EQUITY FUND PERFORMANCE AND SECTOR DIVERSIFICATION

MIHOVIL ANĐELINOVIĆ, ANA PAVKOVIĆ, LIVIJA VALENTIĆ

Abstract:

This paper examines the performance of equity funds relative to the diversification of their portfolios. The main objective of the research is to determine how the allocation of investment in individual sectors affects the yield of equity funds in the Republic of Croatia. Six equity funds which were selected, invested more than 50% of their assets in sectors in the Republic of Croatia. An unbalanced dynamic panel model is estimated for the period from January 2012 to August 2017. Investing in tourism and industry has proved to be the most significant investment, and it has a positive effect on the fund yields, whereas significant negative impact has been discovered in consumer goods, funds and conglomerates, and the state sector. The macroeconomic environment was studied to put the conclusions of econometric analysis into the actual context. The conducted empirical analysis suggests that portfolio managers should pay more attention to macroeconomic conditions and trends in economic sectors if they want to achieve higher returns.

Keywords:

asset liability management, equity funds, sector diversification, panel data model, Croatia

JEL Classification: C33, G11, G23

Authors:

MIHOVIL ANĐELINOVIĆ, Faculty of Economics and Business, University of Zagreb, Croatia, Email: mandelinovic@efzg.hr
ANA PAVKOVIĆ, Faculty of Economics and Business, University of Zagreb, Croatia, Email: ana.pavkovic@efzg.hr
LIVIJA VALENTIĆ, Faculty of Economics and Business, University of Zagreb, Croatia, Email: valenticlivija@gmail.com

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1   Introduction

The financial crisis that began with the bankruptcy of the Lehman Brothers investment bank in 2008 put investment funds in the focus of research. In this context, studying asset allocation of investment funds and their yields is vital for the financial sector of the Republic of Croatia. Equity funds as a type of investment funds are most vulnerable to fluctuations in the financial markets as they predominantly invest in stocks, which are first to respond to market changes. Even though in terms of market share, cash funds are dominant in Croatian capital markets, the subject of this research is equity investment funds because of their unique characteristics.

The main aim of this research is to examine the impact of sectoral distribution on the yields of equity investment funds in the Republic of Croatia. It is broken down into specific goals, the first of which is to examine the importance of equity funds for the financial system of the Republic of Croatia and the potential for continuing their development. Another objective is to determine the dependence of equity funds in the Republic of Croatia and their sectoral distribution by quantitative empirical research. Given the subject and aims of the research, the purpose of the work is to contribute to the literature dealing with this issue by conducting a quantitative analysis of equity funds in the Republic of Croatia, as well as to present new remarks.

The rest of this paper is organized as follows. Following the Introduction, the second section presents previous empirical research. The third section is concerned with research methodology, while the results of our empirical analysis are reported in the fourth section. Conclusion and future research proposals are provided in the final section.

2   Previous Research

Since only a few studies examine equity fund indices, literature review is very heterogeneous. Below are mentioned papers exploring the link between yield (profit) and investment allocation, and then the relationship between macroeconomic variables and return on investment funds. Goetzmann and Massa (1998) have analyzed the strong correlation between the inflow of funds and the return on the S&P market, and vice versa and negative correlation between fund flows and S&P market return.

Maysami and Sims (2001a, 2001b, and 2002) examined the relationship between macroeconomic variables and return on stocks in Hong Kong and Singapore, Malaysia and Thailand, Japan, and Korea. The results confirmed the impact of macroeconomic conditions on equity indices in each of the observed countries. Maysami, Howe, and Hamzah (2004) studied the link of macroeconomic variables and indices of the Singapore stock market. They, apart from the common stock index, examined the cointegration of sectoral equity indices with macroeconomic variables. Authors concluded that the

Singapore stock market and the Sector Property Index have a significant correlation with the changes of all the examined macroeconomic variables (interest rates, industrial production, price levels, exchange rates and cash flow), whereas in the hotel sector index money and interest rates, and in finance index economic activity and money were insignificant variables. The fact that each sector is affected by different macroeconomic variables in different ways leads to the conclusion that investing in certain sectors can yield superior returns relative to investments in another sector.

Kaperczyk, Sialm, and Zheng (2005) studied the relationship between industrial concentration and performance (properties) of US investment funds for the period 1984 to 1999. They concluded that more concentrated funds have better results than diversified portfolio funds. Humphery-Jenner (2011) has shown in his paper that industrial and geographical diversification increases private equity returns due to knowledge sharing rather than risk reduction and endogeneity. The author also points out that increased diversification can lead to lower yields due to unnecessary wide expansion in other industries or regions.

Mansor, Bahatti, and Khan (2012) used panel analysis to explore the characteristics of Islamic investment funds. This analysis is suitable for testing when data has a time and cross-sectional dimension, as is the case in this paper. Bams, Otten, and Ramezanifar (2016) investigated the properties of investment funds and investment style misclassification and used their NAV value as one of the variables in research.

3   Methodology

Following the aim of the paper, our empirical research includes testing the importance of sectoral diversification for equity fund yields in the Republic of Croatia. In the beginning, it was first necessary to select indicators that would represent equity funds, sectoral investments, and macroeconomic indicators. Subsequently, taking into account the availability of the required data, the research period was determined. The econometric model was determined following the aim of research and data characteristics.

3.1   Data

For empirical analysis, data on the monthly returns of the selected funds and their monthly structure of the sector investment were collected. The collected data represent the percentage of monthly yields of the selected funds and the percentage of the monthly structure of the investment fund structure.

Of all the investment funds operating in the Republic of Croatia, six were selected for the analysis based on two conditions: (1) the selected fund must be an equity fund; (2) in the research period, more than 50% of equity funds' assets had to be invested in Republic of

Croatia. Given the above criteria, the following equity funds are subject to analysis: A1, Allianz Equity, Erste Adriatic Equity, HPB Equity, KD Victoria, and PBZ Equity Fund. Appendix 1 contains basic information on selected funds.

The value of assets invested in a particular sector and the ability of the sector to achieve favorable results affect the fund's earnings. An aggravating circumstance for further analysis is the fact that each fund in the Republic of Croatia uses different names for the same or similar sectors as there is no unified framework for the analysis. For the analysis carried out in this paper, it was, therefore, necessary for authors to make their classification.

Made classification consists of the following sectors: *finance*, *tourism and hotel industry*, *consumer goods*, *industry*, *telecommunications and IT*, *energy*, *funds*, *communal services*, *health*, *pharmacy*, *state,* and *miscellaneous*. The *finance* category, together with the finance sector, includes banking and the insurance sector. *Tourism and hotel industry* includes the hotel and restaurant sector, whereas the *consumer goods* sector consists of food, household products, basic and cyclical consumer goods, goods and services, electricity, and public services. To the *industry* category belong the automobile industry, the tobacco industry, the food industry, and other industries, the construction, real estate, transport, and logistics sectors. The *funds* sector includes conglomerates and diversified regional investment, whereas the *telecommunications and IT* sector still include electrical equipment and communications. Oil, gas, other fuels and energy are grouped into the *energy* sector, materials and raw materials are in the *materials* category, and communal services and investment in the country are each in a separate sector. Sectors *health* and *pharmacy* are separated from all funds, and each fund has a *miscellaneous* sector involving smaller investments.

The yields of selected equity investment funds in the paper represent a dependent variable while the investment of funds by sectors make independent variables. Several control variables are included in the work, including macroeconomic indicators and indicators characteristic of each fund individually. These include the index of industrial production as GDP proxy, CROBEX share index, inflation rate, the interest rate on the money market, interest rate on kuna mortgage loans to citizens, i.e., NAV values, yield volatility, and VaR values. The basic statistical measures for the variables used are given in the fourth section of the paper.

3.2   Dynamic Panel Data Model

Since data have both time-series and cross-section dimensions, a panel data model is estimated, with yield as the dependent variable. We employ a dynamic panel data model, which is more appropriate than static panel data models in case of probable multicollinearity (Kripfganz and Schwarz, 2015). Including a lagged dependent variable

with one or more lags, has a significant impact on the consistent assessment of other parameters (Bond, 2002). A dynamic panel data model whose dependent variable has t - 2 lags and K independent variables x_{itk} (k = 1,…K), has the following form:

$$y_{it} = \mu + \gamma y_{i,t-1} + \delta y_{i,t-2} + \beta_1 x_{it1} + \beta_2 x_{it2} + \beta_K x_{itK} + \alpha_i + \varepsilon_{it},$$
$$i = 1, \dots N, t = 1, \dots T,$$

(1)

where N is the number of individuals, T the number of periods, x_{itk} (k = 1,…, K) value of the kth independent variable of the ith individual in period t. The parameter α is a random or fixed effect, and β_1 to β_K parameters of the exogenous variables to be estimated in the model. It is assumed that error terms ε_{it} are independent and identically distributed random variables whose mean is equal to 0 and variance to σ_ε^2. Introducing lagged dependent variable results in a correlation between the lagged dependent variables y_{t-1} and y_{t-2}, and α_i. If the specified model were estimated by the least square method, OLS estimators of model parameters would be biased and inconsistent, even in cases where they are mutually uncorrelated, random variables. Arellano and Bond (1991) have proposed using the Generalized Method of Moments (GMM) in estimating parameters of the model. The first-differencing transformation of equation (1) equals:

$$y_{it} - y_{i,t-1} = \gamma(y_{i,t-1} - y_{i,t-2}) + \delta(y_{i,t-1} - y_{i,t-2}) + \beta_1(x_{it1} - x_{it-1,1}) + \beta_2(x_{it2} - x_{it-1,2}) + \beta_K(x_{itK} - x_{it-1,K}) + (\varepsilon_{it} - \varepsilon_{i,t-1}),$$
$$i = 1, \dots N, t = 1, \dots T.$$

(2)

To achieve consistency of the parameter γ, it is necessary to include additional instruments in the model. The values of the dependent variable with two lags are used as instrumental variables. Finally, this paper uses the two-step GMM estimator.

4   Results and Discussion

The data used in the econometric analysis are taken from monthly reports of equity investment funds in the Republic of Croatia for the period from January 2012 to August 2017. Reports are publicly available and have been taken from official websites of selected funds and financial portal HrPortfolio.hr. Macroeconomic data are taken from the

Central Bureau of Statistics and the Croatian National Bank. Table 1 gives an overview of the basic descriptive measures for dependent and independent variables.

Table 1 Summary Statistics

Variable	Mean	Std. Dev.	Minimum	Maximum	Observations
Yield	0.0060748	0.0300762	-0.1288	0.1069	408
Finance	0.1513284	0.0916785	0	0.4625	363
Tourism	0.1129606	0.1214632	0	0.3984	363
Consumer	0.1939887	0.1207715	0	0. 4392	363
Industry	0.2392152	0.1483803	0	0.7077	363
Telecom	0.0452163	0.0439775	0	0.3395	363
Energy	0.0612088	0.0417906	0	0.1739	363
Funds	0.0199873	0.0412608	0	0.58	363
Pharmacy	0.0218625	0.0287209	0	0.2195	363
Health	0.0092242	0.0257211	0	0.0964	363
Communal	0.0054455	0.0163157	0	0.0751	363
Materials	0.0227664	0.0441754	0	0.1914	363
State	0.0238818	0.0546524	0	0.211	363
Volatility	0.0148419	0.0481626	-0.1005	0.1426	408
Var	0.0357167	0.0072505	0.0246	0.0455	408
Nav	9.37e+07	8.95e+07	4772900	3.57e+08	381
Iip	95.54265	3.9275	89.8	107.7	408
Inflation	100.0529	0.5490588	99	101.7	408
Money	0.6604412	0.4610652	0.32	2.86	408
Interest	5.207941	0.5244402	3.89	6.34	408
Stock	1803.705	115.2305	1612.19	2221.02	408

Source: authors

Table 1 shows that the analysis will include an assessment of the importance of 12 sectoral investment indicators and eight independent control variables for equity fund

yields. In the observed period, investment fund yields ranged between -12.88% and 10.69%. As sectoral investments are used in the form of relative value or proportion, it can be deduced, from Table 1, that the investments of the analyzed funds are quite heterogeneous and that there is no sector in which the funds have not invested in any period *t*. The highest individual value invested in a sector is 70.77%, invested in the industry.

Since the analyzed data have both time-series and cross-sectional dimensions, panel data analysis will be employed. The dynamic panel data model that will be estimated is unbalanced, owing to missing data for some funds in a few months. The starting point in this analysis is the assumption that the yield of selected equity investment funds depends on the amount of investment in the individual sector. The dependent variable is yield of the funds, independent variables of primary importance are the values of investments in the sectors, while the control variables include index of industrial production, inflation rate, money market interest rate, bank interest rate for housing loans in kuna, and stock market index CROBEX. Table 2 summarizes the results obtained after the estimation of several dynamic panel models.

Table 2 Panel Data Model Estimates with Yield as Dependent Variable

Variable	Coefficient	*z*-test statistic	*p*-value	95% confidence interval	
$yield_{t-1}$	-5.205868*	-1.76	0.078	-10.99937	0.587634
$yield_{t-2}$	-5.576889**	-2.34	0.019	-10.25342	-0.9003613
Finance	0.0545467	0.47	0.638	-0.1729008	0.2819942
Tourism	8.666987*	1.79	0.073	-0.8171153	18.15109
Consumer	-0.310483*	-1.67	0.096	-0.6759017	0.0549356
Industry	0.3409007*	1.74	0.082	-0.0426961	0.7244975
Telecom	0.1508852	1.05	0.293	-0.1303424	0.4321128
Funds	-0.01399914**	-2.42	0.016	-0.2535645	-0.0264183
State	-0.7573257**	-2.17	0.030	-1.439806	-0.0748453
Stock	0.0003472***	2.92	0.004	0.0001139	0.0005804
Iip	0.0060135	1.51	0.131	-0.001791	0.013818
Interest	-0.0592638	-1.26	0.208	-0.1515265	0.0329988
Money	0.0820226**	2.20	0.028	0.0089387	0.1551065

Source: authors

Note: ***, ** and * denote significance at 1%, 5% and 10% levels, respectively.

Results show that seven variables are significant for the dependent variable: *tourism, consumer, industry, funds, state, stock,* and *money*. Variables *volatility*, *var,* and *nav* have been omitted because they created multicollinearity problems. On the other hand, variables *energy*, *pharmacy, health, communal,* and *materials* have been excluded from estimation due to an insufficient number of observations per panel. The analysis shows that both lags (*t*-1, *t*-2) of the dependent variable are significant, confirming the dynamic character of the model. The first independent variable that refers to the sector of finance and banking has a positive but insignificant impact on *yield*. A 1%-increase in investment in the *finance*, *ceteris paribus*, would lead to an increase in fund yields, on average, by 0.0545467 percentage points.

Furthermore, investment in tourism has a significant and positive impact on the equity fund yield at the level of significance of 10%. Besides, a significant and positive impact is also visible in investments in the industrial sector, while investing in telecommunications and information technology has a positive but insignificant impact on yields. According to the model, investments in consumer goods and other household products have a negative impact on the dependent variable at the level of significance of 10%, which would mean that if investments in the consumer goods sector increased by 1%, else remaining the same, yield would fall by 0.310483 percentage points, on average. At a level of 5% significance, an increase in investments in funds and conglomerates, and the state sector will lead to a drop in the yield of equity funds.

Speaking of control variables, the most important variable for explaining variations in the dependent variables is the stock index CROBEX. If at the level of significance of 1%, the share index value increases by 1%, and the other variables remain unchanged, the yield of equity funds will increase by 0.0003472 percentage points on average. A significant and positive impact is also exhibited in case of interest rate on the money market, while the gross domestic product is positively associated with the dependent variable, but has no significant impact on it.

The analysis shows that both lagged dependent variables are negative and significant, meaning that yields in the previous two periods have a significant negative impact on yield in the current period. Such a result can be explained by the fact that fund yields in each month are not positive, but funds also generate negative returns. The yield of an equity fund depends on the result of the investment in stocks, which is following the economic theory and logic.

The analysis has also shown that the investment of equity funds in *tourism* results has a positive effect on equity fund yield. This result is confirmed by the trends of the Tourism Index from the Zagreb Stock Exchange, CROBEXturist, which, in its composition, brings

together companies from the tourism sector in the Republic of Croatia. It can be noted in Table 3 that the values of this index are evergrowing in the period from 2012 to 2017.

Table 3 CROBEXturist values from 2012-2017

Period	CROBEXturist
2012	820,85
2013	1.155,00
2014	2.068,44
2015	2.559,02
2016	3.271,93
2017*	3.855,60

Source: authors using Zagreb Stock Exchange data (2012-2017)

*Note: * refers to November 2017*

These movements of the CROBEXturist index are positively reflected in the yield of equity funds investing in this sector, and it is important to point out that tourism revenues account for 18.01% of the gross domestic product of the Republic of Croatia, thus further recognizing the importance and profitability of this sector.

The results obtained from the GMM model show that investment in the *consumer goods* sector negatively affects the yield of equity investment funds at the level of 5%. It is assumed that the margins of consumer goods retailers are the same in the relative amount (percentage). Inflation increases with the price of consumer goods, which at the same relative margin assuming the ceteris paribus leads to a higher absolute margin and increases merchants' profits. However, due to price competition, retailers reduce margins and lower consumer goods prices and attract consumers. In this way, inflation negatively affects the profits of merchants and stock prices of these companies. Inflation rate represents changes in the price of goods and services, measured with the Consumer Price Index (CPI). According to Fama (1981 and 1990), Chen, Roll, and Ross (1986), and Fama and French (1989) investigating the US capital market, there is a negative correlation between the stock market price and inflation. Humpe and Macmillan (2007) find that the rise in US stock prices has a positive impact on the decline in consumer price indices, and they have also proven this hypothesis for the Japanese market. The negative relationship between inflation and the stock market has been confirmed by Al-Sharkas (2004) and AL-Zararee and Ananzeh (2014) for Jordan.

Furthermore, Jakšić (2009) and Benaković and Posedel (2010) investigating the stock prices of the Croatian capital market, found that there was a negative impact of the

inflation rate on stock prices. Hsing (2011) confirmed this. The CPI reflects changes in the prices of goods and services purchased and used by the reference population. Except for measuring inflation, this index is used for analytical purposes. Volatility and price fluctuations negatively affect stocks, and therefore, equity funds. In emerging economies, stable and mildly positive inflation is desirable; however, rising prices of resources and basic products at a high rate can negatively impact the yield. Equally, a negative scenario can also happen in case of deflation.

Figure 1 Changes in the Consumer Price Index in Croatia

Source: Trading Economics (4 November 2017)

It can be noticed in Figure 1 that in spite of oscillations on monthly levels, the consumer price index in the Republic of Croatia tends to grow. From the lowest level, 63.70 index points, which was in January 1998, to the highest level of 101.20 index points, reached in April 2013. In April 2017 it amounted to 100.3 index points. Growth in the consumer price index increases the inflation rate, which reduces the value of money and increases the price of goods and services whose real value remains the same. Taking into account these assumptions and the fact that inflation may adversely affect the prices of consumer goods and merchant profit, the results of the GMM analysis are in line with previous research. Since stock prices of consumer companies are decreasing due to inflation rise, this is negatively reflected in the yield of equity investment funds investing in this sector.

Investment in the *industry* sector according to the model results positively affects the yield of equity funds. An explanation for this relationship is sought-after in the index of industrial production. Naik and Padhi (2012) have found a positive relationship between industrial production and return on the stock market index in the Indian market. They explained that the growth of industrial production increases the company's earnings and

value, resulting in increased investment in the stock market and rising stock prices. Jakšić (2009) and Benaković and Posedel (2010) identified a positive correlation between industrial production and stock prices on the Croatian market. Other authors also prove this relationship, namely Chen, Roll, and Ross (1986) and Samitas and Kenourgios (2007). The growth of stock prices positively affects the yield of equity investment funds, so the results of the previous research can be compared with the results obtained by the GMM model. Table 4 presents the growth of CROBEX in the period from 2012 to 2017, as well as the values of the most important global indices.

Table 4 Comparison of world stock exchange indices in the period from 2012 to 2017

| Stock market index	Index value						currency
	2012	2013	2014	2015	2016	2017*	
Dow Jones Industrial Average	13,025.58	16,576.66	17,823.07	17,425.03	19,762.60	23,539.19	USD
S&P 500	1,426.19	1,848.36	2,058.90	2,043.94	2,238.83	2,588	USD
Nikkei 225	10,395.18	16,291.31	17,450.77	19,033.71	19,114.37	22,518.99	JPY
DAX	7,612.39	9,033.92	9,805.55	10,743.01	11,481.06	13,478.86	EUR
FTSE 100	5,897.81	6,749.09	6,566.09	6,242.32	7,142.83	7,560.35	GBP
CROBEX	1,740.39	1,794.28	1,745.44	1,689.63	1,994.84	1,841.12	HRK

Source: authors using Investing.com data (4 November 2017)

*Note: * refers to November 2017*

The observed period was marked by the growth of industrial production in the Republic of Croatia. After a record low growth rate of -12.40% in June 2009, in January 2016, industrial production reached a growth of 15.10%. In 2014, industrial production rose by 1.2%, in 2015 it was growing by 2.6% each year, and this trend continued in 2016 with a growth of 5%. In the first seven months of 2017, industrial production in Croatia grew by 2.5%. Figure 2 presents the trend of the industrial production index in Croatia, where, despite oscillations at monthly levels, the observed trend of industrial production growth is visible. This trend is positively related to the rise of stock prices on the Croatian capital

market (Table 4), which consequently affects the positive yield of equity investment funds.

Figure 2 Development of the industrial production index in Croatia, %
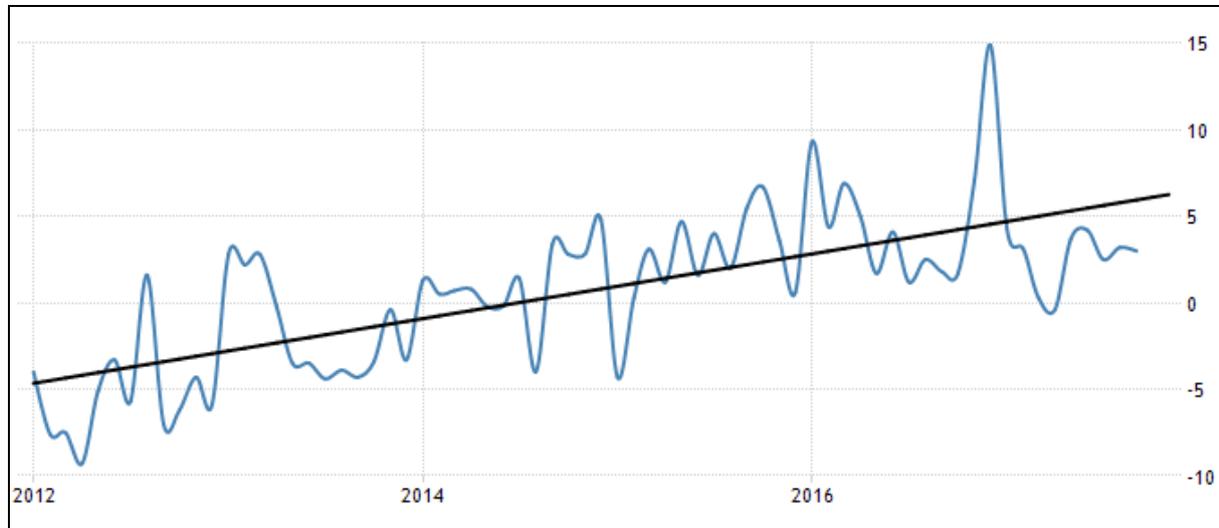
Source: Trading Economics (3 November 2017)

The GMM model has detected a positive relationship between investment in the telecommunications and IT sectors. Since technology is progressing every day, these results are logical. Indjikian and Siegel (2003), studied the influence of IT on the economic outcomes in developed and underdeveloped economies. In developed countries, such as Croatia, there is a positive correlation between IT and the country's economic performance, confirming the result obtained by analysis.

The analysis has shown that investment in the *funds* sector harms the yield of equity investment funds with a 5% significance. Since investment funds have a wide range of investment opportunities, this result cannot have a unique explanation. One explanation can be related to a long period of low interest rates. Dorofti and Jakubik (2015) examined the relationship between profitability in the insurance sector and macroeconomic conditions. They highlighted three key factors threatening the business of European insurers: low interest rates combined with slow economic growth, poorly developed equity market, and high inflation rates. The first two cases are present in the Croatian market. In 2012, when European central banks lowered interest rates, JP Morgan and Goldman Sachs announced the closure of one part of their cash investment funds. In the US market, money market investment funds before interest rate cuts yielded average yields of less than 0.10% in three years, with additional interest rates being lowered. Since currently, cash funds dominate the Croatian capital market, such a long period of low interest rates lowers their yields and consequently reduces the yield of investment funds

investing in them. Fry (2016) explained that lowering interest rates positively affects economic growth by fueling investment and spending, but only in a short period; a prolonged period of low interest rates is now slowing down further economic upswing. The temporary decline in interest rates encourages personal consumption, but if such a period lasts long enough, it can be considered "permanent" to consumers who will reduce their spending. Bond funds are greater in number than cash investment funds in the Republic of Croatia. By lowering interest rates, the price of bonds increases, but yields are lower, which reduces the yield of bond funds and the funds investing in them. As an example of a reduction in bond yields, one could look at the situation in the German market, with negative yields issued in 2016, while in the same year Japanese bonds had negative earnings for the first time in history. This situation relates to a part of the explanation of why equity investment funds that are investing in the *funds* sector have generated negative returns. Moreover, because of the heterogeneity of asset allocation of investment funds, this explanation cannot be taken as unambiguous and is certainly subject to further research.

The GMM model pointed to a positive correlation between the realized yield of equity investment funds in the Republic of Croatia and the investment in the equities. Naturally, the yield of equity funds depends on the stock market movement. Since the yield of all companies depends on the market situation and stock market trends, stock trading will be explained by the movement of the stock market index. In the annual and semi-annual trade reviews for the period from 2012 to 2017 published by the Zagreb Stock Exchange, one can notice the recovery on the Croatian financial market. Although in 2012 the share turnover on the Zagreb Stock Exchange was down by -35%, a year later, Croatia entered the European Union, further alignment of regulations with EU regulation and increased transparency of issuers, which could help Croatian companies in the coming years capital market. In 2014, the market capitalization of shares grew by 6.1%, and in 2015 by 3.3%, and in the same year, there was an increase in the total volume of stock trading for as much as 50%. 2016 looked optimistic, since CROBEX strengthened by 18%, and the price of shares grew by 16.5%. The 2017 mid-year review shows that the indices this year have been at the highest levels in recent years, and CROBEX has crossed the 2,100 point limit. Although in March that year there was a negative turnaround due to the uncertainty with the Agrokor Group companies, the situation has already begun to recover in June. The table shows the movement of CROBEX in the analyzed period.

From 2012 to 2017, the index has increased in value. It should be further emphasized that, according to some researches, the movement of CROBEX is related to the movement of other world indices. According to Hsing (2011), the Croatian stock exchange index is positively linked to the German stock index. Erjavec and Cota (2007) conclude that the Croatian stock exchange index CROBEX is more influenced by the US stock market indices Dow Jones Industrial Average and NASDAQ than the German DAX and British FTSE. Morales and Andreosso-O'Callaghan (2010) investigating the effect of

"contagion" among the capital markets of several countries, including Croatia, have found evidence of the Dow Jones Industrial Average and S&P 500 index overflow effects on CROBEX. These results are confirmed by actual trends in domestic and global financial markets. Table 4 also presents the values of some of the world's selected stock market indices together with CROBEX. Values of all indices grew in the observed period. With the end of the global economic crisis, markets have begun to recover, restoring investor confidence in financial institutions and less aversion to the risk of losing the funds invested. The recovery of the world's financial markets has also escalated to recovery in the financial market of the Republic of Croatia.

According to the previously mentioned research, it can be concluded that the impact of the world market recovery after the crisis has been transferred to the Croatian capital market. All this has a strong base in the movement of stock exchanges, so a satisfactory financial market situation and the growth of the index have a positive impact on stock prices and the yield of equity investment funds.

The index of industrial production and the yield of equity funds are in positive relationships with the results from the analysis. The industrial production index was used as the monthly level as a relevant measure for GDP, the economic activity of the economy. In their research Naik and Padhi (2012) explained that the growth of industrial production increases earnings and company dividends, leading to an increase in the value of the company and the growth in the price of its shares. Other researchers also found a significant correlation between the gross domestic product and the share yield, such as Chen, Roll and Ross (1986), Nishat and Shaheen (2004), Samitas and Kenourgios (2007) and Humpe and Macmillan (2007). Cota et al. (2008) and Jakšić (2009) have established a positive correlation between stock prices in Croatia and long-term industrial production indices. Such a relationship between GDP and stock prices positively affects the yield of equity funds.

The results of the empirical analysis confirm that the interest rate and yield of equity investment funds have a negative correlation. The interest rate is the cost of money, in other words, the lending rate, and several researchers have been investigating its impact on the financial market. According to Bernanke (2003), stock prices affect expectations of current or future short-term interest rates. If it is anticipated that interest rates will increase, this will negatively affect stock prices. The author points to two reasons. One reason is the growth in the discount rate that leads to a fall in stock prices, and the second is raising interest rates by raising the investor's return on stocks, whereby they are willing to pay less for the stock. Çiftçi (2014) explains in his paper that the interest rate, through market mechanisms, is negatively related to equity funds, but after a certain time. Thus, interest rates make an opportunity cost, meaning investors will invest more in safer assets such as government bonds or corporate bonds and will thus reduce stock prices. Likewise, high interest rates increase the indebtedness of companies using sources of funding and are thus more in charge of hurting the stock price. Çiftçi (2014)

believes low interest rates will boost the economy, while high rates would negatively affect the economy. The negative correlation between interest rates and yield of equity funds was also seen in Gjerde and Saette (1999) in Norway, Al-Sharkas (2004) in Jordan, Humpe and Macmillan (2007) in the US and Japan, Adam and Tweneboach (2008) in Ghana and Alshogeathri (2011) in Saudi Arabia. In this paper, the interest rate on housing loans was used by citizens in kunas, and the inverse relationship between the interest rate and the yield of equity investment funds has been confirmed. Lastly, according to the results of the model, investment in the financial sector is favorable to the rise of the yield of equity funds, while the investment in the state sector of the Republic of Croatia hurts equity funds.

5   Conclusion

In the Croatian financial system, despite it being a bank-based system, other financial intermediaries also play a vital role. Among them are investment funds that are becoming increasingly important for the Croatian market and continuously growing in terms of asset value. Investment funds have enabled small investors to access to the capital market. In the Republic of Croatia, investment funds are divided into UCITS and AIF funds. The subject of this paper analysis is equity investment funds. By investing in equity investment funds, individuals with a small amount of money can invest in shares of big companies. Investment funds also offer services, such as professional management of assets, diversification of investment, they lower transaction costs and risks and can aid investors in achieving higher liquidity.

The main aim of this paper was to examine the impact of sectoral distribution on the yields of equity investment funds in the Republic of Croatia. The assumption was that the yield of equity funds depends on the structure of the funds sector investments. The data refers to the period from 2012 to 2017. The subject of the research was equity investment funds that invest 50% of their property in the Republic of Croatia. An unbalanced dynamic panel model was used for the analysis. The parameters of the model were evaluated by the Generalized Method of Moments. As dependent variable yield of funds were used, whereas the independent variables were sectors in which the selected funds invested. The results of the analysis are in line with the market situation and with previous research. The first independent variable that refers to the sector of finance and banking has a positive but insignificant impact on yield. Investment in tourism has a significant and positive impact on the equity fund yield. Also, a significant and positive impact is visible in investments in the industrial sector, while investing in telecommunications and information technology has a positive but insignificant impact on yields. According to the model, investments in consumer goods and other household products harm the dependent variable.

The analysis identified how sectoral investment affects the yield of equity investment funds. However, due to their complexity and heterogeneity of investment, these funds leave new doubts that can be the starting point for further research. The capital market in Croatia is insufficiently developed but considering globalization, and the spillover effects in the world, positive development of the financial market in Croatia can be expected.

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Appendix 1. Sample Information

The study used data on six equity funds that met the set criteria. Below is the basic information about them.

- A1

  A1 is the only equity investment fund that invests 100% of its assets in the Republic of Croatia. The total value of assets is HRK 6,747 million, while the share price is 92.84 HRK. It was introduced began on May 19, 2008, and its VaR risk was estimated at 3.88%.

- Allianz Equity

  This fund started operating on January 13, 2012. Its assets amount to HRK 55,079 million, and the price of the share is 169.93 EUR. It invests 82.79% of total assets in the Republic of Croatia with the estimated risk value of VaR 2.46%.

- Erste Adriatic Equity

  The Fund was established on 11 October 2005. The share price is 88.78 EUR. 60.03% of its total assets, amounting to HRK 208,848 million, is invested in the Republic of Croatia. The VaR risk indicator is 4.49%.

- HPB Equity

  Fund start date is October 04, 2005. Total assets amount to HRK 30,622 million, of which 63.35% are invested in the Republic of Croatia. The VaR is 2.96%, and the price of a share is 115.05 HRK.

- KD Victoria

  KD Victoria is an equity fund that commenced operations on May 11, 1999. Out of the total asset value of HRK 75,363 million, 75.92% is invested in the Republic of Croatia. The share price is 21.11 HRK, while the VaR risk is 4.21%.

- PBZ Equity fund

  Equity Investment Fund founded on September 5, 2005. The share price is EUR 12.15. It deals with assets of 75,363 million HRK, while 51.10% of them are invested in the Republic of Croatia. VaR risk is 3.22%. The PBZ Equity Fund won the "Golden Share for the Best Equity Fund" award in 2006.