



Investment funds and their impact on the pension funds of AFP members in Peru, period 2010-2021

Fondos de inversión y su incidencia en los fondos de pensiones de los afiliados de las AFP en el Perú, periodo 2010 - 2021

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ABSTRACT

The private pension system in Peru, managed by Pension Fund Administrators (AFPs), exhibits a logical trend of growth in both funds and profitability during periods of economic stability. However, in times of crisis, pension fund investment portfolios have been shown to be vulnerable due to their dependence on the financial market and various exogenous variables, which generate uncertainty and directly affect members' individual funds. In this context, the objective of this research was to determine the relationship between investment funds and the pension funds of AFP members in Peru during the period 2010-2021. This was an applied study with a non-experimental design and a descriptive correlational approach. The population and sample consisted of historical data on the pension funds and investment funds managed by AFPs during this period. Document analysis was used, using a document analysis guide as an instrument. The results showed a significant relationship between investment funds and pension funds, with a bilateral significance of 0.011 and a moderate positive correlation coefficient of 0.699, which led to the conclusion that an increase in AFP investments favors the profitability of pension funds.

Keywords: affiliates; bonds; investment portfolio; pension; profitability

RESUMEN

El sistema previsional privado en el Perú, gestionado por las Administradoras de Fondos de Pensiones (AFP), presenta una tendencia lógica de crecimiento tanto en los fondos como en su rentabilidad durante contextos de estabilidad económica; sin embargo, en épocas de crisis, se ha demostrado que los portafolios de inversión de los fondos de pensiones son vulnerables debido a su dependencia del mercado financiero y a diversas variables exógenas, lo cual genera incertidumbre y afecta directamente los fondos individuales de los afiliados. El objetivo de la investigación fue determinar la relación entre los fondos de inversión y los fondos de pensiones de los afiliados de las AFP en el Perú durante el periodo 2010-2021. La investigación fue de tipo aplicada, con diseño no experimental y nivel descriptivo correlacional, cuya población y muestra estuvo conformada por datos históricos sobre los fondos de pensiones y fondos de inversión administrados por las AFP en dicho periodo. Se utilizó la técnica de análisis documental y como instrumento una guía de análisis documental. Los resultados evidenciaron una relación significativa entre los fondos de inversión y los fondos de pensiones, con una significancia bilateral de 0.011 y un coeficiente de correlación positivo moderado de 0.699, lo cual permitió concluir que un incremento en las inversiones de las AFP favorece la rentabilidad de los fondos de pensiones.

Palabras clave: afiliados; bonos; cartera de inversiones; pensión; rentabilidad



1. INTRODUCTION

Pensions have historically represented a fundamental mechanism for ensuring the economic security of workers upon reaching old age (Gasic, 2018). However, in many countries, including Peru, contributions to the public pension system proved insufficient to sustain this purpose, generating a significant fiscal burden and reduced pensions for retirees (Espino Lazo, 2018).

In response to this problem, the Private Pension System (SPP) was implemented, based on an individual capitalization model through the Individual Capitalization Account (CIC), in which each worker owns their funds (Rojas, 2014). Inspired by the Chilean reform of 1981, this system was adopted by Peru two years later, coexisting with the public system administered by the ONP, which continues to face structural deficiencies that affect pension amounts (Olivera, 2016).

Nevertheless, the SPP has also been criticized due to high commission fees, low returns for members, and its failure to fulfill its promise of well-being (Pardo López & Pico Bonilla, 2020). Although the AFPs, which administer the private system, compete to offer better returns, services, and administrative costs, various structural factors in the labor market, such as informality, low wages, and access restrictions, have led many workers to perceive the system as a burden in the short term (Manrique Céspedes et al., 2020).

However, the possibility of securing an adequate pension in the long term encourages workers to continue contributing. In this regard, AFPs invest pension funds in financial instruments such as government bonds, time deposits, and publicly traded shares, seeking to maximize returns while maintaining acceptable levels of risk (Argandoña Andrade, 2019).

This pattern of fund growth has been evident during periods of economic stability; however, crisis situations, such as that caused by the COVID-19 pandemic, revealed the vulnerability of the system. The sharp decline in the financial market during the first quarter of 2020, resulting from the global economic slowdown, negatively affected portfolio returns, directly impacting members' individual funds and generating uncertainty regarding their pensions (Quintana García, 2021).

In addition, Peru has one of the highest administration fees in the region, averaging 1.87%, higher than those of Chile (1.74%) and Colombia (1.58%), a situation that has generated dissatisfaction among members, particularly given the lack of visible improvements in the system's profitability (Vásquez Villanueva et al., 2021). In this context, the present study was undertaken to analyze the relationship between investment funds and the pension funds of AFP members in Peru during the period 2010–2021.

Accordingly, the general research question was formulated as follows: How are investment funds related to members' pension funds during the period analyzed? The specific research questions were: What was the trend in domestic and international investment of pension funds? How did their nominal returns behave during those years?

The general objective of the study was to determine the relationship between investment funds and pension funds, while the specific objectives were to analyze domestic and foreign investment and the returns obtained. The study was based on the hypothesis that there is a significant relationship between both variables, recognizing that this analysis may provide useful information for pension-related decision-making and help guide more efficient investment and fund management strategies.

2. MATERIALS AND METHODS

The present study was conducted in the Peruvian context, using historical information published by the Superintendency of Banking, Insurance, and AFPs (SBS), a supervisory entity founded in 1931 that, since the enactment of Law No. 25897 in 1992, has regulated Pension Fund Administrators in the country (SBS & AFP, 2022). The study was conducted between April 2022 and March 2023, guided by international

ethical principles such as integrity and beneficence, as the data were obtained from reliable sources without altering or manipulating their content and were used strictly for academic purposes (Hernández Sampieri et al., 2014).

The research focused on examining the relationship between investment funds and pension funds managed by Peruvian AFPs during the period 2010–2021. The first variable, investment funds, is understood as accumulated assets intended to finance retirement plans, consisting of contributions from both employers and workers and aimed at long-term growth under criteria of security and profitability (SBS & AFP, 2022). Pension funds, in turn, are defined as collective investment instruments in which contributors delegate the management of their resources to specialized financial institutions, expecting higher returns than they could obtain individually (Burbano et al., 2021; Arbaiza Fermini, 2016). These definitions made it possible to clearly operationalize both variables and determine their scope within the study.

Methodologically, the research was applied in nature, as it sought to apply theoretical knowledge to the specific context of the Peruvian pension system (Valderrama Mendoza, 2014). A descriptive-correlational level was adopted, allowing the characteristics of each variable to be identified and their possible degree of relationship to be calculated (Behar Rivero, 2018). Rather than a controlled experiment, the study analyzed events that had already occurred; therefore, a non-experimental design with a longitudinal approach was used. This latter aspect was essential for analyzing the evolution of both variables over a continuous twelve-year period, which, according to García De La Figal Costales (2018), is appropriate for detecting patterns and changes in long-term economic or social phenomena.

The technique employed was document analysis, considered appropriate for research requiring an exhaustive review of secondary data (Laborda Ibáñez, 2018). Structured guides were used as instruments to collect information published by the SBS, the Central Reserve Bank of Peru (BCRP), and the Association of AFPs. The study population consisted of all available statistical records on investment and pension funds, while the sample was defined as the subset of historical data corresponding to the period from 2010 to 2021, which provided a significant and representative sample for observing the behavior of both variables (Otzen & Manterola, 2017).

Microsoft Excel and SPSS software were used to process the information, as these tools are recommended for the statistical management of financial data. These platforms facilitated the organization of information, the preparation of tables and graphs, and the application of bivariate correlation tests. This methodological strategy not only made it possible to address the research problem but also provided a solid foundation for future studies related to the efficiency of the private pension system and its sustainability in the Peruvian context (Quintana García, 2021).

3. RESULTS AND DISCUSSION

The present study analyzed investment funds and their relationship with pension funds. The following results are presented after applying the document analysis guide to each of the study variables.

3.1. Analysis of Domestic Investment of AFP Members' Pension Funds in Peru during the Period 2010–2021

Table 1. Evolution of Domestic Investment of AFP Members' Pension Funds in Peru, 2010–2021

Analysis of AFP Investment Funds												
Domestic Investment												
(In Thousands of Soles)												
Description / Period	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Government	14,085,566	13,914,536	16,938,770	13,745,916	20,289,641	22,057,400	29,841,974	3,958,425	35,633,740	40,430,674	27,933,738	20,843,381
Financial System	16,529,335	14,332,647	16,268,003	22,671,872	16,082,014	23,629,987	19,956,521	20,427,619	16,231,785	18,817,271	20,070,645	17,553,497

Non-Financial System	27,966,781	23,174,561	26,057,623	20,207,308	19,746,756	15,873,584	20,657,017	23,697,925	22,951,909	26,727,652	26,466,233	27,516,392
Fund Administrators	2,700,659	2,999,736	3,679,622	4,308,302	5,419,234	5,407,355	6,003,023	5,699,977	5,195,221	5,335,831	5,479,067	5,682,200
Securitization Companies	3,060,654	3,763,360	5,111,096	5,527,829	5,844,110	6,851,150	6,591,580	5,204,379	4,051,011	4,035,721	3,421,734	3,172,764
Total	64,342,995	58,184,840	68,055,114	66,461,227	67,381,754	73,819,477	83,050,115	88,988,324	84,063,667	95,347,149	83,371,417	74,768,234

Note: Data extracted from the SBS database.

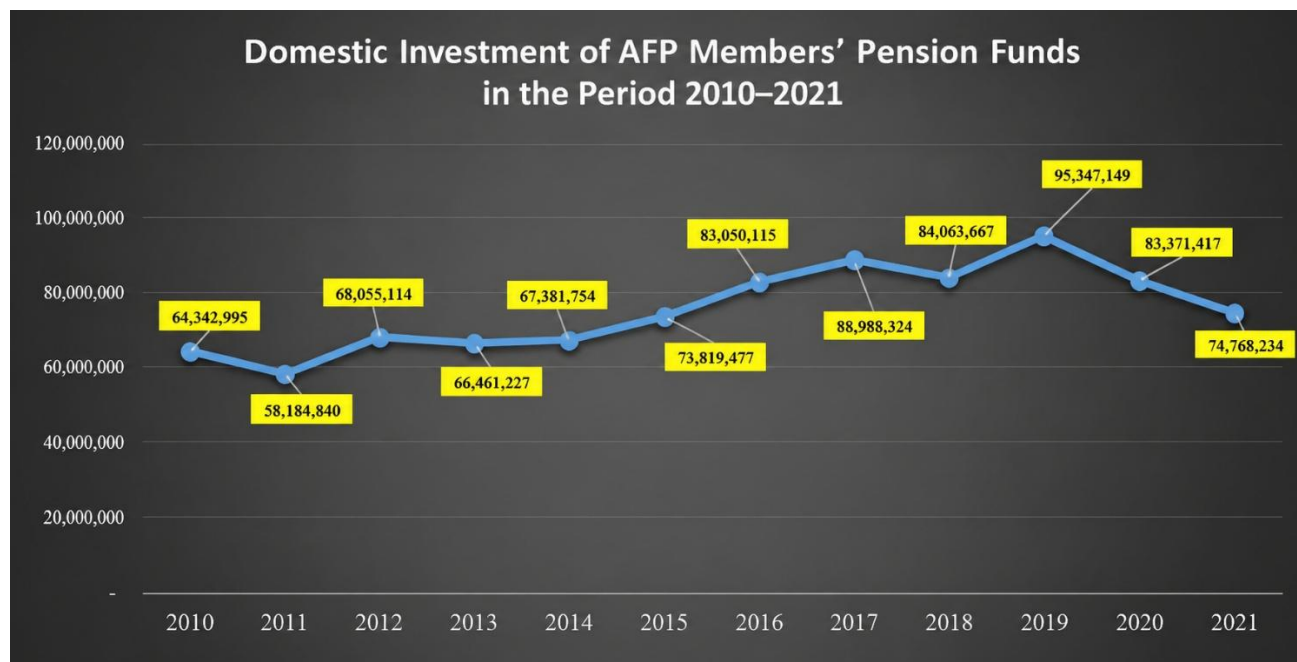


Figure 1. Domestic investment of AFP members' pension funds during the period 2010–2021

The results obtained and presented in Table and Figure 1 regarding the domestic investment of AFP members' pension funds during the period 2010–2021 show that domestic investment in 2010 amounted to 64,342,995 million soles. However, in the following year, investment decreased by 9.57%, reaching 58,184,840 million soles. In subsequent years, constant increases were observed, except in 2013 and 2018, when decreases of 2.34% and 5.53%, respectively, were recorded, reaching the highest investment level (S/ 95,347,149) in 2019. Nevertheless, in 2020, domestic investments declined by 12.56%, and similarly, in 2021, a decrease of 10.31% was observed compared with the previous period.

3.2. Analysis of Foreign Investment of AFP Members' Pension Funds in Peru during the Period 2010–2021

Table 2. Evolution of Foreign Investment of AFP Members' Pension Funds in Peru, 2010–2021

Analysis of AFP Investment Funds												
Foreign Investment												
(In Thousands of Soles)												
Description / Period	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Government	2,156,596	949,241	1,705,359	1,340,936	673,915	98,359	688,219	920,188	1,487,774	4,512,117	7,137,325	1,296,170
Financial System	3,522,984	2,737,673	2,639,637	2,732,042	2,287,523	1,867,329	1,832,560	1,577,880	946,262	741,537	940,844	955,589
Non-Financial System	10,793,881	8,220,460	6,249,069	6,752,010	2,821,989	999,949	1,719,853	1,630,086	1,493,027	2,488,799	2,322,645	1,874,517
Fund Administrators	6,477,534	11,529,252	17,918,096	25,095,362	40,725,826	46,931,917	47,744,800	63,578,775	64,440,688	70,705,168	71,483,571	53,670,834
Securitization Companies	50,427	-	-	-	-	-	-	-	-	-	-	-
Transactions in Transit	-48,817	259,998	285,793	-304,333	612,490	375,938	1,317,278	-448,612	982,219	1,028,401	-381,236	744,898
Total	22,952,604	23,696,624	28,797,954	35,616,018	47,121,743	50,273,492	53,302,709	67,258,316	69,349,969	79,476,022	81,503,149	58,542,010

Note: Data extracted from the SBS database.

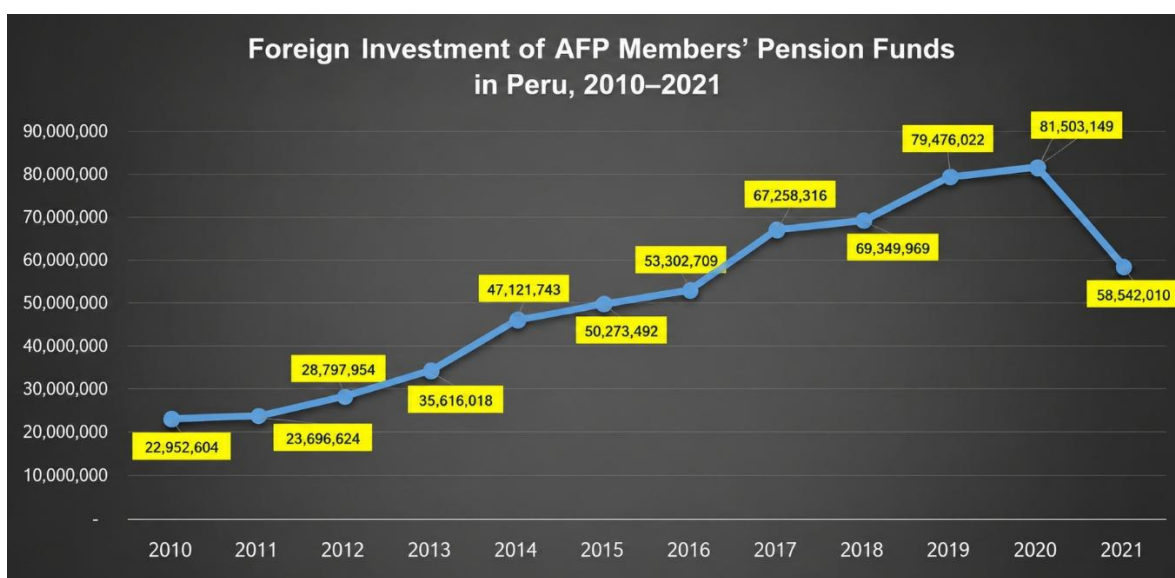


Figure 2. Domestic investment of AFP members' pension funds during the period 2010–2021

The results obtained and presented in Table and Figure 2 regarding the foreign investment of AFP members' pension funds during the period 2010–2021 show that it increased by 60.69%, since foreign investment in 2010 amounted to 22,952,604 million soles and continued to increase steadily until 2020, reaching its highest level of 81,503,149 million soles in that year. However, in the following year, it experienced a significant decline of 28.17%.

3.3. Analysis of the Nominal Return of AFP Members' Pension Funds in Peru during the Period 2010–2021

Table 3. Evolution of the Nominal Return of AFP Members' Pension Funds in Peru, 2010–2021

		Analysis of the Annual Nominal Return of Pension Funds											
		(Percentage)											
Type of Return	Description / Period	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Annualized Nominal Return of the Pension Fund	Fund Type 0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	4.66	3.71	4.26	3.02	0.76
	Fund Type 1	7.91	3.02	12.44	0.10	7.81	5.59	7.87	9.27	0.56	13.83	9.32	-3.17
	Fund Type 2	18.44	-7.06	11.78	-0.04	8.92	5.66	9.94	11.92	-1.30	12.92	10.52	6.55
	Fund Type 3	34.52	-17.32	10.63	0.32	6.69	2.41	10.46	12.44	-3.80	7.82	6.34	20.03
	Average %	20.29	-7.12	11.62	0.13	7.81	4.55	9.42	9.57	-0.21	9.71	7.30	6.04



Figure 3. Nominal return of AFP members' pension funds during the period 2010–2021

The results obtained and presented in Table and Figure 3 regarding the nominal return of AFP members' pension funds during the period 2010–2021 show that, in 2010, for every sol contributed by pensioners across the four fund types, the AFP achieved a return of 20.29%. However, in 2011, the AFP funds did not generate any return, as an average decline of -7.12% was recorded. This was because only Fund Type 1 achieved a return of 3.02%, while Fund Types 2 and 3 experienced declines of -7.06% and -17.32%, respectively. From 2012 to 2017, each sol contributed and invested generated returns above 0.13%; however, in 2018, the AFP funds once again recorded a decline of -0.21%, as Fund Types 0 and 1 generated returns, while Fund Types 2 and 3 recorded losses. In 2019, a return of 9.71% was recorded, followed by 7.30% in 2020 and 6.04% in 2021, despite Fund Type 1 experiencing a decline of -3.17% in 2021.

Table 4. Shapiro–Wilk Normality Test

	Shapiro-Wilk		
	Statistic	df	Sig.
Investment funds	0.636	12	0.000
Pension funds	0.911	12	0.222

Table 4 shows that the significance value obtained for the investment funds variable was below 0.05, while that of the pension funds variable was above 0.05. These values indicate that the data were not normally distributed; therefore, Spearman's Rho correlation coefficient was used to determine the relationship between the variables.

3.4. Determining the Relationship Between Investment Funds and AFP Members' Pension Funds in Peru During the Period 2010–2021

Table 5. Relationship Between Investment Funds and Pension Funds

Spearman's Rho	Investment Funds	Pension Funds	
		Correlation Coefficient	0.699*
		Sig. (2-tailed)	0.011
		N	12

The data presented in Table 5 reveal that there is a significant relationship between investment funds and pension funds, since the significance level was 0.011 and the correlation coefficient was moderately positive at 0.699. These results support the hypothesis proposed by the researcher, which states that a relationship exists between the two variables.

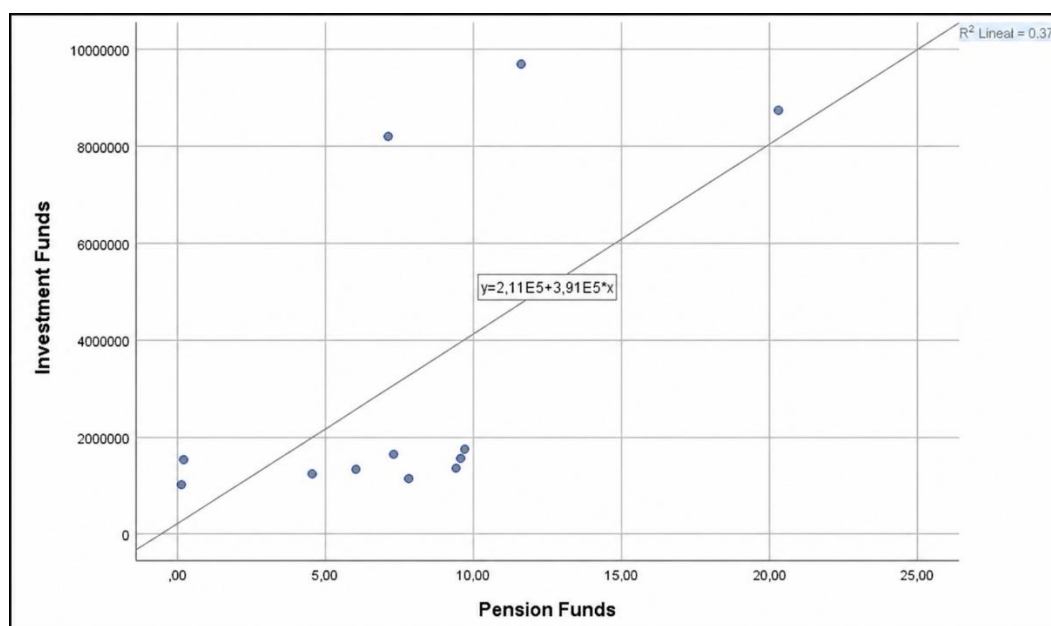


Figure 4. Scatter Plot

Figure 4 shows that there is a significant relationship between the investment funds and pension funds variables, with the degree of relationship equivalent to 13.98%. Therefore, it is recognized that domestic and foreign investment of AFP funds has an impact on the returns of pension funds.

DISCUSSION

In this section, the results obtained are compared with the findings of previous research conducted in different contexts and with theories associated with the study variables. It should be noted that the results were obtained by applying a document analysis guide for each variable to a sample consisting of historical data on pension funds and investment funds managed by AFPs in Peru during the period 2010–2021.

First, the domestic investment of AFP members' pension funds in Peru during the period 2010–2021 was analyzed. The results revealed that domestic investments decreased in 2011, 2018, 2019, and 2021 compared with the preceding periods, which was mainly dependent on the national economic situation; however, the overall trend showed growth across the 12 periods analyzed. Similarly, the results presented by Barrera García and Chinchilla Álvarez (2022) in their study conducted in Colombia were consistent with these findings, as they reported that AFP domestic investments showed little variation, with a maximum of 8.8%. In contrast, the results of Valdes (2017) in the Dominican Republic differed from those obtained in the present study, as they concluded that domestic investments showed a downward trend during the last three years (2016, 2017, and 2018); however, in Peru, domestic investments declined in 2018. Likewise, Hubert (2021), in a study conducted in Peru, reported that despite fluctuations in domestic investments, they showed a greater tendency to increase, which had an impact on pension fund returns; therefore, enrollment in the AFP system continued to increase. In this regard, the findings reported by González & López (2017) support this result, as they indicated that the unit value has shown that AFP domestic investments tend to evolve favorably, given that periods of recession are followed by periods of recovery. Furthermore, Santa Cruz Pacheco (2017) maintains that AFPs have contingency measures and strategies to protect their members' funds, such as prioritizing investments in essential sectors.

Regarding the second objective of the research, the foreign investment of AFP members' pension funds in Peru during the period 2010–2021 was analyzed. The results revealed a gradual upward trend, despite variations in 2018 and 2021. It should be noted that in 2021 there was a significant decline of 28.17%, which resulted from the international economic context experienced worldwide during that year. The study conducted by Ramos (2021) is consistent with these results, as it reported that AFP investments abroad gradually increased from 2014 to 2020, reaching investment levels close to the investment limit established by the BCR. Similarly, Manrique Céspedes et al. (2020) conducted a comparable study in Peru and reported similar results, indicating that AFP management had produced favorable outcomes, as reflected in the historical data provided by the SBS.

Regarding the third objective, which consisted of analyzing the nominal return of AFP members' pension funds in Peru during the period 2010–2021, the results revealed significant upward and downward changes in the trend. In 2011, there was no nominal return, with a decline of -7.12%; however, in 2012, the average return was 11.62%. In 2013, the return was only 0.13%, while in the following years through 2017, pension fund returns increased. They declined again in 2018, when there was no return (-0.21%), increased in the following period (2019), and then showed a moderate downward trend through 2021. The results obtained by Cuñas Delgado (2018) are consistent with these findings, as they showed that 48% of affiliated retirees were satisfied with the management of their funds by the AFPs because acceptable rates of return were achieved, which, despite experiencing fluctuations, generally showed an upward trend. Similarly, the results presented by Valera (2021) are comparable, as they indicated that between 2005 and 2015 the trend in nominal returns was variable, revealing that the predominant trend in returns was growth despite minor declines in some years. Conversely, the study conducted by Cervantes and Garcia

(2019) partially differs from the previous findings, as they reported that AFP returns in recent years had not been satisfactory for members, who therefore expressed dissatisfaction with AFP management. These results are supported by the theory of Manrique Céspedes et al. (2020), which states that the purpose of pension fund management is to increase the returns of these funds for each member through interest earned on domestic and foreign investments.

Finally, the general objective, which was aimed at determining the relationship between investment funds and AFP members' pension funds in Peru during the period 2010–2021, was addressed. After assessing the normality of the data, Spearman's Rho statistic was applied, revealing a significant relationship between investment funds and pension funds, since the two-tailed significance value was below 0.05 and the correlation coefficient was 0.699, indicating a moderate positive correlation. The results obtained by Barrera García and Chinchilla Álvarez (2022) are similar, as they showed that investment portfolios had a significant 52% effect on the returns of AFP pension funds in Colombia, given that the significance value was below 0.05 and the Pearson coefficient was 0.726. Likewise, Soto Escobar (2021) in the Dominican Republic concluded that financial management and AFP pension funds were significantly related, with a moderate positive relationship (Sig. = 0.00 and rho = 0.784). Similarly, in Ecuador, Cuñas Delgado (2018) also statistically demonstrated that investment funds and pension funds were significantly related, since the significance level obtained was 0.001 and the r coefficient was 0.878. Therefore, they stated that variations showing an upward trend in investments would have an impact on pension fund returns, as would variations showing a downward trend. These results are consistent with the findings of Martínez-Preece et al. (2020), who stated that AFP members' pension funds consist to a greater extent of returns and to a lesser extent of contributions made.

CONCLUSIONS

During the period 2010–2021, it was statistically demonstrated that there is a significant relationship between investment funds and the pension funds of AFP members in Peru, supported by a significance value of 0.011 and a moderate positive correlation coefficient of 0.699, indicating that when AFP investments increase, pension fund returns also tend to be favorable. Regarding the domestic investment of pension funds, a cumulative increase of 13.94% was observed during this period, showing an upward trend despite declines in 2011 (–9.57%), 2013 (–2.34%), 2018 (–5.53%), 2020 (–12.56%), and 2021 (–10.31%). Likewise, foreign investments of pension funds grew by 60.69%, consolidating an upward trend, although with a significant decline of 28.17% in 2021. Finally, it was found that the nominal return of pension funds showed notable variations throughout the period; in 2010, a return of 20.29% was recorded, while in 2011 an average loss of –7.12% was observed, followed by a recovery with positive returns until 2018, when no significant nominal return was once again recorded (–0.21%).

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CONFLICT OF INTEREST

The authors declare that there is no conflict of interest related to the subject matter of this study.

AUTHOR CONTRIBUTIONS

Conceptualization, Data curation, Formal analysis, Investigation, Methodology, Project administration, Resources, Writing – original draft, Writing – review and editing: Ushiñahua-Ushiñahua, M., Alarcón-Jiménez, K. M., Pinchi-Vásquez, A., Rojas-Vela, J. & Solano-Reátegui, R.

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