

# Sectoral Returns and Diversification: Empirical Evidence from Indonesia

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***Abstract:****The Indonesian capital market is an emerging market that has a smaller number of issuers compared to other markets. Although the number of listed companies in the capital market is small, many of the listed companies do not fluctuate or sleeping. There is a lot of debate about the number of shares formed in the portfolio by investors to form a portfolio to achieve well-diversified portfolio. However, in the case of the Indonesian capital market, it is possible to form a portfolio to be well-diversified portfolio due to limitations in the Indonesian Capital Market. The development of the capital market is one measure of economic development in a country. One way to look at economic analysis is that analysis is needed first at the industry or sector level. Although in general there is no necessary relation between economic growth and industries growth, some industries may grow in spite of poor economic growth, but the whole industry is an economic activity that covers all economic activity that refers to growth or decline. This article aims to evaluate portfolio at the sector level in the study period. Using the meanvariance model, we form a portfolio in each sector. The purpose of portfolio performance assessment is to find out whether the portfolio is formed can increase the possibility of investment objectives, it can be known which portfolio from which sector is outperform to other sectors. This study shows how the premium value and size effect in each sector and main sector.*

***Keywords:*** *book to market, diversification, emerging market, sectoral return, size.*

## 1. INTRODUCTION

Indonesia is categorized as an emerging market. Indonesia is considered to meet the criteria and is said to be an emerging market with a variety of market valuation considerations by MSCI Inc., such as economic development, standard size and liquidity, and market access criteria. With this market classification, investors gain trust and have access to enter the Indonesian market.

Merton (1973) in his article said that in multi-economic periods investors expect to hedge uncertainty value of these assets. Investors prefer change their fund to investment and consumption.

This allocation of asset will change price in the capital market conditions.

Investment strategy activities is reducing investment risk to achieve investment objectives. Practitioners develop their strategies to achieve their investment objectives. This activity is usually associated with seeing variables can affect the price of these assets, such as macroeconomic conditions in a market, sector conditions and at the company level from asset price liquidation, profitability to company size. Several studies focus on diversification at the sector level to see how profitable it is if investors invest in certain sectors. Previous studies conducted research focusing on diversification in the commodity market resulted in a low correlation between commodities and stock prices (Satyanarayan&Varangis, 1996; Erb& Harvey, 2006; Arouri, Jouini, & Nguyen, Uddin, 2017).

Based on the international multifactor asset pricing model Arouri et al (2011) emphasizes the importance of managing risks in the sector. In a larger market stated by Grinold, Rudd, and Stefek (1989) suggested that the exposure to the global sector has a significant relationship affecting the return of each company in different countries. Jiayu (2020), argues that in emerging market and developed market countries to allocate portfolios and reduce systematic risk in financial sector portfolios is a more effective sector to diversify or hedge during crisis periods.

Jiayu (2020) showed that in periods of crisis or not, diversification in certain sectors can be a strategy for hedging. This is evidenced in emerging markets and developed markets. In a smaller scope, namely sectoral diversification in a market. Narayan (2017) shows that by using a passive trading strategy investors can benefit by investing in certain sectors.

Each market has its own characters, although the assessment has same standard, but every country has different conditions and policies, especially macro policies that can affect market conditions. The data in Table 1 illustrates the condition of how the Indonesian market is compared to other emerging markets. From 2013 - 2018 Indonesia has a smaller number of issuers compared to other emerging market countries.

Table 1. Comparison of Indonesia with other emerging markets

Country	Indicator Name	2013	2014	2015	2016	2017	2018
China	Turnover	194.88	199.16	480.29	249.17	197.12	206.65
	Company Listed	2489	2613	2827	3052	3485	3584
Indonesia	Turnover	28.52	21.49	21.24	21.23	17.77	21.50
	Company Listed	483	506	521	537	566	619
India	Turnover	47.22	46.89	50.92	51.18	50.87	58.07
	Company Listed	5294	5541	5835	5820	5615	5065
Malaysia	Turnover	28.41	31.08	29.11	27.01	30.06	34.00
	Company Listed	900	895	892	890	890	902
Thailand	Turnover	98.74	72.17	77.79	80.92	61.87	77.19
	Company Listed	584	613	639	656	688	704

\* Turn over is the number of shares traded compared to the number of listed companies

\* Company listed is the number of companies registered in each country

Seen in Table 1, the Indonesian capital market is one of the markets that has a smaller number of issuers than other markets. Although in 2013-2017 the number of issuers rised, the turnover rate did not increase. The extreme decrease in 2014 was -24.63% and in 2018 it was -26.41%. However, there was an increase in 2018 to 21.5 or an increase of 17.36% from growth in 2017. The extreme decrease also occurred in Thailand by -26.91% in 2014 and -30.80% in 2017. There was an extreme turnover growth from China in 2015 of 58.3% due to the China's black Monday event which was included as a major economic event.

Table 1, The turnover and company listed levels of 2013-2018, Indonesia has an increase in company listed an average of 4.86% and a decrease in the average turnover rate of -5.60% while Malaysia has an increase in turnover by an average of an average of 3.32% and company listed an average of 0.04% annually. Compared to the Chinese Market, Indonesia still has a smaller growth value compared to China with an average increase of 7.02% per year, while the turnover rate has growth below the Indian market which has an average turnover rate of 3.90%.

The explanation above is one proof of the character of the capital market in Indonesia. Although the number of listed companies has increased, it has not been matched by the number of transactions conducted by investors. Investors have a tendency to invest in stocks that are categorized as safe. This can allow there are shares that are not actively traded by investors. Investors tend not to diversify into portfolio assets that have a higher risk.

Every investor has their own goals in investing. To achieve these investment objectives, investors need to combine their assets to form a portfolio. There is a lot of debate about how many shares are managed to get a portfolio that is said to be a well-diversified portfolio. To form a good portfolio, then investors need to identify each stock at the market, sector, or even between companies. Investors need to consider because each asset has a relationship with other assets, both direct and indirect relationships.

At the market level assessment, investors need to analysis macroeconomic in the country. The development of the capital market is one measure of economic development in a country. Investors need to do analysis at the macroeconomic level, but no less important investors need to analyze at the sectoral level. Although in general there is no relationship between the economy and some industries, some industries will continue to develop even though the economy is experiencing a decline but the entire industry is an economic activity that reaches all economic activities.

Table 2. Investment Return based on Sectoral Index and IHSG 2010-2019

<b>Return</b>	<b>2019</b>	<b>Return</b>	<b>2017 -</b>	<b>Return</b>	<b>2015 -</b>	<b>Return</b>	<b>2010-</b>
			<b>2019</b>		<b>2019</b>		<b>2019</b>
JKFINA	15.22%	JKFINA	66.85%	JKFINA	85.15%	JKFINA	349.42 %
JKBIND	14.44%	JKBIN	81.74%	JKBIN	79.91%	JKBIN	257.07 %
JKPROP	12.54%	JKPRO	-2.69%	JKSE*	20.52%	JKPRO	243.24 %
JKINFA	6.88%	JKINFA	7.76%	JKMIN	13.12%	JKCON	205.77 %
JKSE*	1.70%	JKSE*	18.93%	JKINFA	-1.96%	JKTRA	179.17 %
JKTRAD	-1.79%	JKTRA	-10.55%	JKPRO	-4.01%	JKSE*	148.57 %
JKAGRI	-2.55%	JKAGR	-18.23%	JKCON	-5.75%	JKMIS	103.48 %
JKMISC	-12.23%	JKMIS	-10.71%	JKMIS	-6.37%	JKINFA	56.14%
JKMING	-12.83%	JKMIN	11.84%	JKTRA	-12.38%	JKAGR	- 13.04%

JKCONS	-20.11%	JKCON	-11.69%	JKAGR	-35.16%	JKMIN	-
	S		I		G		29.72%

*Data sources: IDX JKFINA is the finance sector, JKBIND is the Basic Industry Index sector, JKPROP is the Construction*

*Index, Property & Real Estate Index, JKINFA is the Infrastructure, Utility & Trans Index sector, JKTRAD is the Trade & Service Index sector, JKARGI is the Agriculture sector Index, JKMISC is Miscellaneous Index sector, JKMING is Mining Index sector, JKCONS is Consumer Index sector and JKSE \* is Composite Index.*

The main purpose for investing is to manage risk in order to protect value or gain profits in the form of a portfolio. According to Jiayu (2020) there is an unexpected increase in price volatility in the financial crisis experienced in the global equity market, so investors need to carry out effective diversification. This causes the stock price to fluctuate every time that has an allegation that connected with the business cycle.

Analysis at the sector level is one important thing because investors can see how the performance of the sector in shaping the market. Table 2 shows sector yields based on sectoral indices.

In 2019, based on the data attached above, there are a number of sectors that have an outperform value from the composite index, namely the finance, basic industry, property and infrastructure sectors. The four sectors are not only the four best sectors in the index, but the four sectors constitute a positive return value in 2019. When compared to 1 year, 3 years, 5 years and 10 years back, the basic industry sector and the sector finance has a stable performance in the top-3 best sectors. But this is not in the property sector that experienced a negative return when viewed in the last 5 years, decreased returns by -4.01%.

Even though the Miscellaneous and Agriculture sectors as calculated in the index are always underperforming to the JKSE in the calculation of 1 year, 3 years, 5 years and 10 years back, but cannot conclude that the sector is not good for portfolio. In addition, there are other industries that underperform JKSE, Mining, Manufacture, Consumer and Trade sectors.

A company size in a market that is reflected in the value of market capitalization is a measure that can affect the return of these assets. This shows that there is a relationship between return and firm size. Banz (1981) shows that companies that have small company size have a higher return value compared to companies that have large size. Fama& French (1993, 2016), company size is one of factor which influence market efficiency for the asset pricing model. Ball, 1978; Berk, 1995, There is a relationship between size and expected return because the size is formed by market value which is mediated by risk. The higher the risk, the investor will expect a higher return. The growth theory says that companies that have the opportunity to grow (Carlson et al., 2004)

Every sector and main sector have different characteristics of facing market conditions, size effect and value premium which affect portfolio. Fama& French (1992) 3 factors model is design to describe how market risk (*mkt*), outperformance small companies versus big companies (*smb*), and outperformance of high book to market ratio versus versus low book to market ratio (*hml*).

With this phenomenon at the market level, it will reduce to a sector level. In the data listed at the sector level, it can be seen that there are several sectors which are too contrasting for profit and loss at each period. Every market has its own characteristics. Every time facing an economic problem such as the macro economy will have a different effect on the market response.

Based on background in previous, this study aims to create the best investment strategy with an overview of sector condition in Indonesian capital market, here is the point of the research question: a) Which sectors or main sectors gives more gain to investors by using

Mean Variance Model. b) How portfolio performance results in each sector and which gives consistency to positive stock returns. c) Do market risk, size, premium value of company influence portfolio return formed by sectors and general sectors?

This research has the following structure. Section 2, provides a description data and methods. Section 3 presents findings and discussion. Finally, Section 4 conclude the paper.

## 2. DATA

The research data is daily closing price data for all listed companies in Indonesia capital market and JKSE period from January 2017 to December 2019. The data is taken from IDX (www.idx.co.id) and SBI for *risk free rate* and JKSE for *market index* are obtained from datastream. Each company is categorized into 9 sectors and 3 main sectors or general sector by JASICA. These sectors are Agriculture; Basic Industry and Chemicals; Consume Goods Industry; Finance; Infrastructure, Utilities and Transportation; Manufacturing, Mining; Miscellaneous; Property, Real Estate, and Building Construction; and Trade, Service and Investment. That classification is categorized into 3 main sector or general sectors: 1. Raw Materials: Agriculture, and Mining; 2. Manufacture: Basic Industry and Chemicals, Miscellaneous Industry, Consumer Goods Industry; 3. Services: Property-Real Estate and Building, Infrastructure Utilities and Transportation, Finance, and Trade-Service & Investment.

Table 3. Constituents and Capitalization Sector Distribution

G S Cod e	General Sectors	Sec tor Code	Sectors	2017					
				% Av Const s	% of Con sts	% of Tot. Cons GS	Avg. MC	% of Tot. MC S	% of Tot. Avg GS
1	Raw Materials	1	AGRICULTURE	16 %	4,36 %	12,01 0	6634,5	5,73 %	12,41 %
		2	MINING	29 %	7,65	7725,5 3	6,67 %		
2	Manufact ures	3	BASIC INDUSTRY AND CHEMICALS	12,1 46 5%		8250,3 2	7,13 %		
		4	MISCELLANEO US INDUSTRY CONSUMER	27 %	7,28	14243, 27,65 07	12,30 %	43,10 %	
		5	GOODS INDUSTRY	31 %	8,23	27397, 36	23,67 %		
		6	PROPERTY, REAL ESTATE AND BUILDING	12,4 47 6%		7031,0 2	6,07 %		
		7	CONSTRUCTIO N INFRASTRUCT URE, UTILITIES AND	40 9%	10,6	18957, 12	16,38 %		
3	Services				60,33 %		44,49 %		

			TRANSPORTATION					
		8	FINANCE	59	15,6	19863,	17,16	
					4%	72	%	
		9	TRADE, SERVICES & INVESTMENT	81	21,5	5652,9	4,88	
					5%	3	%	
<b>Total</b>				<b>377</b>	<b>100</b>	<b>100,0</b>	<b>11575</b>	<b>100,0</b>
				<b>%</b>	<b>0%</b>	<b>5,57</b>	<b>0%</b>	<b>0%</b>

GS: General Sector

MC: Market Capitalization

Table 3. Constituents and Capitalization Sector Distribution (cont.)

GS Code	General Sectors	Sector Code	Sectors	2018					
				g. Consts	% of Consts	% of Avg GS	Avg. MC	% of Tot. MC	% of Tot. Avg GS
1	Raw Materials	1	AGRICULTURE	17	3,84	11,72	5310,1	4,99	14,27
		2	MINING	35	7,88		9879,7	9,28	
2	Manufactures	3	BASIC INDUSTRY AND CHEMICALS	54	12,2	9%	9899,2	9,30	
		4	MISCELLANEOUS INDUSTRY	31	7,10		11942,	11,22	
		5	CONSUMER GOODS INDUSTRY			27,81	41	%	42,89
		5	INDUSTRY	37	8,41		23811,	22,37	
3	Services	6	PROPERTY, REAL ESTATE AND BUILDING CONSTRUCTION	56	12,6	60,47	5884,5	5,53	42,83
		7	INFRASTRUCTURE, UTILITIES AND TRANSPORTATION	49	11,1	1%	14265,	13,40	
		8	FINANCE	65	14,8	0%	20283,	19,06	
							26	%	

		9	TRADE, SERVICES & INVESTMENT	96	21,9 0%	5157,5 5	4,85 %
<b>Total</b>				<b>439</b>	<b>100</b> <b>%</b>	<b>100,0</b> <b>4,12</b>	<b>10643</b> <b>100,0</b> <b>0%</b>

GS: General Sector

MC: Market Capitalization

Table 3. Constituents and Capitalization Sector Distribution (cont.)

GS Code	General Sectors	Sector Code	Sectors	2019					
				g. Consts	% of Consts	Avg. Cons	% of Tot. MC	Avg. MC	% of Tot. GS
1	Raw Materials	1	AGRICULTURE	17	3,56 %	10,93 3	5054,1 %	5,01 %	12,90 %
		2	MINING	36	7,37 %	7949,9 0	7,89 %		
2	Manufactures	3	BASIC INDUSTRY AND CHEMICALS	56	11,5 9%	10482, 92	10,40 %		
		4	MISCELLANEOUS INDUSTRY CONSUMER GOODS INDUSTRY	35	7,30 %	10330, 27,5108	10,25 %		39,88 %
		5	INDUSTRY	42	8,63 %	19381, 84	19,23 %		
3	Services	6	PROPERTY, REAL ESTATE AND BUILDING CONSTRUCTION	63	13,0 9%	5885,6 4	5,84 %		
		7	INFRASTRUCTURE, UTILITIES AND TRANSPORTATION	55	11,4 2%	14157, 92	14,05 %		
						61,55 %		47,21 %	
		8	FINANCE	65	13,3 8%	22846, 81	22,67 %		
		9	TRADE, SERVICES & INVESTMENT	115	23,6 7%	4693,3 4	4,66 %		
<b>Total</b>				<b>484</b>	<b>100</b> <b>%</b>	<b>100,0</b> <b>2,56</b>	<b>10078</b> <b>100,0</b> <b>0%</b>	<b>100,0</b> <b>0%</b>	

GS: General Sector

MC: Market Capitalization

Source: idx.co.id

The results shown in table 3 are the number of companies and market capitalization after the selection in the next section. It is seen that in 2017-2019 sector 9 is the largest number of companies compared to other sectors. However, although the average number of companies listing in sector 9 is higher, the highest total market capitalization in sector 8 is finance.

At the main-sector or general sector level, the largest number of constituents is in general sector 3. In 2019, sector 3 has a value of 61.55% of the total sample. Although in general sector 2, in 2018 the number of companies is 27.81% less than that of GS 3 of 60.47%, but has a higher market capitalization value compared to GS 3. This value is an average value because we made sectoral portfolio in every month.

The reason we use JASICA standard is for investors to see how sectoral conditions are in Indonesia. This is because in each of these sectors are divided according to general sectors so that investors can broadly assess the sector to be a producer of raw materials, manufacturing and services.

### 3. METHOD AND RESULTS

Companies classified according to each sector needs to be reselected to fit the assumptions of optimal portfolio theory. Portfolios were formed in the study period from January 2014 to December 2019.

This study uses some criteria to be included in portfolios in each sector. Therefore, before classifying sizes and books to the markets of each company in the portfolio of each sector, the study chooses the extreme price of each company stock (Chordia et al., 2001 & Chordia et al., 2011).

Daily stock price data on listed companies from January 2017 to December 2019 there is a large price gap. The study issued extreme low and extreme high values for stocks listed on the Indonesia Stock Exchange. Then the study issued a research sample which is seen from the share price, which is

2.5% lowest and 2.5% highest with the aim that shares.

After making a selection on prices, the next selection is the traded volume selection. This selection aims to ensure that all sample companies that will be included in the portfolio are active in the market. The criteria used for this selection are for every company that has a value of at least 75% of trading days in the research period. After volume traded selection, we exclude companies which have negative book to market ratio.

In this study, we form daily return from each company and classified to its sectors and general sectors. We form portfolios for each sectors and general sectors with two form.

First, portfolio returns are formed with equal weighted (EW) for each company for each sectors and general sectors. Second, portfolio returns are formed with capitalization-weighted (MC) for each company in its sectors and general sectors.

Market risk factor (*mkt*) was calculated as the excess return JKSE minus SBI or *risk-free* rate. On their B/M ratio and size (total stock market capitalization), big companies and small companies were defined as those with a capitalization above and below its median. The B/M ratio breakpoints were made the 30<sup>th</sup> and 70<sup>th</sup> percentiles of the B/M ratio for all companies in their sectors and general sectors. The intersection between size and B/M ratio form 2x3 sorts and made six portfolios-SG, SN, SV, BG, BN and BV, where S is small size companies and B is big size companies, G is growth (bottom 30% of B/M), N is netral (middle 40% of B/M), and V is value (top 30% of B/M).

Size factor (*smb*) as the mean return on the three small company portfolios from 2x3 size-B/M sorts, minus the mean return on value portfolio (BV and SV). Value factor (*hml*), was the difference between the mean return on value portfolio (BV and SV) and the mean return on growth portfolio (BG and SG).



$$E(R_{p,t}) = \sum_{j=1}^m w_{jt} r_{jt} \tag{1}$$

Where  $E(R_{p,t})$  is expected return portfolio sector/general sector p, at month-t,  $w_{jt}$  is weights individual stock-j at month-t,  $r_{jt}$  is expected return stock-j at month t. we use this formula to calculate portfolio returns.

$$\sigma_{p,t} = \sqrt{\sum_{i=1}^n w_{it}^2 \sigma_{it}^2 + \sum_{i=1}^n \sum_{j=1}^n w_{it} w_{jt} Cov_{ijt}} \tag{2}$$

Where  $\sigma_{p,t}$  is the standard deviation of the portfolio sector/general sector-p at month-t,  $w_{it}$  is the weights of the individual stock-I at month-t,  $\sigma_{it}^2$  is the variance of rates of return for stock-i at montht,  $Cov_{ijt}$  is the covariance between the rates of return for stock-i and j at month-t.

Tabel 4. General Sector Return

No.	Sector/General Sectors	Data	Retur n	ST Dev
1	Raw Mtrls	EW	-0,0817	0,0035
		MC	-0,0980	0,0041
2	Manufatures	EW	-0,0134	0,0017
		MC	-0,0123	0,0023
3	Services	EW	-0,0281	0,0020
		MC	-0,0836	0,0042

\*EW: Equal Weighted

\*MC: Market Capitalization Weighted

In general sector, the result shows that there are no positive return in each sectors. The lowest return value is Raw Materials sector. The largest Standard Deviation is Service sector. The results seen in all general sectors have negative values, both on equal weighted and capital capitalization weighted. there is a value that is far in the general service sector between portfolios formed with equal

weighted market capitalization weighted. The equal weighted value has a value of -0.0281 and market capitalization weighted has a value of -0.0836. This is due to a large gap in the size of companies in the service general sector.

Tabel 5. Sector Return

No.	Sector/General Sectors	Data	Retur n	ST Dev
1	AGRICULTURE	EW	-0,0439	0,0046
		MC	-0,0457	0,0035
2	MINING	EW	-0,1012	0,0037
		MC	-	0,005

3	BSC INDSTRY	EW	0,1204	0
		MC	-	0,002
4	MISC INDSTRY	EW	0,0087	1
		MC	-	0,005
5	CONSUMER GOODS	EW	0,0439	5
		MC	-	0,002
6	PROPERTY, RE, CONS	EW	0,0248	4
		MC	-	0,002
7	INFRASTRUCTRE, UTRLTS, TRANS	EW	0,0052	4
		MC	-	0,001
8	FINANCE	EW	0,0107	9
		MC	-	0,002
9	TRADE, SRVCS & INVST	EW	0,0103	3
		MC	-	0,002

\*EW: Equal Weighted

\*MC: Market Capitalization Weighted

For more detailed results at the sector level can be seen that there is only one sector that has a positive return value. At the sector level, returns in each sector have the same results as the general sector that is generally negative returns. Only in the Finance sector has positive results, even though it has a far different value between portfolios formed in equal weighted and market capitalization weighted. Difference value between portfolio calculations using equal weighted and market capitalization weighted results because there is a high difference in the size of companies in the sector, higher the difference shows that higher the size of the company in a sector.

With the results of the accumulated returns in research period we cannot conclude which sector is better because in general each sector has a negative value. The results of this assessment are caused by several reasons. 1. We need to conduct an analysis at the sub sector level so that it can see which sub sector has resulted in the accumulation of sectors and the general sector having a negative value. 2. Time periode on research is not long enough. Long time period will give a description of characteristics in each sector more detail. 3. Return formula. Calculations at the sector level should use a variety of formulas. Besides using weighted calculations on shares (equal weighted, market capitalization weighted and optimal weighted), it is necessary to use calculations with dynamic trading strategies. 4. This is

caused because it does not fit in the standard categorization sector used in research. The assessment of this sector results in an evaluation that does not match so it appears that there is no superior sector compared to other sectors.

$$R_{p,t} = \alpha_p + \beta_{MKT,p}MKT_t + \beta_{smb,p}SMB_t + \beta_{hml,p}HML_t + \epsilon_{p,t} \quad (3)$$

Where  $R_{p,t}$  is return portfolio sector-p at month-t,  $\beta_{MKT,p}$  is equal to CAPM Beta (JKSE-Riskfree),  $\beta_{smb,p}$  is size effect, small portfolio minus medium portfolio,  $\beta_{hml,p}$  is value premium, high portfolio minus low portfolio.

Table 6. Examination of the General Sector Portfolio with Asset-Pricing Models

General			$\alpha$	$mkt$	$smb$	$hml$
1	Raw Materials	E	-0,003	0,066	-0,172	0,014
		W	<b>-2,542**</b>	0,22	-0,864	0,101
	C	M	-0,002	-0,216	0,154	0,021
		C	<b>-2,271**</b>	-0,886	0,947	0,177
2	Manufactures	E	2E-04	-0,251	-0,029	-0,107
		W	0,384	<b>-1,955***</b>	-0,293	-1,198
	C	M	-3E-04	-0,12	-0,184	-0,177
		C	-0,569	-0,69	-1,36	-1,454
3	Services	E	3E-04	-0,391	0,176	0,192
		W	0,664	<b>-2,998*</b>	0,931	<b>1,933**</b>
	C	M	-0,003	0,149	-0,292	0,221
		C	-	0,484	-0,655	0,944

The table reports the coefficients from the assets pricing models with corresponding t-statistics (tstat). EW is equal-weighted portfolio, MC is market capitalization weighted for each sectors. Asterisks \*, \*\*, \*\*\* indicate value significantly from zero at the 10%, 5%, 1% levels, respectively.

Table 6 shows that in both equal weighted portfolio and market capitalization portfolio, there is no significant value in the SMB variable. this shows that in the general sector, size effect has no effect to the return general sectors. in the services sector, there is a significant negative relationship at the level of 1%. This shows that the movement of returns in the service sector has a value that is opposite to the market. Raw materials Sector has low coefficients with negative significant alpha value in both portfolios, equal weighted portfolio and market capitalization portfolio.

Table 7. Examination of the Sector Portfolio with Asset-Pricing Models

Sector	$\alpha$	$mkt$	$smb$	$hml$
1 Agriculture E	-8E-04	-0,107	0,316	-0,097

		W	-0,89	-0,444	<b>2,931*</b>	-1,325
		M	-0,001	-0,028	0,008	-0,014
		C	-1,175	-0,108	0,07	-0,176
2	Mining	E	-0,002	-0,16	-0,165	-0,288
		W	<b>-2,22**</b>	-0,644	-1,086	<b>-2,205**</b>
		M	-0,003	0,339	-0,536	-0,467
		C	<b>-3,072*</b>	1,145	<b>-2,962*</b>	<b>-2,994*</b>
3	Basic Industry	E	2E-04	-0,193	0,003	0,022
		W	0,368	-1,324	0,022	0,285
		M	-0,002	0,422	-0,17	-0,344
		C	-1,434	1,143	-0,575	<b>-1,787***</b>
4	Misc. Industry	E	3E-04	-0,296	0,178	-0,158
		W	0,655	-1,737	1,503	<b>-2,361**</b>
		M	2E-04	-0,172	0,002	-0,204
		C	0,447	-0,918	0,014	<b>-2,752***</b>
5	Cons. Goods	E	-4E-04	-0,007	0,25	-0,186
		W	-0,959	-0,051	<b>2,004**</b>	-1,087
		M	1E-04	-0,238	-0,086	-0,272
		C	0,249	-1,341	-0,541	-1,247
	Prop. RE.	E				
6	&Const	W	5E-04	-0,412	0,152	-0,154
			1,031	-	1,017	<b>-1,746***</b>
				<b>2,644**</b>		
		M	-4E-04	-0,408	-0,012	-0,019
		C	-0,864	<b>-2,931</b>	-0,091	-0,236
	Infrs., Utilts., &	E				
7	Trans	W	-1E-03	-0,382	0,526	-0,335
			<b>-2,486**</b>	<b>-3,393*</b>	<b>4,821*</b>	<b>-4,009*</b>
		M	-4E-04	-0,418	-0,096	0,057
		C	-0,776	<b>-3,097*</b>	-0,732	0,569
8	Finance	E	0,001	-0,378	0,128	-0,042
		W	<b>2,423**</b>	-	1,052	-0,369
				<b>2,604**</b>		
		M	-0,007	1,091	-1,045	-0,325
		C	<b>-3,608*</b>	<b>1,834**</b>	<b>-2,1**</b>	-0,696

\*

Trade, Srvs. &Invs.	E				
9	W	-7E-04	-0,184	0,145	0,102
		-1,272	-1,064	0,785	0,881
	M	-3E-04	-0,183	-0,19	0,086
		C	-0,537	-1,308	-1,278

The table reports the coefficients from the assets pricing models with corresponding t-statistics (tstat). EW is equal weighted portfolio, MC is market capitalization weighted for each sectors.

Asterisks \*, \*\*, \*\*\* indicate value significantly from zero at the 10%, 5%, 1% levels, respectively.

Tabel 7 shows more detail, Table 6 shows that the general sector service has a significant negative market risk value. At the sector level there are two sectors that have the same negative significant results. In the finance sector and Infrastructure, utilities & transportation show negative coefficients. It shows that both sectors, have the opposite relationship to the market. In the sector 8, Finance has significant positive alpha value indicating abnormal return.

#### 4. CONCLUSION

With the results of the accumulated returns in research period we cannot conclude which sector is better because in general each sector has a negative value. The results of this assessment are caused by several reasons. 1. We need to conduct an analysis at the sub sector level so that it can see which sub sector has resulted in the accumulation of sectors and the general sector having a negative value. 2. Time periode on research is not long enough. Long time period will give a description of characteristics in each sector more detail. 3. Return formula. Calculations at the sector level should use a variety of formulas. Besides using weighted calculations on shares (equal weighted, market capitalization weighted and optimal weighted), it is necessary to use calculations with dynamic trading strategies. 4. This is caused because it does not fit in the standard categorization sector used in research. The assessment of this sector results in an evaluation that does not match so it appears that there is no superior sector compared to other sectors.

If investors invest in a passive strategy, the results seen in the financial sector provide more gain compared to other sectors. But this cannot be drawn to a certain conclusion because the two ways to recalculate sectors have different results. Difference value between portfolio calculations using equal weighted and market capitalization weighted results because there is a high difference in the size of companies in the sector, higher the difference shows that higher the size of the company in a sector.

This study uses a sample period from January 2017 to December 2019 with a total of 484 shares. If investors want to diversify at the sector level, investors need to consider economic needs. Some sectors have the opposite relation to market risk.

In some sectors, market risk factors, size and premium value have a relationship to sectoral returns. This shows that, investors consider the sector, but investors need to consider other factors such as market risk, premium value and size.

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