Despite being of paramount importance to fund managers, management fees could diminish net returns (gross returns net of management and other fees) received by fund members or investors. Finding out the fair and reasonable level of management fees is especially important in the context of pension fund management, as it has not only a mere financial impact but also a social consequence.

In this paper, several pension funds are analyzed to find the factors affecting the level of management fees, such as the portfolio management type, the asset allocation, the age of funds, etc. Besides, other types of fee structures (such as performance fees with a hybrid structure) are applied to Armenian mandatory pension funds to figure out the total level of fees relative to the current NAV-based fees. Finally, the active returns of the pension funds are estimated by constructing benchmarks and comparing the actual returns with the returns of benchmarks to check the feasibility of performance fees.

As the results show, including performance fees into the current fee structure may not only make compensation to managers more reasonable but also significantly reduce expenses for future retirees.

Keywords: pension fund, management fee, performance fee, active return, passive management, Jensen’s alpha

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**Introduction.** All types of portfolios, including investment funds, are managed by professional entities requiring a certain fee for the services provided. This fee (also known as a management fee) compensates the investment fund manager for the costs incurred for the management of the fund, as well as ensures some net profit. In light of the complex and sometimes incomprehensible nature of investment management services, management fees are defined in a way that seems normal at first glance but in fact, they are high and not reasonable for the investment service. As a result, net returns become lower than they should have been. Although financial regulators around the world try somehow to limit maximum costs that can be incurred by investors, the problem of high and unreasonable fees continues to bother investors.

A management fee may manifest itself in different forms. The conventional way is to define a fixed percentage of net asset value (NAV-based fee), which must be paid at every period\(^1\). However, the main drawback of making management fees dependent on only net asset value is that managers may not pay necessary attention to the performance and instead concentrate on fund size. That is why performance fees have been designed to supplement fixed management fees as a way to inspire fund managers to ensure high returns for fund members. Performance fees are paid when the actual return is higher than the predefined return, also known as the hurdle rate. The difference between actual return and hurdle rate is divided between fund managers and investors. Some funds may not have defined hurdle rates (implicitly it is 0\%) or it is pegged to some kind of benchmarks such as stock and bond market indices or inflation level\(^2\). Performance fees have their shortcomings but compared to NAV-based fees, they seem to be more reasonable and fairer in light of different returns. However, performance fees are usually put with NAV-based fees and form a hybrid fee structure.

**Literature review.** The literature on investment fund management fees is not much extensive. Much of the work has been done by the international and local regulators of the investment fund sphere. So, ESMA, the regulator of the securities market in the EU, has published “Guidelines on Performance Fees in UCITS and Certain Types of AIFs”\(^3\), that exhaustively defines special compliance and reporting obligations in respect of management and performance fees, including the disclosure of the structure of fees, the calculation methodology of performance fees, as well as the benchmarks that would be used to calculate active returns. In addition, ESMA has conducted research on a broad level covering thousands of UCITS and AIFs all around the EU, that focuses on costs of investment funds, including management fees, subscription and redemption fees, their trends, the impact on net returns, etc\(^4\). Some insights from the report have

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been used in this article. W. Tapia and J. Yermo have analyzed the management fees and other expenses of the pension plans across Latin America, the European Union, and Australia\(^5\). The main insightful revelation is the negative relationship between the expenses and the maturity of the pension system. Another research about fees in the Spanish mutual fund industry has been done by A. C. Diaz-Mendoza and M. A. M. Sedano\(^6\). They have discovered that the funds that performed poorly tend to reduce fees to remain competitive. Meanwhile, the funds that have ensured great performance increase their compensation. The International Organization of Securities Commissions (IOSCO) released the final report\(^7\) on fees and expenses of collective investment schemes in 2016. The report addresses the main issues regarding the expenses incurred by fund members. It particularly defines a framework about the expenses that can be included in fees, the disclosure of fees, the calculation of performance fees, etc. This and other reports by other regulatory and supervisory bodies are widely used in the sphere of collective investment schemes.

**Research methodology.** Before buying units of funds prospective investors need to be certain that the management fee, including the performance fee, is reasonably defined and fairly represents the efforts made by the managers, not by other factors. It means that fees need to be commensurate with costs incurred by fund managers and returns. The main task here is to find out which part of returns is generated by the manager’s efforts. Returns in fact may be high because of external forces or factors, for which managers should not be paid\(^8\). For example, when the portfolio is to track a benchmark, managers should be awarded only when they beat the benchmark or other predefined return levels. If the portfolio is strategically allocated to asset classes, which can be represented by respective market indexes, then the excess return can be found by examining tactical asset allocation within each asset class, or across asset classes. Tactical asset allocation means that the predefined weights to strategic asset classes are temporarily changed to capitalize on available opportunities. As a fact, active portfolio management is paid more than passive management. By passive investing, we mean tracking benchmark or index without significant tactical asset allocation. Besides, portfolios that include more equity need higher service prices to manage compared to fixed-income portfolios\(^9\). That is because equity investing is risky and requires more research and effort to get high risk-adjusted returns. To corroborate the abovementioned facts, several pension funds, including Armenian mandatory pension funds, have been analyzed using a variety of tools.

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So, data on pension funds have been analyzed by using simple regression analysis, histogram, and other types of charts. As we have applied performance fee structure to Armenian funds, we need a way to compare them with current NAV-based fees. To this end, total fees have been calculated based on the guidelines of ESMA\(^{10}\) and SEC\(^{11}\) to make the performance fees comparable to the NAV-based fees using the following formula:

\[
T_{ft} = \frac{NAV_t \cdot F_t + [(NAV_{t-1} \cdot (1 + r_t) - NAV_{t-1}) - NAV_t \cdot F_t] \cdot P_{ft}}{NAV_t},
\]

where \(T_{ft}\) is the total fee for a hybrid structure that includes both NAV-based and performance fees; \(NAV\) is the total net asset value of the fund; \(F_t\) and \(P_{ft}\) are the NAV-based fee and performance fee, respectively; \(r\) is the return of the fund for a time period. Note, that the second part (square brackets) in the numerator is to adjust the return, on which performance fee should be calculated, for already paid NAV-based fees to prevent double counting of fees.

To realize how reasonable the level of fees of Armenian funds is, the active returns of funds have been estimated using the most widely used formulas, \(M^2\) alpha and Jensen’s alpha\(^{12}\). Both are based on the risk and return parameters of the portfolio and the respective benchmark.

\[
M^2\alpha_{i} = \frac{\sigma_{b}}{\sigma_{i}} \cdot (R_{i} - R_{f}) + R_{f} - R_{b},
\]

\[
Jensen's\_\alpha_{i} = R_{i} - \left[ R_{f} + \beta_{i} \cdot (R_{b} - R_{f}) \right],
\]

where \(R_{i}, R_{p},\) and \(R_{f}\) are returns (nominal or real) on an asset or a portfolio, the benchmark and the risk-free asset, respectively; \(\sigma_{i}\) and \(\sigma_{b}\) are standard deviations of the returns on an asset or a portfolio and the benchmark, respectively; \(\beta_{i}\) is the beta (sensitivity) coefficient of an asset or a portfolio. The main difference between these measures of risk-adjusted return is that \(M^2\) alpha is mainly used for portfolios that are not perfectly diversified, meanwhile, Jensen’s alpha is used for fully diversified portfolios.

**Findings and analyses.** After analyzing 135 pensions funds (mandatory and voluntary funds from the USA, the EU, the UK, Australia, Hong Kong, etc.) worldwide it is confirmed that actively managed funds and funds with higher equity allocation have higher management fees than the passively managed funds and funds with lower equity allocation, respectively.

**Means and standard deviations of the management fees of the pension funds in terms of the strategy and the asset allocation**

<table>
<thead>
<tr>
<th></th>
<th>Active</th>
<th>Passive</th>
<th>equity ≥50%</th>
<th>equity &lt;50%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean</td>
<td>0.75%</td>
<td>0.45%</td>
<td>0.75%</td>
<td>0.64%</td>
</tr>
<tr>
<td>STD</td>
<td>0.42%</td>
<td>0.32%</td>
<td>0.46%</td>
<td>0.36%</td>
</tr>
</tbody>
</table>


As we can see in Table 1, the fees of actively managed funds and funds with more than half invested in equity are higher on average by 30 and 11 basis points than the fees of passively managed and funds with less than half invested in equity, respectively. Besides, actively managed funds and funds with more than half invested in equity show more diverse levels of fees measured by the higher standard deviation of fees. However, by glancing at the histogram of fees of the actively managed funds, it is apparent that most of the funds have lower fees than the average. In other words, the distribution is skewed to the right.

![Histogram of the management fees](image)

To find out what kind of impact an equity allocation has on fees, we need to look at figure 2. As we can see the relationship between the fees and the weights in equity is not as clear as it is apparent from table 1. However, some kind of small positive relationships can be seen, which somehow confirms the fact of high expenses and much effort associated with equity investments. The next decisive factor which may affect fees turns out to be the age of a pension fund (years since the inception of a fund). The way this factor affects fees is debatable from a theoretical point of view and the respective explanations may be contradictory. So, according to one widely believed theory, newly established funds should have higher fees, as fixed costs are high to run the management of the fund, and the experience of managers is at the seed level. As time passes the fund takes advantage of the positive effect of scale since the fund assets increase in volume, and it becomes easier to negotiate the prices of services with brokers and dealers. Besides, the experience of fund managers improves which reduces the level of costs within the entity and hence fees for managing the fund\textsuperscript{14}. The other theory insists on the opposite: the longer it passed since inception the bigger becomes the fund, and hence managing it will require more effort than before\textsuperscript{15}. Two theories have reasonable rationales to advocate, but as it has turned out from the analyses, the second theory outweighs the first. That is the

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funds that have just been established have lower fees compared with the funds established a long time ago (figure 2).

![Fees and age](image)

![Fees and equity](image)

Figure 2. **The effects of age and equity weight on the fees**

Next, we try to figure out what level of fees may be reasonable for Armenian pension funds. To this end, we construct a benchmark for the pension funds based on the available indexes and investment limits defined by the RA Law “On Funded Pensions” and compare the funds’ historical returns to the returns of the benchmark portfolio. After comparison, it can be revealed whether managers have beaten the benchmark or not. In other words, whether managers have succeeded to generate alpha that can be compared to the fees paid to them. In addition, the current NAV-based management fees are compared with other possible fee structures, such as performance fees combined with NAV-based fees.

Let us find out the range of possible levels of fees for Armenian markets based on the analysis of 135 funds. Although the regression lines based on data points do not fit perfectly, they can give some shallow approximations for appropriate levels of fees in Armenia. Based on the regression lines in figure 2, the pension funds should have fees equal to 0.6% on average if 8 years of life are taken into account. And if the equity allocation weights are put into the regression equation, we get 0.62% for the fixed income fund, 0.70% for the conservative fund, and 0.71% for the balanced fund, which are a bit lower than the actual fees of 1%, 1.1%, and 1.3% respectively. And finally, Armenian pension funds are not index-tracking funds, so their fees should be around 0.75% on average. Putting all together we can assume that the fees of management of Armenian funds should be in the range of 0.6% and 0.75%.

Next, we estimate the total fees if performance fees were used with fixed NAV-based fees. Note, that currently, the management fees of Armenian mandatory pension funds are different depending on the equity weight in the portfolio. As mentioned in the article, higher equity allocation begets higher management fees. So fees are 1%, 1.1%, and 1.3% for fixed income, conservative,  

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and balanced funds, respectively. One of the widely accepted ways of transforming NAV-based fees to hybrid forms is to take half of the current NAV-based fees and add a 20% performance fee. That is what we have applied to the current fees of Armenian pension funds. Besides, we consider two additional cases of the application of performance fees: performance fee is awarded only if some kind of benchmark is beaten by fund managers. In this case, CPI and a 2% return have been considered. To apply this structure to the actual data, quarterly returns of the funds (Q1_2014-Q3_2021) have been used as a base to check performance and compare with the benchmarks. After that performance fees and total fees have been calculated and compared with the current fees. Average total fees ($T_{ft}$) are presented in Table 2.

<table>
<thead>
<tr>
<th>The NAV-based and the hybrid form of fees</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>FIXED INCOME</strong></td>
</tr>
<tr>
<td><strong>Fund 1</strong></td>
</tr>
<tr>
<td><strong>Current fees</strong></td>
</tr>
<tr>
<td><strong>performance fee 20% +0.5% (0.55%, 0.65%) NAV</strong></td>
</tr>
<tr>
<td><strong>performance fee 20% +0.5% (0.55%, 0.65%) NAV (if r&gt;CPI)</strong></td>
</tr>
<tr>
<td><strong>performance fee 20% +0.5% (0.55%, 0.65%) NAV (if r&gt;2%)</strong></td>
</tr>
</tbody>
</table>

As we can see the average total fees computed with hybrid methods are considerably lower than the current NAV-based fees. Another merit of hybrid methods is that it takes into account the performance of the fund and hence it makes compensation to managers higher when managers beat the benchmark, in this particular case, inflation rate and 2% fixed target return. Note, that the total rates of fees are higher than the NAV-based fees (0.5%, 0.55%, 0.65%), which means that the funds have exceeded the benchmarks on average. To see this in a more detailed way let’s take a look at the Box and Whisker, and the line chart for one of the funds of a conservative type (figure 3). Analyzing all 30 quarters from 2014 to 2021, it is apparent that there are only a few quarters when the fund’s fee is higher than the current 1.1%, and it is because the actual returns on that quarters exceed the benchmarks significantly, and hence the performance fees are higher. On the other hand at some quarters returns have been negative and the hybrid mechanism with no benchmarks (the first case) “punishes” fund managers paying even lower than NAV-based 0.55% fee due to the negative returns. The other two cases pay a minimum of 0.55% when the benchmarks have not been beaten. As the Box and Whiskers chart shows almost 75% percent of quarters (for the CPI benchmark case even higher percentage) have generated fees lower than the current 1.1%. Maximum fees have been at the level of 1.47% thanks to the high positive returns. For the benchmarked cases fees are not significantly lower than 0.6%. On the other hand, the first hybrid case has generated fees as low as 0.27% at bearish market times.
Next, to find the active returns of the funds to compare with the fees, a simple benchmark has been created that takes into account both the constraints set by the RA Law “On Funded Pensions” and available indices representing broad asset classes. For the equity asset class S&P500, US Small Cap 2000, CAC 40, DAX, FTSE 100, and Nikkei 225 have been used. To represent bond asset class as broad as possible, we have used iShares J.P. Morgan USD Emerging Markets Bond ETF, iShares Core U.S. Aggregate Bond ETF (AGG), iShares J.P. Morgan EM Local Currency Bond ETF (LEMB), Armenian government bond indices (G05, G5I), and an index constructed manually to represent Armenian corporate bond market based on the government bond indexes. For deposits, the average deposit rates have been used as an input to the benchmark construction. Respective weights for all asset classes are represented in figure 4.18

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18 There are infinite number ways to construct a benchmark. Here, the simplest form (equal weights within each asset class) has been chosen just to somehow represents all asset classes available for the managers in the scope of limits set by the Law.
Then, for each quarter the actual returns of the funds have been compared to the returns of the benchmarks constructed for each type of funds. The average results of the active returns computed based on the formulas of risk-adjusted returns (as shown in the research methodology section) are shown in Table 3.

As we can see $M^2$ alpha based on the nominal returns is positive only for Fund 1 of a fixed income type. So, only this fund should have positive performance fees. On the other hand, Jensen's alpha is positive mainly for Fund 2 of all types and in a significant amount, which should add up to the NAV-based fees. Thus, the Fund 2 manager can be compensated more than the manager of Fund 1. However, if real returns are taken into account $M^2$ alpha and Jensen's alpha are positive only for Fund 1 of a fixed income type. Hence, the management of the other funds should not be compensated for returns, as all returns are thanks to the market, in this case, the constructed benchmark. There is an orthodox understanding that fees should not be more than active risk-adjusted returns. For the positive active returns, the maximum fees are four times the active returns, as the analyses are based on quarterly data. That is for Fund 1 of a fixed income type fees should not exceed 1.6% (0.4%*4) or 0.8% (0.2%*4), if Jensen's

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alpha is applied, and 2.4% or 0.8% if $M^2$ alpha is used. For Fund 2 of a fixed income type, fees should not be more than 5.6%, which is quite high. For Fund 2 of conservative and balanced types fees are limited from above by 4% based on Jensen’s alpha. For other funds and metrics, which generated negative returns, fees should not be based on performance, rather they may include some symbolic NAV-based fees to compensate the managers for conventional expenses. Drawing on Jensen’s alpha is more reasonable, as it is for portfolios that are well diversified as Armenian pension funds in our case. Note, that maximum fees differ depending on whether nominal or real returns are taken into account. As the managers are also responsible for inflation risk, fees based on the real returns are more reasonable.

Conclusions. In this paper management fees of pension funds have been analyzed in terms of their reasonability, fairness, and relationship with factors that could have a significant and decisive impact on them. Analyzing several pension funds from all around the world it has been revealed that the equity weight in allocation structure, the fund management type, and the age of fund can define the level of fees: the higher the weight of equity in portfolio, the higher the management fee, and the longer it passed since inception, the higher would be the expenses, and hence, the management fee. In addition, active management requires higher fees as it is theoretically rationalized. Besides, new fee structures which include performance fees, have been applied to Armenian mandatory pension funds, the results of which have shown that fees could be effectively reduced and transformed to more reasonable levels. In addition, active returns have been estimated for those funds by creating respective benchmarks and doing comparisons of the returns, which as we saw are not as high as it might be expected. However, performance fees have been calculated for the funds that have generated positive risk-adjusted returns.

References

Разумный уровень платы за управление инвестиционным фондом.— Несмотря на первостепенное значение платы управления для управляющих фондами, она может уменьшить чистую доходность (валовую доходность за вычетом платы за управление и других комиссий), получаемую участниками фонда или инвесторами. Выяснение справедливого и разумного уровня платы за управление особенно важно в контексте управления пенсионным фондом, поскольку оно имеет не только чисто финансовые, но и социальные последствия.

В этой статье анализируются несколько пенсионных фондов, чтобы найти факторы, влияющие на уровень платы за управление, такие как тип управления портфелем, распределение активов, возраст фондов и т. д. Кроме того, к обязательным пенсионным фондам Армении применяются другие виды структур платы (например, плата за результат с гибридной структурой) для определения общего уровня плат по сравнению с текущими платами на основе NAV. Наконец, активные доходности пенсионных фондов оцениваются путем построения бенчмарков и сравнения фактических доходностей с доходностями бенчмарков для проверки целесообразности плат за результат.

Как показывают результаты, включение плат за результат в текущую структуру платы может не только сделать компенсацию менеджеров более разумной, но и значительно сократить расходы будущих пенсионеров.

Ключевые слова: пенсионный фонд, оплата за управление, оплата за результат, активная доходность, пассивное управление, альфа Дженсена

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