Shifting Investment Portfolio to a New Approach of the Passive Investors

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Abstract - In an era of growing financial awareness, particularly among younger generations, passive investing has gained significant popularity. This paper examines the creation of investment portfolios tailored to different risk appetites—conservative, moderate, and aggressive. The study analyzes the risk-return profile over ten years using a sample that includes various asset classes such as gold, real estate, equity exchange-traded funds (ETFs), bond ETFs, and Bitcoin (BTC). The findings highlight the superior returns of cryptocurrency and equity-based aggressive portfolios, contrasting these with the stability and lower yields of more conservative investments. The paper identifies a statistically significant correlation between asset classes and proposes strategies for constructing portfolios that balance risk and reward. Additionally, the research explores generational shifts in investment behaviors, emphasizing Generation Z's growing preference for high-risk assets like cryptocurrencies. This paper contributes to the understanding of passive portfolio management and offers insights for investors seeking to optimize returns based on their risk tolerance.

Key-Words: - Investment Decision, Portfolio Yield, Conservative Portfolio, Moderate Portfolio, AggressivePortfolio, Generational Investment Trends, Investments Class, Passive Investment.

1 Introduction

In the age of digitization and abundant information, all generations, especially younger generations, millennials, and Gen Z, are increasingly turning to investing for a better and safer future. Cash is the most well-known investment method as a risk-free but zero-return asset [1], which does not satisfy investors.

There are two types of investors, active and passive, based on how they manage portfolios.

Active investors choose individual investments to try to win the market, while passive investors are focused on long-term returns and spread the risk over a broader number of shares, so their portfolios are more diversified, [2].

In this way, even those who do not want to invest actively become investors, but by creating a passive portfolio over a more extended period, they can secure enough funds for a better future or some of their wishes. Every investment carries with it a particular risk. At their own discretion, each investor determines the yield and risk one is willing to bear. The investor builds their own active or passive portfolios accordingly. A portfolio consisting of several asset classes enables risk diversification. A well-diversified portfolio may consist of different assets like individual shares, governments or corporate bonds, cash investments, Mutual Funds, Index Funds, Exchange Traded Funds (ETFs), derivatives (futures, options, and swaps), gold or other precious metals, real estate, Cryptocurrencies, and all other investment opportunities.

Each form of investment [3] has its own cycle, and the only safe and correct way of investing is in accordance with these cycles. Investors create an aggressive, moderate, or conservative portfolio according to the risk they can bear.

Gold can be used as a haven investment, [4]. Exchange-traded funds (ETFs) are passive investment vehicles, [5]. Cryptocurrencies, especially Bitcoin (BTC), represent the speculative

class. They carry high yields but also the highest risks. Cryptocurrencies should be seen as speculative assets that should be regulated (globally) to prevent possible (future) financial crises [6] and [7].

The paper aims to investigate the riskiness and returns of different asset classes and create an aggressive, moderate, or conservative portfolio [8] with all the fervor of a new type of investment.

The paper consists of five parts, including an introduction and a conclusion. The second part contains a literature review. The methodology and sample are explained in the third part. The fourth part provides an analysis of the statistical processing results and a discussion.

2   Literature Review

2.1 Investing General
There was an increase in money flows from active to passive investments from 2004 to 2012, [2]. Also, passive investors are more diversified than active investors in the US market across various industries, [2]. Some researchers [9] argue that a passive investment strategy is a wiser decision for investors and emphasizes incensement in passive funds' investments from 16.4 percent to 26 percent. Over 90 percent of investors prefer/use Exchange-Traded Funds (ETF), and half expect intensification in the following year, [10]. The succeeding investment choices are cash and cash equivalents, mutual funds, and individual stocks and bonds (Figure 1).
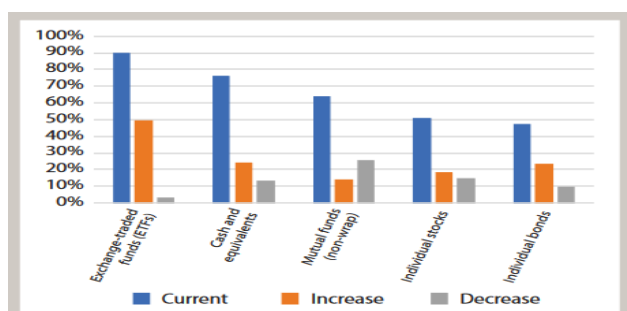

Fig. 1: Top 5 Investments in 2023, [10]

Furthermore, passive management is gaining a market share of up to 38 percent in 2022 (index funds adding about $747 billion). Investment professionals (64 percent) combine both active and passive investing strategies, while 23 percent favoured the passive approach better, and 14 percent preferred the active approach only, [10] (Figure 2).
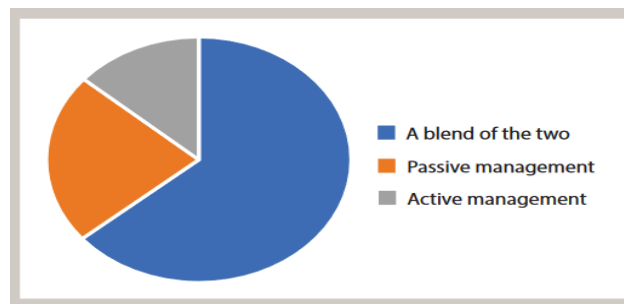

Fig. 2: A mix of Passive, Active Management, [10]

A shift from active to passive investing impacts financial stability risks, such as the growth of ETFs (mostly passive vehicles). Also, passive investing can reduce risks related to liquidity transformation, and passive mutual funds are less sensitive to changes in fund performance than active funds in terms of their inflows and outflows, [11]. Several researchers have witnessed a shift from active to passive investing in other countries [12] and [13]. For example, the shift is most apparent in the US among mutual and exchange-traded funds, which are passive investment vehicles, [5]. Passive funds account for 48 percent of equity funds and 30 percent of bond funds, [1]. Moreover, passive investments hold an increasing part of total financial assets; passive MFs and ETFs accounted for 14 percent of US stocks in March 2020 [1], while in 2016, passive investors owed 18 percent of all global equity outside of MF and ETF sectors, [14].

Passive exchange-traded funds (ETFs) are exciting to investors, especially as short-term trade vehicles, because they are highly liquid, easy to sell, and investors have the freedom to play with their style (value or growth, IT, or metal industry, real estate, etc.), [15], [16] and [17]. ETFs are more attractive because they are generally less expensive, more tax efficient, and do not have redemption fees, [18]. Researcher [18] identified that demand for ETFs is inversely related to their future returns over a 6 to 12-month period. In addition, some other authors reveal the use of ETFs to extend to other strategies, such as obtaining exposure to specific factors [16] or hedging industry, [19].

Markets [20] with a more significant proportion of active investments led to a lower utility of individual active investors, while high levels of passive investment led to market failure. Authors [11] and [13] find that a certain proportion of active investors is essential for a financial market to function proficiently.

2.2 Assets' Investing Trends
Passive risk-matching portfolios produce a higher return (two-year period) than active portfolios, [9].

Cryptocurrency and gold have positive average daily returns, while African stocks have negative daily returns, [7]. Regarding volatility, Ripple (XRP) stock is more volatile than other cryptocurrencies or gold. Cryptocurrencies differ from gold regarding uncertainty; gold is considered a haven, while cryptocurrency is not. Thus, cryptocurrencies should be seen as speculative assets that should be regulated (globally) in order to prevent possible (future) financial crises. Also, cryptocurrency has differences regarding liquidity, volatility, and exchange rate, [6].

Researchers [4] find that an optimally weighted portfolio consists of 63 percent investment in gold as an asset, 20 percent in STOXX 600, and 16 percent in BTC. Some researchers [21] identified that 1999-2000 and 2008-2009 were the periods of most extreme volatility episodes related to the stock market crisis, but gold is a solid hedge for oil prices and can be considered safe even during the Covid-19 crisis, emphasizing gold's role as stabilizing instrument for markets.

A positive relationship exists between the coronavirus index on Bitcoin and gold, [22]. Furthermore, a higher level of panic-inducing news leads to increased returns for Bitcoin and gold, suggesting that both can act as safe havens and hedges against media-induced panic. Combining Bitcoin or Ethereum with gold offers diversification opportunities for US and Chinese investors during crises, [23]. Also, before the Pandemic, the interdependence relationship between cryptocurrency and stock markets was weak. In contrast, during the COVID, interdependence intensified as gold, Bitcoin, and Ether became receivers of shocks. In contrast, Tether and TrueUSD function as net transmitters of market shocks to both the US and Chinese markets, [23].

2.3 Z Generation

Gen Z was born between 1997 and 2012. They are a troop defined by their love of trends and social media, but they are also the most tech-savvy generation. A survey from 2023 [24] indicated that 73 percent of Gen Z own stocks. The survey also revealed that 15 percent of Gen Z investors use ETFs, 30 percent invest in bonds, and 22 percent purchase index funds. Reflecting their affinity for technology, 47 percent of Gen Z reported owning cryptocurrency stocks. According to Survey [24], this cohort started saving and investing at an average age of 19, 16 years earlier than the average Baby Boomer. Fifty-six percent of U.S. Gen Zs aged between 18 to 25 own at least some investments; currently, 19 percent of Gen Z are

invested in cryptocurrency and/or non-fungible tokens (NFTs), [25]. Additionally, their investment preferences are as follows: 55 percent invest in cryptocurrencies, 41 percent in individual stocks, 35 percent in mutual funds, 25 percent in NFTs, and 23 percent in ETFs.

From all the above, the first hypotheses emerged:
H1: A statistically significant correlation exists between Yields from investments in different asset classes (gold, real estate, stock ETFs, bond ETFs, or Bitcoin).

2.4 Investment Portfolio Strategy

Given the market's significant volatility, investors must evaluate several crucial factors when selecting an investment strategy. These factors include the total capital available for investment, the investment's time horizon, the level of risk they are prepared to accept, and their specific investment objectives, [3]. Investors can create an active or passive portfolio. Depending on their financial goals, timeline, and risk tolerance, they can create a well-diversified portfolio and invest in different assets like individual shares, governments or corporate bonds, cash investments, Mutual Funds, Index Funds, Exchange Traded Funds (ETFs), derivatives (futures, options, and swaps), gold or other precious metals, real estate, Cryptocurrencies, and all other investment opportunities.

In a modern portfolio theory, Nobel Prize winner Markowitz demonstrates that higher returns are generally associated with higher risk, therefore, it is essential for every investor to carefully evaluate the level of risk they are willing to undertake, [26]. The best long-term investment does not exist because every investment has roughly the same risk-adjusted expected value. In a shorter period, their results vary widely with possible big ups and downs. A successful investor [3] must know how to recognize a specific cycle and know how to change his strategy with current market conditions.

Investors can manage their portfolios actively or passively.

Active portfolio management is based on the conclusion that the market is not perfect, which means that it is possible to beat it. It tries to choose winning investments, that is, those that will earn more than the average ones on the market.

The term buy simplifies passive portfolio management and holds, [27]. Investors often build a passive portfolio to imitate the movement of the overall market. Such portfolio management enables the investor to make long-term earnings that correspond to the long-term average growth of the

market. Therefore, it is typical for the portfolio to consist of index funds or ETFs (that track the S&P 500 indexes), representing the largest companies in the American market or ETFs that track the NASDAQ 100 technology index (companies in America or all World) or Emerging markets ETFs. Passive portfolio management assumes that the market cannot be beaten. A significant advantage of ETFs [28] is low costs, easy trading, and tax burden when you can avoid paying dividend tax by investing in accumulating ETFs. The risk of such a way of managing a portfolio is reflected above all when building a portfolio or exiting an investment position. There are several types of investors [8] regarding the risk they can accept, such as aggressive, conservative, or defensive.

The aggressive type of investor focuses on achieving a higher yield while taking on a higher risk. An aggressive type of investor can create a 100 percent portfolio in stocks or create a portfolio of high-risk investments. Paraphrasing the conditions, [8] aggressive investment is possible only if the following conditions are met: enough money is set aside in the next year to satisfy all needs; the investment term is a minimum of 20 years. An investor can watch the daily volatility of the market, not sell shares or other investments when the market is down, and have a formal plan implemented to control their own behavior.

A conservative type of investor does not want to take a considerable risk, and the main goal is to safeguard the capital and the safety of the invested funds.

A defensive investor [8] should not hold less than 25 percent or more than 75 percent of funds in common stocks; the reverse is true for bonds. The standard split should be equal or 50:50. A defensive investor usually does not have the time or knowledge to focus on portfolio management. Investors need to determine the percentage of their assets they feel comfortable with [28] investing in the stock market, and maintaining that investment over time is advised. This percentage typically ranges from 40 percent to 80 percent for many individuals.

When creating a portfolio, an investor can use a top-down or bottom-up approach, [29].

The percentage of asset classes in the portfolio is first determined using the top-down approach. Only then is the selection of individual securities within each class (e.g., the investment portfolio consists of 50 percent stocks, 30 percent bonds, 10 percent real estate, and 10 percent deposits). It is desirable to determine the direction in the creation of the portfolio by defining the sector, geographical location, stock index, currency, or any other determinant that will help in the creation of the portfolio. The bottom-up approach is based on selecting individual securities and thus forming the portfolio. Diversification will arise simply because the returns on such chosen investments will be mismatched.

When building portfolios, passive investors mostly use Cost Average techniques called Dollar-Cost Averaging (DCA) [30], whereby they build their investment portfolio slowly over time. It is optimal for investing in the long run because the investment is usually equal in monetary amounts every month. It helps to avoid the risk of investing all the funds in the capital market at the wrong time. As passive investors have a long-term investment horizon, they should not be worried about the market's daily volatility. DCA gives the best results through index funds (inefficient capital markets, choosing individual securities is not worth it) because, in this way, it protects the investor from short-term market declines and provides him with a positive return in the long term.

ETFs are an optimal investment tool for passive investors because they allow them to maximize portfolio diversification by tracking indices.

Investors can create portfolios according to their risk and return preferences [28] and [29] such as aggressive, passive, conservative, or moderate portfolios.

The aggressive portfolio can consist of 100 percent equity ETFs and is suitable for those with a minimum 10–15-year investment horizon. It is realistic to expect a volatility of 30-40 percent.

A passive portfolio is suitable for those with a minimum investment horizon of 5 years who are not prone to greater risk as in an aggressive portfolio but still want to achieve a decent return. In the worst-case scenario, it is realistic to expect up to 15 percent volatility, as in 2008 and 2022.

A moderately passive portfolio is suitable for those with a minimum investment horizon of 5-10 years and are ready to accept higher volatility than a passive portfolio but still less than an aggressive one. Diversification allows investors to reduce risk and potential losses by spreading their capital over several different investment options. A well-diversified portfolio, achieved by investing in different assets such as gold, ETFs, real estate, or cryptocurrencies, provides returns and investment stability. Investors can stay calm and focused on long-term goals with diversification. Investing in ETFs that track stock indexes is one of the most widespread ways of creating a passive portfolio.

ETFs can consist of stocks and bonds. ETF with the largest market capitalization.
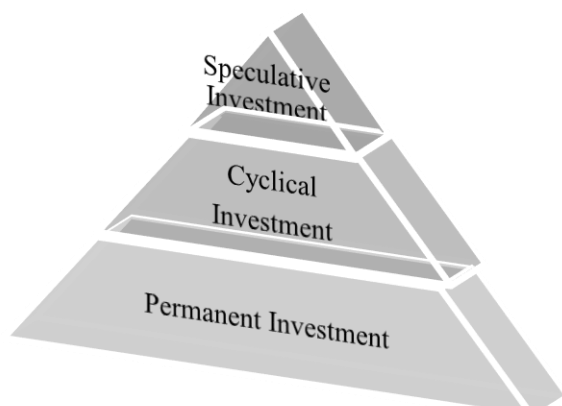

Fig. 3: Simplified Investors' Strategy, [3]

The meaning of each of the three parts of the pyramid above is self-explanatory; each part contains a different type and amount of investment. While everyone, in their own way, determines specific investments and their combinations, the philosophy of these three categories remains permanent. When creating their portfolio, investors should use the so-called Pyramid plan [3], consisting of permanent, cyclical, and speculative investments.

Core investments [3] are those that investors consider to be the safest and must be considered "money that co-investors must not allow you to lose." Gold or some of the very reliable blue-chip stocks, carefully chosen for long-term security and earnings (Royal Dutch Shell electricity, gas, or water), are examples of core investments.

The middle of the pyramid (Figure 3) consists of cyclical investments that are also "money you cannot afford to lose". It should consist of safe, conservative, and diversified investments. It differs from essential investments in that it represents time-sensitive instruments that will change from time to time (term deposits in different currencies), and bond speculative investments at the top of the pyramid are those that, if successful, bring above-average profits. At the same time, they carry an above-budget risk. The speculative part is about 5 percent of the portfolio.

The investment strategy of individual investors is related to the life cycle, [31]. Investors of different ages use different financial instruments to achieve their goals. Recommended allocation of assets by the life cycle is following [31] individuals in their mid-twenties should structure their investment portfolio with 5% allocated to cash or liquid securities, 20% in bonds, 65% in stocks, and

10% in real estate. Additionally, for those in their late thirties to early forties, the recommended allocation is 5% in cash-equivalent assets or liquid investments, 25% in bonds, 60% in equities, and 10% in real estate funds. Meanwhile, investors aged 60 and above are advised to allocate 10% to liquid assets, 40% to bonds, 35% to stocks, and 15% to real estate investments.

Based on the above, **the second hypothesis**, H2, was created: There is a statistically significant difference in the Portfolio Yield depending on which type of investment portfolio (aggressive, moderate, or conservative) is calculated.

3 Methodology

Based on the research mentioned above, the property classes in which investors invest the most have been determined in the theoretical part. Therefore, for the purposes of this research, the following asset classes were selected: gold, real estate investments, a stock ETF that tracks the S&P500 (symbol CSPX), a bond ETF (symbol SXRL), and the newest and riskiest cryptocurrency asset class and its most famous representative, Bitcoin (symbol BTC).

Gold protects against inflation and currency fluctuations. Investors can achieve stable long-term returns while maintaining liquidity that enables them to react quickly to market changes. Authors in [3] recommend keeping 8 to 15 percent of assets in gold (in gold mine shares, gold bullion, and gold coins).

Furthermore, real estate investments consider the average price of an apartment in Zagreb (Croatia) and the average annual rental yield of 6 percent. Real estate is the most popular investment in Croatia, [32]. Croatia, the newest member of the EU, has become a popular destination for real estate purchases from across the Union.

Data from the source base [33] represents stock ETFs info. The iShares Core S&P 500 UCITS ETF (Acc) seeks to track the S&P 500® index, the 500 most extensive US stocks. This ETF is the largest fund by value [33] of 92,517 m $ or 84,152 EUR. The ETF mirrors the performance of the underlying index through full replication, meaning it buys all the constituents of the index. The dividends generated by the ETF are accumulated and reinvested within the fund. The one-year volatility stands at 13.06 percent.

In addition, the iShares [34] $ Treasury Bond 3-7yr UCITS ETF USD (Acc) (SXRL) was chosen as the bond ETF representative due to its substantial size, managing assets worth 4,926 million Euros,

[34]. The iShares USD Treasury Bond 3-7yr UCITS ETF (Acc) aims to replicate the ICE US Treasury 3-7 Year index, which includes US Dollar-denominated government bonds issued by the US Treasury. The interest income (coupons) generated by the ETF is accumulated and reinvested within the fund. Volatility in one year (in EUR) is 7.42 percent.

Cryptocurrencies have become a modern form of investment. Although they are volatile and carry a high level of risk, cryptocurrencies also offer the possibility of significant returns. By following trends and doing fundamental research, investors can add a layer of diversification to their investment portfolio by including digital currencies such as Bitcoin, Ethereum, and others. BTC has the largest market cap of € 1,080,145,622,674 or $1,197,947,448,912, [35]. Bitcoin (BTC) is the first and most famous cryptocurrency, often referred to as "digital gold", or a speculative asset with safe-haven characteristics and potential for facilitating capital movement, [36].

The yield of various investment classes [30] depends on a combination of macroeconomic conditions—such as GDP, inflation, interest rates, currency exchange rate movements, and political stability—sector trends, changes in legislation and taxation, business results, and various market conditions. Some factors have long-term effects (e.g., financial results and economic growth), while others, such as sentiment or geopolitical events, have short-term effects. Internal factors influencing price include Bitcoin supply and demand [36] while external factors range from the attractiveness of the crypto market (appeal, trends, and speculation) to macro-financial aspects (exchange rate, interest rate, and gold price).

For each portfolio, the return on investment was calculated according to the formula:

YIELD % = [(Current income +(The sale market price of the investment– The initial market price of the investment)) / The initial market price of the investment] x 100

The total amount is in USD, and each portfolio has invested 1 million USD for a period of 10 years. Various statistical methods suitable for the topic are employed in the works, whether comparing the returns of various investments or creating investment portfolios. Common methods used to examine the relationship between investments include regression analyses [1], [15], [17] and [19] and correlation analysis [3] and [13]. The statistical analysis was conducted using IBM SPSS Statistics

30. This paper utilizes descriptive analysis, correlation analysis, and Welch's ANOVA. Due to the characteristics of the investment sample and the small dataset, tests such as the t-test or Chi-square test are not applicable. Instead, ANOVA or Welch's ANOVA is recommended, [37].

4 Results and Discussion

In this part, the statistical processing of the data for hypothesis 1 and hypothesis 2 is presented.

4.1 Testing the Hypothesis H1

The following asset classes were researched to test hypothesis 1: gold, real estate investments, CSPX, SXRL, and BTC.

Average annual values from 2014 to 2023 have been determined for each listed asset class. In determining the yield on individual investment classes, USD 1,000,000 was assumed to be invested in each of the investigated asset classes for ten years in 2014, and at the end of the period, the assets were cashed out. Table 1 presents the descriptive statistics for five principal investment asset classes: Gold, CSPX (stock ETF), BTC (Bitcoin), Real Estate, and SXRL (bond ETF). The table provides insight into the performance and risk levels of each asset class over the observation period. Bitcoin (BTC) has the highest mean yield of 7,333.02%, but it also exhibits the highest standard deviation of 35,927,026.78, indicating extreme volatility and risk. This confirms Bitcoin's potential for exceptional returns, though it comes with significant uncertainty. CSPX (Stock ETF) shows a notable mean yield of 154.90% with a standard deviation of 1,014,383.45, highlighting a moderate risk-return trade-off. It demonstrates strong performance compared to more stable asset classes like bonds or gold. Gold and Real Estate exhibit more stable returns. Gold has a mean yield of 59.90% with a relatively lower standard deviation of 639,123.60, indicating its role as a stable investment. Real Estate also shows respectable returns (99.48%) with a moderate risk level (784,236.78). SXRL (Bond ETF) has the lowest yield (8.28%) and standard deviation (500,662.57), representing the safest and least volatile asset class. Standard deviation is used to measure investment risk, specifically quantifying the volatility of returns for a given investment. A volatile stock has a high standard deviation, while the deviation of a stable blue-chip stock is usually rather low, [30]. BTC carries the greatest risk and the highest yield. On the other hand, bonds and ETF SXRL have the lowest

risk and profit. Investors can use this data to analyze the profit and risk of their preferred investment.

Table 1. Descriptive statistics of the principal investments assets (classes)

	Mean	Std. Deviation	% Yield 1 mil.$
Gold	457,433.21	639,123.60	59.90
CSPX	729,172.69	1,014,383.45	154.90
BTC	21,242,798.59	35,927,026.78	7,333.02
Real Estate	570,533.60	784,236.78	99.48
SXRL	310,623.70	500,662.57	8.28

Source: Authors' calculations

Table 2 shows the correlation of the researched investment classes Gold, Equity ETF CSPX, BTC, Real Estate, and bond ETF SXRL. A statistically significant strong positive correlation with $p < 0.05$ was observed in most funds analyzed. Pearson Correlation shows a strong positive correlation with most of the investigated variables. Gold shows a very strong positive correlation with CSPY (r =.943), Real Estate (r =.984), and SXRL (r= .930). This indicates that the performance of Gold moves closely with CSPX, Real Estate, and Bond ETFs, suggesting that these assets tend to rise and fall together. SPX (stock ETF) has a strong correlation with Real Estate (r = 0.987, p = 0.000), BTC (r = 0.895, p = 0.007), and SXRL (r = 0.756, p = 0.049). The strong correlation with BTC highlights that stock ETFs and Bitcoin may exhibit similar market behavior, which is particularly important for portfolio diversification. Bitcoin (BTC) shows a moderate correlation with Gold (r = 0.695, p = 0.083) not statistically significant. Also, a strong positive correlation between CSPX (r = 0.895, p = 0.007) and Real Estate (r = 0.813, p = 0.026). This indicates that BTC, despite being highly volatile, has some level of alignment with riskier assets like stock ETFs and real estate. Real Estate demonstrates strong positive correlations with Gold (r = 0.984, p = 0.000) and CSPX (r = 0.987, p = 0.000) and moderate correlation with BTC (r = 0.813, p = 0.026) and SXRL (r = 0.850, p = 0.015). SXRL (Bond ETF) shows strong correlations with Gold (r = 0.930, p = 0.002) and Real Estate (r = 0.850, p = 0.015) and a moderate correlation with CSPX (r = 0.756, p = 0.049), but no significant relationship with BTC (r = 0.383, p = 0.396).

In most of the investment assets examined, $p < 0.05$, supporting the first hypothesis: A statistically significant difference in the correlation between the investment yields across different asset classes (gold, real estate, ETFs, bond ETFs, or Bitcoin) **is confirmed.**

The impact of diversification [2] is emphasized, especially when developing an investment strategy. The global personal wealth survey in 97 markets and 9 regions [32] reveals that Croatian citizens primarily save in real estate and cash, with less investment in stocks, investment funds, and bonds.

Table 2. Correlation of investment's assets

	Gold	CSPX	BTC	Real Estate	SXRL
Gold Pearson C.	1	.943**	.695	.984**	.930**
Sig. (2-t)		.001	.083	.000	.002
CSPX Pearson C.	.943**	1	.895**	.987**	.756*
Sig. (2-t)	.001		.007	.000	.049
BTC Pearson C.	.695	.895**	1	.813*	.383
Sig. (2-t)	.083	.007		.026	.396
Real Estate Pearson C.	.984**	.987**	.813*	1	.850*
Sig. (2-t)	.000	.000	.026		.015
SXRL Pearson C.	.930**	.756*	.383	.850*	1
Sig. (2-t)	.002	.049	.396	.015	

Source: Authors' calculations

The value of Croatian households' tangible assets (including real estate, durable consumer goods, physical gold, and other precious metals) is double that of their financial assets. In 2023, the financial wealth of Croatian citizens increased at an annual rate of 7.2 percent, representing 2.1 percent of the financial wealth in the Eastern European region. Over the past 20 years, Croatian citizens' financial wealth (total wealth excluding real estate and debt) has grown at an annual rate of 6 percent. This rate matches the global wealth growth but is slower than Eastern Europe's 10 percent growth rate. Croatian citizens' slower increase in financial wealth may be attributed to the limited presence of assets like bonds, investment funds, and stocks in their portfolios. These types of investments generally offer the potential for higher long-term returns compared to holding cash. Cash and deposits present 48 percent of financial wealth in the 2023 year. In 2023, the state issued government bonds that citizens could purchase for 2 years at an interest rate of 3.65 percent. Investing in gold is considered

by many investors as an ideal mix of safety and profit. The average annual yield of investment in gold was 8.8 percent, according to the average growth of gold prices expressed in euros from 2014-2023 on the capital market. The return on the most popular investment in real estate is 5 to 6 percent on average per year. The net financial assets of households in Croatia [38] increased by 108 percent from the end of the first quarter of 2014 to the end of the first quarter of 2024. Inflation in the same period amounted to 28 percent, the largest part of this growth in the last 3 years. Accordingly, the real asset increase is about 80 percent compared to 10 years ago. Because of all this, there is an increasing demand for new investment methods, especially in the younger generation.

Generation Z [39] will overtake the market dominance of Generation Y by 2034, when there will be about 78 million of them. ESG investing has become a vital investment segment of Gen Y and Z. According to research [24] 73 percent of Gen Z invest in stocks, 15 percent in ETFs, 30 percent in bonds and 22 percent of them buy index funds. 47 per cent of Generation Z have cryptocurrencies [39], i.e., they prefer to trade this type of asset. In a survey [39] of 9,500 Gen Z, the first choice of publicly owned stocks is Starbucks (SBUX), followed by Chipotle Mexican Grill (CMG) and Nike (NKE).

The article [40] discusses stocks favored by Generation Z investors, highlighting their preferences for companies like Tesla, Apple, and Amazon. This reflects Generation Z's inclination towards technology and innovation, aligning with the observation that current trends and peer opinions may influence Generation Z more than Millennials. Additionally, the article notes that Generation Z investors are starting to invest at a younger age compared to previous generations and rely heavily on social media and family for financial advice, while Millennials prefer traditional sources such as financial advisors and investment reports. The research [41] explored how financial literacy, herding behavior, risk aversion, and risk perception influence investment decisions among Generation Z and Millennials. The results showed that higher levels of financial literacy led to better investment decisions among respondents. Herding behavior also positively influenced investment decisions, particularly among students, and respondents generally tended to avoid risk. Additionally, the results indicated that Generation Z and Millennials are cautious and considerate when making investment decisions.

4.2 Testing the Hypothesis H2

Based on the above asset classes and regarding the investment pyramid [3] and the structure of investments according to years of life [31] and the investment habits of Generation Z [39], three portfolios were created: conservative, moderate, and aggressive (Table 3). The total amount of USD 1,000,000.00 is divided according to percentages for individual types of portfolios. The investment was made as a lump sum at the average annual price in 2014, and the entire portfolio was cashed out after 10 years in 2023.

Table 3. Investment Portfolios

Portfolio	Conservative Yield %	Moderate Yield %	Aggressive Yield %
GOLD	10	10	5
Real Estate	20	10	10
SXRL	20	20	10
CSPX	50	55	35
BTC	0	5	40

Source: Authors' calculations

A conservative portfolio includes researched asset classes except for investing in Bitcoin, which is considered the riskiest investment. Five percent of BTC is included in a moderate portfolio, and 40 percent is included in an aggressive portfolio (Table 3). Table 4 (Appendix) shows descriptive statistics of created portfolios. The aggressive portfolio has the highest risk expressed by the standard deviation but the biggest Yield of 3,007.19 percent. The aggressive portfolio delivers the highest yield, but it is associated with the highest risk, as evidenced by the large standard deviation. This indicates that investors opting for aggressive strategies can achieve significantly higher returns, but they must also be prepared to bear substantial volatility. The moderate portfolio offers a balance between risk and return. While the yield is significantly lower than the aggressive portfolio, the standard deviation is also much smaller, making it a safer option for investors with moderate risk tolerance. The conservative portfolio has the lowest risk with the lowest Yield of 116.98 percent. The conservative portfolio produces the lowest returns but with the least risk. This portfolio is suitable for investors who prioritize capital preservation over high yield.

A one-factor analysis of variance ANOVA is used to compare the realized returns in the Moderate, Aggressive, and Conservative portfolios. ANOVA shows whether there are significant

differences between the mean values of the dependent variable, i.e., portfolio yield. To determine whether the basic assumptions for ANOVA calculation were met, Levene's test of Homogeneity of Variance was performed, which is used to test the equality of variances in the results of each of the three groups.

Table 5 presents the results of the Levene Test of Homogeneity of Variances, which assesses whether the variances across the three portfolio types (Aggressive, Moderate, and Conservative) are equal. The Levene Statistic is 29,544, and the p-value (Sig.) is 0.000.

Since the p-value is less than 0.05, the assumption of homogeneity of variances is violated. This result indicates that the variability (standard deviation) of portfolio yields significantly differs between the three portfolio types.

Table 5. Levene Test of Homogeneity of Variances,

Levene Statistic	df1	df2	Sig.
29544	2	14	.000

Source: Authors' own calculations

Since the assumption of homogeneity of variance is violated, the results of the ANOVA shown in Table 6 (Appendix) cannot be interpreted. Instead, the results of Welch's ANOVA (Table 7) are used.

Welch's ANOVA (Table 7) is an alternative to Classic ANOVA and is applicable when the assumption of homogeneity of variances is violated. Welch's ANOVA presents an F-value of 1.820 with degrees of freedom (2, 7.087) and p = 0.230.

Table 7. Welch ANOVA - Robust Tests

	Statistic[a]	df1	df2	Sig.
Welch	1.820	2	7.087	.230

a. Asymptotically F distributed.
Source: Authors' calculations

As p < .005 means there is insufficient evidence of statistical significance differences within groups. Therefore, it is optional to ascertain whether there is a statistically significant difference between individual investment portfolios. Post Hoc Test Games-Howell [37] is adapted to situations with heterogeneous variances and unequal numbers of participants per group, making it more flexible than other tests (e.g., Tukey). Post Hoc Test Games-Howell (Table 8) confirms no statistically significant difference between different types of portfolios.

Table 8 presents the Games-Howell post-hoc test results, which were conducted to compare the mean differences in portfolio yields between the three portfolio types: Aggressive, Moderate, and Conservative. The Games-Howell test is suitable when the assumption of homogeneity of variances is violated (as confirmed by Levene's test in Table 5). In moderate vs. Aggressive Portfolios the mean difference is not statistically significant as the p-value exceeds 0.05. No significant difference is observed between the Moderate and Conservative portfolios. Aggressive vs. Conservative Portfolios, despite the large difference in means, the result is not statistically significant. Regarding Aggressive vs. Moderate Portfolios, while the aggressive portfolio shows a notably higher mean yield compared to the moderate portfolio, the result is not statistically significant (p > 0.05). This means that the observed difference in yields could be due to variability in the data rather than a true underlying difference. Conservative vs. Moderate Portfolios, while the conservative portfolio's mean yield is slightly lower than the moderate portfolio, the difference is also not statistically significant (p > 0.05). The overlap in performance suggests that these two portfolios deliver relatively comparable outcomes in this analysis. With Conservative vs. Aggressive Portfolios, the aggressive portfolio yields significantly higher mean returns compared to the conservative portfolio; however, this difference is not statistically significant (p > 0.05). Despite the large observed mean difference, the variability in the data prevents a definitive conclusion.

Table 8. Post Hoc Test Games-Howell

Multiple Comparisons

DependentVariable: Portfolio Yield

Type of Portfolio	Mean Difference (I-J)	Std. Error	Sig.
Moderate			
Aggressive	-8,429,191.27	6,279,324.25	0.43
Conservative	1,136,835.87	883,468.25	0.45
Aggressive			
Moderate	8,429,191.27	6,279,324.25	0.43
Conservative	9,566,027.14	6,224,733.02	0.35
Conservative			
Moderate	-1,136,835.87	883,468.25	0.45
Aggressive	9,566,027.14	6,224,733.02	0.35

Source: Authors' calculations

Since p > 0.05, **H2**: There is a statistically significant difference in portfolio yields depending on which type of investment portfolio (aggressive,

moderate, or conservative) is calculated and **not accepted**.

The results indicate that while there are observable differences in portfolio yields (aggressive, moderate, and conservative), these differences are not statistically significant. Aggressive portfolios offer higher average yields but are associated with the greatest volatility, as evidenced by higher standard deviations, whereas conservative portfolios provide the lowest returns with the least risk. The growing interest of younger investors in alternative investments, including cryptocurrencies [10], aligns with this research. Investors should include cryptocurrency and gold in their portfolios if they seek safer and more profitable investments [7], as confirmed by this research. Gold functions both as protection and a safe haven during financial crises [3], partially supporting the research findings. Short-term [4] vulnerabilities in financial markets can be mitigated by creating diversified portfolios, as demonstrated in this research. Cryptocurrencies exhibit higher volatility compared to gold [6], and their correlation varies over time, indicating that cryptocurrencies cannot consistently serve as a safe haven like gold. However, this research shows that aggressive portfolios containing cryptocurrencies and equity ETFs deliver better returns over ten years, despite the higher volatility.

Table 9 shows [42] hypothetical yield of different conservative, moderate and aggressive portfolios. Suppose the portfolio consists of only one type of asset, as in the case of conservative bonds, considered risk-free security if state-owned; the minimum yield is 6.3 per cent. The more the portfolio is composed of riskier assets, the higher the return, as shown in the case of an aggressive portfolio where 100 per cent are individual stocks, and the average return is 12.3 per cent.

Table 9. Vanguard hypothetical portfolio types

Portfolio type	Average return (1926-2021)	Single-year best return	Single-year worst return
100% bonds (Conservative)	6.3%	45.5%	-8.1%
50% bonds; 50% stocks (balanced)	9.3%	33.3%	-22.5%
100% stocks (aggressive)	12.3%	54.2%	-43.1%

Source: [42]

Unlike other's [42] portfolios, the researched portfolios are more diversified, incorporating a broader range of asset classes, including gold as a haven, bonds, real estate, riskier stock ETFs, and speculative BTC. Consequently, the risks are much higher than the returns for a ten-year investment. The yield of the aggressive portfolio was 3,007.19 percent, the moderate portfolio 481.43 percent, and the conservative portfolio 116.98 percent. Today, investors seek a diversified portfolio that delivers the desired returns. While no one wants risk, it is unavoidable. The key conclusion is that investors, regardless of their class (conservative, moderate, or aggressive), should take advantage of new asset classes and a long-term investment horizon.

5 Conclusion

This research confirmed that with the emergence of new investment classes, the possibilities of creating portfolios that differ from those ten or more years ago are expanding.

For future investments, investors seeking higher returns but with a higher risk tolerance may consider incorporating Bitcoin or aggressive strategies. However, due to BTC's volatility, such assets should be limited to a smaller percentage within a diversified portfolio. Conservative investors should focus on stable assets like Gold, Bonds (SXRL), and Real Estate for capital preservation. To achieve balanced risk and return, moderate portfolios with a mix of stocks, bonds, and alternative investments (like Bitcoin) remain ideal. New generations, such as millennials and Z generations, accepted the higher risk of investing with BTC more quickly because they enabled a higher return than usual classic portfolios as there is a longer one in front of them, with an investment period from 20 to 40 years. That alone allows Z-Gen to go far in the beginning with a more aggressive portfolio than someone ten years away from retirement. For older generations, investing in high-risk stocks represents part of the speculative investments, some of which are cryptocurrencies. Most investors use gold as a haven for reduced risks and invest in short-term bonds, especially as a base investment.

The main limitation is the shorter period; that is, not all investors start at the same time. In future research, it would be good to analyze the same portfolio composition but with purchases and sales in different years and extended time periods, 20 or 30 years. Also, future research should explore larger datasets over extended timeframes and consider

regional economic variations along with simulation models to provide more robust conclusions.

This work can benefit all current and future investors by helping them find their risk level and possible return.

As already stated in the theoretical part, and what all authors emphasize, there is no magic the formula for creating a portfolio; everyone should find the best portfolio for oneself considering their personal attitude toward taking risks, the size of the portfolio, and the length of the possible investment.

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Contribution of Individual Authors to the Creation of a Scientific Article
- Vlasta Roška has analysed theoretical portfolio research and carried out the methodology and statistics analysis.
- Sara Soldo has analysed and comprised literature review (theoretical research) and dealt with the technical details of the research paper.
- Nika Anić proposed the idea for the article and granted permission to develop a research paper based on her original thesis.

Conflict of Interest
The authors have no conflicts of interest to declare.

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APPENDIX

Table 4. Descriptive Statistics

	Sum of Squares	Df	Mean Square	F	Sig.
Between Groups	314,228,452,000,273	2	157,114,226,000,136	1.858	0.19
Within Groups	1,183,876,433,503,390	14	84,562,602,393,099		
		16			
Total	1,498,104,885,503,660				

Source: Authors' own calculations

Table 6. ANOVA

	Sum of Squares	Df	Mean Square	F	Sig.
Between Groups	314,228,452,000,273	2	157,114,226,000,136	1.858	0.19
Within Groups	1,183,876,433,503,390	14	84,562,602,393,099		
		16			
Total	1,498,104,885,503,660				

Source: Authors' calculations