protection of citizens’ pension rights but also to the development of national economies through investments in infrastructure, government bonds, and other financial assets. The successful functioning of pension funds directly depends on stable legal regulation, transparency in asset management, and reliable investment strategies, making them a vital element of any pension system in the context of global economic changes.

The legal regulation of pension funds in the Kyrgyz Republic is conducted through Law of the Ministry of Justice of Kyrgyz Republic No. 20 “On State Social Insurance” (1996), Law of the Ministry of Justice of Kyrgyz Republic No. 57 “On State Pension Social Insurance” (1997), Rules for Payment by the Social Fund of the Kyrgyz Republic of Pension Savings of the State Accumulative Pension Fund (2012), as well as Decision of the Ministry of Justice of Kyrgyz Republic No. 670 “On Approval of the Concept of Development of the Pension System of the Kyrgyz Republic” (2014).

Law of the Ministry of Justice of Kyrgyz Republic No. 20 “On State Social Insurance” (1996) is one of the key regulations governing compulsory social insurance, including pension provision in the Kyrgyz Republic. This law establishes the foundations for the functioning of the state pension system based on the principles of solidarity, where current contributions from employees and employers are used to pay

pensions to current pensioners. Article 3 of the Law of the Ministry of Justice of Kyrgyz Republic No. 20 (1996) sets out the basic principles on which the system of state social insurance in the Kyrgyz Republic is based. One of the key principles is the mandatory and universal nature of social protection, meaning that every citizen must be covered by the social insurance system. The Law of the Ministry of Justice of Kyrgyz Republic No. 20 (1996) also guarantees that the state commits to maintaining the achieved level of social protection, ensuring the stability of payments. The principle of differentiation provides that the amount of social assistance depends on the contribution of each individual, considering their work experience and the circumstances of the insured event. An important aspect is also the personal responsibility of the insured persons, which includes their active participation in the arrangement and financing of insurance. The role of public associations in controlling the insurance system is additionally emphasised, ensuring its transparency and development.

One of the key components of the pension system of the Kyrgyz Republic is the State Accumulative Pension Fund, established to ensure the long-term financial sustainability of the pension system. The State Accumulative Pension Fund is a specialised mechanism that accumulates contributions from participants for subsequent investment with the aim of increasing pension savings. This fund operates on the principles of mandatory pension savings, making it an important element in the transition from a solidarity-based system to a more sustainable accumulative pension model.

An important part of the development of the pension system is Decision of the Ministry of Justice of Kyrgyz Republic No. 670 (2014). This document outlines the strategic areas for reforming the pension system, including the improvement of mechanisms for both state and accumulative pension provision. The concept aims to strengthen the role of the accumulative component, enhance the sustainability of the pension system, improve the investment strategies of pension funds, and provide greater protection for citizens' pension rights. The Decision of the Ministry of Justice of Kyrgyz Republic No. 670 (2014) emphasises the need for modernising the pension fund management system, which will ensure long-term financial sustainability and improve the level of pension provision.

The Law of the Ministry of Justice of Kyrgyz Republic No. 20 (1996) defines the procedures for mandatory social insurance for citizens and establishes legal mechanisms for ensuring pension payments. The Law of the Ministry of Justice of Kyrgyz Republic No. 20 (1996) regulates the relationships between insured persons, employers, and government bodies responsible for collecting and distributing pension contributions. The primary goal of Law of the Ministry of Justice of Kyrgyz Republic No. 20 (1996) is to guarantee social protection for citizens by providing pension payments in old age, in the event of disability, and in the case of the death of a breadwinner. Article 5 of this law establishes mandatory pension insurance contributions to be made by both employees and employers. These contributions are accumulated in the Social Fund and used to pay pensions to current retirees, reflecting the solidarity-based pension provision model. In addition, Clause 2 of Article 6 of the Law of the Ministry of Justice of Kyrgyz Republic No. 57 (1997) establishes an important provision, whereby public oversight of the implementation of the law's provisions is entrusted to

trade unions. This mechanism of public oversight ensures the transparency and accountability of government bodies responsible for pension insurance.

The process of pension savings payments to system participants is regulated by the Rules for Payment by the Social Fund of the Kyrgyz Republic of Pension Savings of the State Accumulative Pension Fund (2012). Clause 1 of the Rules stipulates those payments are made upon reaching retirement age, in the case of disability, or upon the death of the insured person. The provision of Clause 2 establishes that pension savings may be paid either in a lump sum or through regular payments, depending on the amount of accumulated funds. Special attention is given to the rights of heirs to receive unpaid pension savings in the event of the participant's death, as regulated by Clause 14 of the Rules for Payment by the Social Fund of the Kyrgyz Republic of Pension Savings of the State Accumulative Pension Fund. These rules play a key role in ensuring the transparency and fairness of the payment system, guaranteeing that participants and their heirs receive funds in accordance with the law.

However, an analysis of the legislation regulating pension funds in the Kyrgyz Republic has revealed several key issues in legal regulation that directly affect the stability of the pension system and the protection of participants' rights. The primary legislative framework is the Law of the Ministry of Justice of Kyrgyz Republic No. 20 (1996), which establishes the principles of mandatory and universal pension insurance, the solidarity-based pension provision model, and oversight by public associations. However, despite the established principles, the system faces a number of issues, both legal and economic.

The first problem, related to the insufficient flexibility of the solidarity-based pension system, is particularly acute in the context of population ageing and demographic changes. In the Kyrgyz Republic, as in other countries with transitional economies, there is a trend towards a reduction in the economically active population and an increase in the number of pensioners. This leads to a decrease in the number of workers contributing to the Social Fund, while the number of people receiving pensions continues to grow. Within the framework of the solidarity system, the contributions of current workers are used to pay pensions to current retirees, which, in the context of demographic imbalance, creates a significant burden on the fund. Moreover, the contribution rates set by law do not correspond to the actual needs of the fund to cover all pension payment obligations, particularly in conditions of inflation and economic instability. As a result, the fund faces a deficit, which threatens its long-term financial sustainability (Zholboldueva *et al.*, 2024). To ensure the sustainability of the system, additional sources of funding, such as government subsidies or changes to the contribution structure, and reforms aimed at modernising the pension system and reducing the burden on the solidarity model, are necessary.

The second issue is the inadequate protection of accumulative pension funds. The State Accumulative Pension Fund, as provided for by legislation, is theoretically intended to ensure the financial sustainability of the pension system through the investment of accumulated funds. However, the problem lies in the insufficiently developed legal framework regulating the investment activities of pension funds. Existing laws fail to provide clear mechanisms for the control and oversight of pension asset management and do not offer

participants adequate guarantees for the security of their funds. As a result, the fund's investment strategies are often focused on low-yield instruments such as government bonds, which limits portfolio diversification and reduces the overall return of the fund (Pigai, 2024). In the context of Kyrgyzstan's unstable economy, such dependence on government bonds increases the risk of underperformance, adversely affecting the future size of pension payments. The lack of more flexible and profitable investment instruments, combined with weak regulatory oversight of asset management, exacerbates risks for system participants. Without sufficient diversification and robust mechanisms for managing investments, funds become vulnerable to economic shocks, potentially leading to reduced savings and a decline in public trust in the pension system.

The third issue is the insufficient legal protection of pension system participants, which is particularly important in the context of economic instability and the lack of transparency in the management of pension funds. Despite the legislated mechanism for public oversight through trade unions, as specified in Article 6 of the Law of the Ministry of Justice of Kyrgyz Republic No. 57 (1997), this oversight remains largely formal and insufficiently effective in practice. Trade unions often lack the necessary resources and tools for comprehensive monitoring of pension fund activities, which weakens their role in protecting the rights of insured individuals.

The lack of transparency in the management of pension fund assets leads to risks of misuse, inefficient allocation of resources, and insufficient accountability from managers. Furthermore, the existing Rules for Payment by the Social Fund of the Kyrgyz Republic of Pension Savings of the State Accumulative Pension Fund (2012), which regulate the rights of participants and their heirs, do not account for the specifics of force majeure circumstances such as economic crises, pandemics, or other unforeseen events. This creates uncertainty for participants, who, in times of crisis, may find themselves in a vulnerable position due to the

lack of flexibility in payment regulations. The insufficient adaptation of the legislative framework to such situations underscores the need to revise existing norms to enhance the level of legal protection for participants, ensure transparency in fund management, and strengthen the role of public oversight to minimise risks and abuses.

The economic system of the Kyrgyz Republic, which is in a transitional phase, adds further complications to the functioning of the pension system. Economic instability manifests in low levels of income among the population, which reduces the volume of pension contributions to the Social Fund. This results in a shortage of financial resources to ensure stable and adequate pension payments. An important contributing factor is the high share of the informal economy, where many workers are not officially registered and therefore do not contribute to the pension system, further decreasing the fund's revenues. Economic growth in the country remains slow, which does not allow pension assets to be maintained at a level necessary for the long-term sustainability of the system. The lack of diversified income sources for pension funds generally leads to their dependence on government support and limits opportunities for investment in more profitable financial instruments (Kapakov, 2023).

In such conditions of economic instability, the pension system of Kyrgyzstan requires profound reforms that consider both legal and economic aspects aimed at enhancing the financial sustainability of funds, expanding economic opportunities to increase contributions, and reducing reliance on the informal economy. Thus, the legal regulation of pension funds in the Kyrgyz Republic faces a number of challenges that necessitate a comprehensive approach to pension system reform. To develop recommendations for improving the legal regulation of pension funds in Kyrgyzstan, an analysis of international experience in countries such as Germany, Sweden, Chile, and Canada were conducted to examine successful models of pension asset management and protection (Table 1).

Table 1. Analysis of pension systems in countries with different economic models

Country	Economic system	Pension system	Features of the pension system
Germany	Social market economy	Multi-layered model: mandatory state pension insurance, corporate and private savings schemes	Asset diversification, state control through BaFin, corporate pension schemes, additional savings via participation in professional pension programmes
Sweden	Social market economy with elements of social democracy	Three-tier system: state pension, private pension funds, voluntary savings programmes	Individual pension accounts with the option to choose investment instruments, state support for sustainable investments, high system transparency
Chile	Transitional market economy	Funded system with mandatory individual pension accounts managed by Administradoras de Fondos de Pensiones (AFP)	Competition among AFPs, asset diversification through investments in stocks, bonds, international markets, and infrastructure projects, issues with income inequality
Canada	Capitalist economy with a high degree of state intervention	Multi-tiered system: state pension, corporate programmes, Registered Retirement Savings Plan (RRSP)	Asset diversification through the Canada Pension Plan Investment Board (CPPIB), management of corporate pension schemes, voluntary savings with tax incentives through RRSP, strict oversight of investment policy

Source: created by the authors based on the Law of Germany "On Improve Company Pension Provision" (2018), Law of Sweden No. 230 "On the Pension Authority's Insurance Activities in the Premium Pension System" (2017), and Canada Pension Plan (1985)

Germany possesses one of the most sustainable and efficient pension systems, based on a multi-layered model comprising three main components: mandatory state pension insurance, corporate pension schemes, and private savings programmes (Fechter & Sesselmeier, 2024). The primary legal framework governing pensions in Germany is the Social Code (1989). This legislation establishes rules for contributions, pension benefit calculations, retirement conditions, and the legal basis for corporate and private pension schemes. A noteworthy milestone in the development of the pension system was the adoption of the Retirement Assets Act of Germany (2001). This law encourages citizens to make voluntary savings through private pension programmes by offering tax benefits and state subsidies. The private pension programme played a vital role in enhancing the financial independence of citizens in old age, complementing the mandatory state pension and enabling more flexible management of pension savings.

One of the key elements of the German system's success is the diversification of pension assets. Pension funds are invested in a wide range of financial instruments, such as government bonds, stocks, corporate bonds, real estate, and other assets. This diversification minimises risks associated with financial market fluctuations and ensures steady growth in fund returns. Notably, corporate pension schemes, regulated by the Law of Germany "On Improve Company Pension Provision" (2018), provide employees with additional opportunities to accumulate funds through participation in professional pension programmes supported by employers. These programmes contribute to the diversification of savings, protecting them from market risks and improving the financial stability of pension funds. This law represents an important step in combating old-age poverty and strengthening social equity. Strict government oversight of pension funds is another critical aspect of the German pension system. Public authorities such as BaFin (Federal Financial Supervisory Authority) oversee pension funds, ensuring transparency in their operations and protecting the interests of participants. BaFin monitors the secure investment of pension fund assets and enforces compliance with requirements for asset diversification and risk minimisation (Janda, 2020).

Sweden boasts one of the most sustainable and flexible pension systems in the world, combining elements of mandatory and individual pension insurance. The Swedish pension system is governed by Law of Sweden No. 674 (1998), which regulates both mandatory state pension insurance and individual pension accounts. The Swedish pension model is built on three tiers: state pensions, private pension funds, and voluntary savings programmes. A key feature of the Swedish system is individual pension insurance, where part of the mandatory pension contributions is directed to individual accounts, allowing insured individuals to independently select investment instruments (Akarsu *et al.*, 2021). Participants in the system are provided with the opportunity to invest their funds in various financial assets, such as shares, bonds, and funds. This ensures portfolio diversification, reducing dependence on a single income source and minimising risks. The broad range of investment options enables participants to tailor their pension savings according to financial goals and market conditions.

Law of Sweden No. 230 (2017) plays a vital role in the management and oversight of premium pension accounts.

It regulates the activities of the Pension Authority, responsible for managing premium pension assets. This legislation sets strict requirements for transparency and the security of investment activities, ensuring that participants can trust those managing their pension assets. An additional key element of the Swedish pension system is Law of Sweden No. 125 (2002), which allows participants to transfer accrued pension rights between different pension schemes. This is particularly relevant for individuals changing employment or participating in various pension programmes. This law provides flexibility in managing pension rights and helps prevent the loss of savings when switching employers or pension schemes.

It is important to note that Sweden actively promotes the use of sustainable and socially responsible investment funds, which is also a significant factor in the stability of pension savings. Transparency and access to information are among the most crucial aspects of the Swedish pension system. Each participant can monitor the status of their pension savings in real-time, select or change investment strategies, and receive regular reports on the performance of their assets (Väänänen, 2023). The online information system enables participants to independently manage their funds, significantly increasing public trust in the pension system.

Chile was one of the first countries to undertake a radical pension reform in 1981, replacing the conventional solidarity-based model with a fully funded system. Decree Law of the Ministry of Labour and Social Security No. 3.500 (1980) sets the rules and conditions for the functioning of the pension system based on individual savings accounts. Under this law, all workers are required to contribute to their individual pension accounts, which are managed by private pension funds known as AFPs. A key element of the Chilean model is the diversification of pension assets. Each pension fund manages investments based on a strategy that includes allocating assets across various financial instruments such as shares, bonds, international investments, and, importantly for Chile's economy, infrastructure projects. This diversification reduces risks and enhances the returns on pension savings while also contributing to the national economy by creating jobs and improving infrastructure (Barr & Diamond, 2008). Due to competition among private management companies, citizens can choose funds with the best conditions and returns, encouraging more efficient asset management. However, despite its successes, the system faces several challenges. One of the main issues is income inequality across different population groups. Many Chileans, particularly those in low-income categories, struggle to accumulate sufficient funds in their accounts to secure a comfortable pension (Diaz *et al.*, 2021). To address this issue, the Chilean government introduced Law of the Ministry of Labour and Social Security, Undersecretariat of Social Security No. 20.255 (2008), which aims to provide additional social protection for citizens with low incomes or insufficient pension savings. This law introduced the Basic Solidarity Pension for those who have not accumulated sufficient funds in their individual accounts. Furthermore, Law of the Ministry of Labour and Social Security No. 20.894 (2016) made pension contributions mandatory, aiming to expand the coverage of the pension system and ensure that more workers accumulate pension savings. This represented a significant step in addressing pension inequality and increased savings for those previously excluded from the system.

Recent reforms led to the adoption of Law of the Ministry of Labour and Social Welfare No. 21.419 (2022). The new law establishes a universal guaranteed pension, provided to all Chilean citizens over the age of 65, regardless of their pension savings. This measure was aimed at ensuring a minimum level of income for all elderly citizens and reducing poverty among retirees, particularly those who had insufficient savings under the contributory system.

Kazakhstan, as a member of the Eurasian Economic Union (EAEU) (2023), is actively participating in regional initiatives to improve pension fund management and investment strategies. Kazakhstan's pension system is based on the funded principle, where citizens make mandatory contributions to individual pension accounts managed by private pension funds. These funds invest in a variety of financial instruments, including equities, bonds and infrastructure projects, which helps to diversify assets and increase the return on pension savings. An important aspect of Kazakhstan's system is strict state control and transparency in the management of pension funds, which protects the interests of system participants (Abikenov *et al.*, 2019). Participation in the EAEU allows Kazakhstan to coordinate approaches to the regulation of pension funds with other member countries, which contributes to increased financial stability and economic integration in the region (Treaty on the Eurasian..., 2014).

Canada's pension system is one of the most efficient and sustainable in the world, due to its multi-tiered structure and combination of mandatory and voluntary contributions. It comprises three main components: public pensions, employer-sponsored pension schemes, and private savings accounts. The Canada Pension Plan (1985) is a key legislative framework governing the public component of the pension system. It sets out the rules and mechanisms for mandatory contributions and pension payments and regulates pension fund operations. The first tier of the system is financed through mandatory contributions made by both employees and employers. These contributions are accumulated and managed by the CPPIB; an independent body responsible for overseeing the assets of the pension plan. The CPPIB invests pension funds in a diverse range of assets, including real estate, equities, bonds, infrastructure projects, and international investments. This approach ensures a high degree of diversification, which minimises risks associated with financial market fluctuations and consistently increases returns on

pension savings. A notable feature of the CPPIB is its strict adherence to investment discipline and transparency in asset management, enabling effective oversight of fund allocation and growth. The Old Age Security Act (1952) governs the pension system that provides monthly payments to Canadian citizens and permanent residents aged 65 and older. This system is funded through tax revenues, distinguishing it from a contributory scheme. An important component of the programme is the Guaranteed Income Supplement, which is offered to low-income retirees. This supplement plays a crucial role in ensuring a minimum level of income for vulnerable populations, helping to reduce poverty among the elderly.

The second tier of the system is represented by corporate pension schemes offered by employers to their employees. These programmes are funded by both employers and employees and are also managed based on asset diversification, which mitigates risks for participants (Martin, 2024). Employees can voluntarily participate in these programmes, enabling them to accumulate additional pension savings beyond the public pension. The Pension Benefits Standards Act 1985 regulates corporate pension programmes by setting minimum standards for their registration, funding, management, and the provision of information to participants. This legislation plays a vital role in safeguarding workers' rights and establishing equitable conditions for participation in corporate pension plans.

The third tier includes voluntary pension savings, such as the RRSP, which is regulated by the Income Tax Act (1985). The RRSP allows citizens to make contributions to savings accounts with tax benefits, encouraging long-term retirement savings. Notably, the RRSP provides participants with the opportunity to select their own investment instruments, enabling them to tailor their pension strategies to individual financial goals and risk preferences (Liukko *et al.*, 2023). Thus, an analysis of the pension systems in Germany, Sweden, Chile, and Canada reveals that the key factors underpinning their sustainability are asset diversification, flexible savings mechanisms, strict government oversight, and transparency in management. These elements could be adapted to reform the pension system in Kyrgyzstan, considering national economic characteristics. Based on the analysis of international practices, the following recommendations can be proposed to improve the legal regulation of pension funds in the Kyrgyz Republic (Table 2).

Table 2. Recommendations on reforming the pension system in Kyrgyzstan

Recommendations	Description	Examples
Development of a multi-tier pension system	The creation of several sources of pension provision, including state pensions, corporate pension schemes, and private savings programmes. This reduces dependence on the state fund and increases pension payments.	Germany: mandatory pensions, corporate and private programmes
Introduction of individual pension accounts	The introduction of accounts where citizens can independently manage investments, select financial instruments, and assess returns. Individual accounts increase the flexibility of the system and asset returns.	Sweden: individual pension accounts with independent investment choices
Strengthening state control and transparency	The establishment of an independent body to oversee the activities of pension funds, conduct audits, and monitor investments. This enhances trust and protects citizens' savings.	Germany: BaFin, Canada: CPPIB – government regulatory bodies
Diversification of pension assets	The expansion of investment opportunities for pension funds, including international markets, real estate, and infrastructure projects. Asset diversification reduces risks and increases returns.	Chile and Canada: asset diversification through investments in international markets

Source: created by the authors based on Pension Benefits Standards Act (1985) and Law of Sweden No. 674 “On Income-Based Retirement Pension” (1998)

The implementation of a multi-tier pension system, similar to the German model, involves creating mandatory state pensions, corporate pension schemes, and private savings programs. This approach ensures a more stable and diversified system, allowing citizens to accumulate additional pension funds through corporate programs and individual savings. Corporate pension schemes can be financed through joint contributions from employers and employees, while private savings programs enable citizens to choose investment strategies tailored to their financial goals. This reduces dependence on the state pension fund and provides higher pension payments through increased savings (Law of Germany..., 2018).

The experience of countries like Sweden, Germany, and Canada highlights the importance of individual pension accounts, strong state oversight, and asset diversification in pension systems (Old Age Security Act, 1952; OECD..., 2016). In Kazakhstan, the pension system has undergone significant reforms to enhance its sustainability and efficiency. The introduction of a mandatory accumulative pension system in 1998 allowed citizens to contribute to individual pension accounts, promoting personal savings and investment (Treaty on the Eurasian..., 2014). The Kazakhstan pension system also emphasizes strong state oversight through regulatory bodies like the National Bank of Kazakhstan, which ensures the security and effective management of pension assets. Individual pension accounts allow citizens to manage their savings and invest in various financial instruments, promoting flexibility and higher returns. Strengthening state oversight through independent bodies can ensure the security and effective management of pension assets. Diversifying pension fund investments beyond conventional instruments can minimize risks and increase returns. These global best practices can serve as a valuable foundation for improving the sustainability and efficiency of the Kyrgyz pension system.

In the context of globalisation and financial integration, pension funds are increasingly influenced by international financial markets, investment strategies, and regulatory frameworks. Many countries participate in international initiatives aimed at improving pension fund sustainability, financial stability, and protection of contributors' rights. The Organisation for Economic Co-operation and Development (OECD) (2016), and the International Labour Organisation (ILO) (2022) play significant roles in shaping international pension policies and best practices. These organisations provide guidelines on pension reform, regulatory standards, and risk management strategies, which are particularly relevant for emerging economies such as Kyrgyzstan. One important aspect of global interaction in pension fund management is the growing trend of cross-border investments. Pension funds in developed countries actively invest in international markets, including infrastructure projects, equities, and government bonds in emerging economies. This creates opportunities for capital inflow into developing countries, strengthening their economic stability and financial markets. However, it also introduces new challenges, such as exposure to global financial crises and the need for robust legal frameworks to protect domestic pension assets from external risks. International cooperation in pension fund regulation is also evident in regional economic unions, such as the EU, where harmonised pension policies are developed to ensure financial stability and equitable pension provision across member states. The European Insurance and Occupational

Pensions Authority (EIOPA) (2025) provides oversight and regulatory recommendations to maintain the stability and efficiency of pension funds within the EU. Similarly, countries within the Eurasian Economic Union (EAEU) (2023), including Kyrgyzstan, are exploring coordinated approaches to pension fund management and investment regulations to enhance financial security and economic integration.

Another critical aspect of global interaction in pension funds is the adoption of digital financial technologies. Many pension systems worldwide are integrating blockchain technology, artificial intelligence, and big data analytics to improve the efficiency, security, and transparency of pension fund operations. For instance, Estonia has successfully implemented blockchain-based digital pension accounts, allowing real-time monitoring and secure transactions for pension contributions and withdrawals (Eurasian Economic Union, 2023). These technological advancements offer potential benefits for Kyrgyzstan, where digitalisation of pension management could enhance transparency, reduce administrative costs, and improve service accessibility for citizens. Thus, the global interaction in the field of pension funds underscores the importance of adopting international best practices, fostering cross-border investment opportunities, and leveraging financial technologies to modernise pension systems. The experiences of leading economies in pension regulation and investment strategies can serve as a valuable foundation for enhancing the sustainability and efficiency of the Kyrgyz pension system.

Discussion

The analysis of the findings demonstrates that the key factors for the successful operation of pension funds are asset diversification, state control, flexibility of accumulation mechanisms, and transparency in management. The adaptation of these elements is a key aspect for the reform of the pension system of Kyrgyzstan, which will enhance its financial stability and protect the interests of participants in the context of economic instability.

The analysis of the legislative mechanisms of the Kyrgyz Republic revealed that the pension system faces a number of legal and economic problems that reduce its effectiveness and sustainability. The main difficulties are related to the insufficient flexibility of the solidarity pension system, weak legal protection for participants in accumulation pension funds, and inadequate state control over the investment of pension assets. These issues are exacerbated by economic instability, a high level of shadow employment, and low-income levels among the population, which leads to a deficit in the pension fund and limited opportunities for asset diversification. Research by other authors also highlights problems in pension fund regulation. L. Defau and L. De Moor (2020) emphasise the importance of diversifying pension assets and investing in alternative assets, pointing to problems arising in the context of low interest rates, which reduce the returns on conventional investment instruments. Their advocacy for investment in alternative assets resonates with the findings of this study, which also stresses the potential benefits of investing in real estate, infrastructure, and private equity. However, a key divergence lies in the practical feasibility of such investments in Kyrgyzstan. While the international literature presents these strategies as essential for maintaining returns in developed economies, the lack of infrastructure and resources in transition economies like Kyrgyzstan presents

significant obstacles to their implementation (Khamzaeva *et al.*, 2020). As a result, while the principle of diversification is universally endorsed, its operationalization requires a tailored approach that considers local economic realities.

E. Fragnière *et al.* (2023) note that to ensure the long-term sustainability of pension funds, predictive analysis should be used to identify weak signals, such as new investment trends or changes in the operational processes of management companies, which allows strategies for asset management to be adapted promptly. While the authors advocate for the integration of such technologies to anticipate market trends and optimize management strategies, this study presents a more cautious view. The practical challenges associated with adopting these technologies in Kyrgyzstan, where technological infrastructure remains underdeveloped, make the widespread implementation of such tools unfeasible in the near term. The gap between the technological advancements in developed countries and the current infrastructure in Kyrgyzstan suggests that a more gradual approach to incorporating data analytics and AI is necessary, one that considers both the technological landscape and the resources available. D.W.G.A. Broeders *et al.* (2016), in turn, indicate that achieving economies of scale in investment management is a substantial factor influencing the efficiency of pension funds. The authors highlight the challenge faced by pension funds in smaller economies, where the limited number of assets and participants prevents the achievement of economies of scale, leading to higher costs of investment management. Their assertion that larger economies benefit from reduced costs due to economies of scale is valid in developed countries, where pension funds can consolidate resources to negotiate favourable investment terms. However, in smaller economies like Kyrgyzstan, achieving such economies of scale is far more challenging. The limited size of the pension fund base and the relatively small number of participants prevent the achievement of cost efficiencies seen in larger economies (Borshch, 2024). This discrepancy highlights the need for regulatory mechanisms that foster cooperation and coordination among smaller pension funds to overcome this challenge.

The results of the study also showed that successful pension systems, such as those in Germany, Sweden, Chile, and Canada, share common features that ensure their sustainability and efficiency. Key elements include asset diversification, which reduces risks and increases returns; flexibility of accumulation mechanisms, providing citizens with the opportunity to choose their own investment strategies; stringent state oversight to ensure transparency in asset management; and access to information for participants in pension funds. The analysis demonstrated that these elements could be adapted to reform Kyrgyzstan's pension system, thereby enhancing its financial stability, improving asset management, and ensuring better protection of participants' rights in a transitional economy. D. Tchiotashvili *et al.* (2023), in their study on the challenges faced by Georgia's accumulation pension system, also emphasise the importance of international experience in pension fund regulation. The authors note that in countries with developed pension systems, such as Germany, successful pension fund management is associated with broad asset diversification, including investments in government bonds, equities, real estate, and other instruments, a finding also confirmed by this study. However, applying these models in Kyrgyzstan requires careful

consideration of local economic and social conditions, including the high level of shadow employment and the low income of much of the population. Thus, while the general principles outlined in international research remain highly relevant, the implementation of such principles must account for the specific challenges of the Kyrgyz economy.

J. McCaskill *et al.* (2024), in their analysis of public pensions in Texas, highlight the importance of establishing systems that effectively manage collective pension funds. They observe that in countries with more flexible pension systems, such as Sweden, participants can independently select investment strategies, leading to more efficient asset management and reducing pressure on the collective fund. The authors' conclusions are well-founded, as flexibility in asset management indeed represents a significant advantage, enabling investments to be tailored to participants' individual goals, which can contribute to improved returns and stability of pension funds.

J. Berg (2022) focused on stringent regulation and state oversight, which are key advantages of Denmark's pension system. His work highlights that rigorous supervision of pension funds' activities minimises the risk of malpractice and enhances the transparency of asset management. This aligns with the practices of Germany and Canada, where state control by independent supervisory bodies, such as BaFin and CPPIB, fosters public trust in the system and protects the interests of participants. The author also notes that strict regulation prevents financial risks and ensures the long-term sustainability of the pension system. The conclusions of J. Berg (2022) can only be partially agreed with, as it cannot be claimed that strict control alone prevents financial risks, given that the financial sustainability of pension funds depends on a variety of factors. While state control and oversight play an important role in mitigating the risk of malpractice and ensuring transparency, effective asset management also requires flexibility, portfolio diversification, and well-considered investment decisions (Toktosunova *et al.*, 2024). In the context of volatile markets and economic instability, excessive rigidity in regulation could, conversely, constrain pension funds from responding promptly to market fluctuations and implementing innovative strategies to enhance returns. Achieving a balance between control and flexibility is a key factor in mitigating financial risks and ensuring the long-term sustainability of pension systems (Esenalieva *et al.*, 2023).

Based on the analysis of international experience, recommendations were developed to enhance the resilience of Kyrgyzstan's pension system. These recommendations include the introduction of a multi-tiered system, individual pension accounts, strengthened state oversight, and asset diversification. These measures would enhance the flexibility of fund management, minimise risks, and ensure the long-term financial stability of pension funds in the context of an unstable economy. A. van der Heide (2024) highlights the importance of the "de-risking" strategy, which involves reducing risks for pension funds through active asset management and optimising investment portfolios. The author suggests minimising reliance on volatile assets and utilising more stable instruments, such as government bonds and insurance products. This view can be partially agreed with, as reducing risks is vital for the stability of funds; however, excessive caution may limit returns, particularly in the context of unstable economies.

M. Hill (2007) stresses the need for pension reforms, such as the introduction of more flexible accumulation schemes and strengthened state control. The author's ideas on enhanced oversight and transparency align fully with the recommendations developed in the conducted research. Finally, while international cooperation, as suggested by I. Wolf and L. Caridad López del Río (2024), is crucial for enhancing the efficiency and sustainability of pension systems, the implementation of such initiatives in Kyrgyzstan requires careful adaptation. Collaboration with international regulators and the exchange of best practices can undoubtedly improve the transparency and efficiency of pension fund management. However, the ability of Kyrgyzstan to implement such strategies will depend on overcoming structural barriers, such as limited infrastructure and the financial literacy of pension participants. Thus, while international cooperation offers significant potential for enhancing pension fund resilience, its impact will depend on the country's capacity to integrate global best practices into its unique context.

The international cooperation mechanisms suggested by several scholars present both opportunities and challenges for Kyrgyzstan's pension system reform. Although the exchange of best practices can certainly benefit countries like Kyrgyzstan, our findings indicate that without critical adaptation to local contexts, such knowledge transfer may yield limited results. This stands in contrast to the optimistic view prevalent in the literature that international cooperation automatically enhances system resilience. This analysis suggests that the effectiveness of international collaboration depends heavily on a country's absorptive capacity and institutional readiness – factors often overlooked in discussions of cross-border pension management frameworks. In conclusion, this study both builds upon and challenges existing scholarship regarding pension system reform in transitional economies. While international experiences provide valuable frameworks for reforming Kyrgyzstan's pension system, their application requires nuanced understanding of local economic conditions and institutional capabilities. The substantial differences the authors identified between theoretical benefits described in the literature and practical implementation challenges in Kyrgyzstan's context underline the need for context-specific approaches rather than wholesale adoption of models successful in developed economies. The findings advocate for a balanced approach that integrates flexibility, diversification, and strong state oversight while acknowledging the constraints posed by Kyrgyzstan's transitional economy.

Conclusions

The study has revealed significant challenges in the legal regulation of pension funds in the Kyrgyz Republic and identified potential solutions based on international experience. The analysis demonstrated that the current pension system faces several critical issues: insufficient flexibility of the solidarity-based system, inadequate protection of accumulative pension funds, and limited legal protection for pension system participants. These challenges are compounded by economic instability, high levels of informal employment, and low-income levels among the population.

The examination of successful pension systems in Germany, Sweden, Chile, and Canada revealed key elements that contribute to their sustainability and effectiveness:

comprehensive asset diversification, flexible accumulation mechanisms, robust state oversight, and transparency in management. These countries' experiences demonstrate that a well-structured multi-tier pension system, combining mandatory state pensions with corporate schemes and private savings programs, can provide greater financial security for retirees while reducing pressure on state pension funds.

The analysis of the legal frameworks in these countries highlighted several advantages and disadvantages. In Germany, the legal framework is known for its robustness and comprehensive oversight, with a strong emphasis on transparency and accountability. The presence of an independent regulatory body ensures rigorous supervision and enforcement of regulations. However, the complexity of the regulatory environment can sometimes hinder innovation and flexibility in pension fund management. Sweden's legal system promotes individual participation through the use of individual pension accounts, which enhances personal engagement in pension savings. The regulatory framework is designed to be flexible and adaptable to changing economic conditions. However, the system's reliance on individual choice can lead to variability in outcomes based on personal financial literacy.

Chile's pension system is notable for its extensive investment diversification, which includes international markets, real estate, and infrastructure projects. The legal framework supports this diversification, contributing to the system's financial sustainability. However, the regulatory environment has faced criticism for insufficient protection of participants' rights, particularly in cases of market volatility. Canada's legal framework emphasizes strong governance and transparency, with the Canada Pension Plan Investment Board (CPIB) playing a crucial role in managing pension funds. The system benefits from robust risk management strategies and a high degree of public trust. However, the regulatory complexity can sometimes lead to administrative burdens and delays in implementation.

The study also highlighted the importance of international cooperation in pension fund management, particularly in the context of globalisation and financial integration. The adoption of digital technologies, participation in international investment initiatives, and implementation of risk management strategies can significantly enhance the efficiency and sustainability of pension funds. The findings suggest that successful reform of Kyrgyzstan's pension system requires a comprehensive approach that considers both legal and economic aspects. This includes modernising the regulatory framework, strengthening oversight mechanisms, and expanding investment opportunities while ensuring adequate protection for pension fund participants. The implementation of these recommendations could significantly improve the financial sustainability of pension funds and enhance the social protection of citizens in the context of economic instability.

The limitations of the study are related to the economic specificity of the Kyrgyz Republic, which may constrain the speed and effectiveness of implementing international practices. Future research should focus on the development of models specifically adapted for small economies and the enhancement of infrastructure to support the implementation of modern technologies. These improvements would contribute to more effective management of pension assets.

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Conflict of interest

None.

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Пенсійні фонди в умовах глобалізації: правове регулювання та виклики в країнах з різними пенсійними системами

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Анотація. Метою дослідження було виявлення ключових проблем правового регулювання пенсійного фонду Киргизької Республіки та розробка пропозицій щодо їх ефективного вирішення на основі аналізу міжнародної практики в різних економічних системах. Дослідження включало аналіз законодавства з використанням формально-юридичного методу, порівняння пенсійних систем Німеччини, Швеції, Чилі та Канади за допомогою порівняльного методу, а також моделювання можливих сценаріїв розвитку пенсійного законодавства з використанням методу правового прогнозування. Основні висновки показали, що пенсійна система в Киргизстані залишається залежною від державних джерел, що обмежує її здатність адаптуватися до мінливих міжнародних фінансових умов. Основними проблемами правового регулювання є відсутність гнучких інвестиційних механізмів і слабкий контроль за управлінням активами. Порівняльний аналіз також показав, що в країнах з диверсифікованою пенсійною системою, таких як Німеччина та Канада, пенсійні системи є більш стійкими завдяки диверсифікації активів та використанню приватних інвестиційних фондів. У таких країнах, як Швеція та Чилі, зростає інтерес до приватних пенсійних заощаджень та впровадження цифрових технологій для управління пенсійними активами, що сприяє більшій прозорості та ефективності пенсійних систем. На основі аналізу міжнародних практик розроблено рекомендації щодо посилення правового регулювання пенсійного фонду Киргизстану, включаючи прийняття міжнародних стандартів фінансової прозорості та розробку механізмів залучення приватних інвестицій у пенсійні активи. Отримані результати засвідчили необхідність модернізації правового регулювання пенсійних фондів у Киргизстані з урахуванням міжнародного досвіду для забезпечення стійкості, прозорості та захисту прав

Ключові слова: міжнародний досвід; законодавчі механізми; соціальне забезпечення; управління активами; інвестиційні стратегії; моделі накопичення