Do Impact Investments Contribute to Portfolio Performance?

A Preliminary Investigation

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Abstract: Social Impact Investments (SII) intentionally aims at generating social impact and financial return. Portfolio diversification is one of the under-investigated areas in SII literature. The aim of this paper is to fill this gap by conducting a preliminary investigation of social impact firms (SIF) contribution to portfolio risk and performance. For the purpose of this paper, we use a sample of SIF members of the London Social Stock Exchange who are publically listed and two contrast samples of traditional firms (non-SIF). To carry out the analysis, we employed methodology based on Markowitz (1952a, 1952b) and Sharpe (1963). The paper may provide useful insights for asset managers and investors involved in portfolio choice evaluation and policy makers interested in fostering development of the social impact market.

Key words: social impact investments; impact firms; portfolio performance; portfolio choice

JEL codes: G15; G17

1. Introduction

Social Impact Investments (SIIs) intentionally aims at generating a measurable social impact and financial return. The intention of generating social impact distinguishes this kind of investments from traditional ones: although traditional investments can generate positive (or negative) impacts, they are generally defined as externalities, due to their accidental feature.

SIIs can also be differentiated from socially responsible investments (SRI) in the way they screen investments according to ethical criteria. For instance, negative screening excludes companies from a SRI portfolio when they operate in controversial sectors, like alcohol and tobacco. Unlike philanthropy, SIIs require the pay-back of invested capital and a minimum level of financial return.

The SII market has grown since 2010, when the term impact investing was coined. Last available data estimate the market to be worth in the range of $114 billion of assets under management (Mudaliar et al. 2017). The demand-side organizations include almost three kinds of subjects: (1) public institutions that are facing difficulties in addressing social needs with public expenditure; (2) delivery organizations (also defined as social

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impact firms) who demand funding to realize social activities; and (3) people who directly face social needs. The supply-side organizations include private investors (especially institutional investors) and public investors that would like to support the sector with direct financing or guarantees (Social Impact Investment Taskforce SIIT 2014). Investors can also be classified as impact-first or financial-first investors. Impact-first investors 'optimize a social or environmental impact with a financial-floor', and financial-first investors 'optimize financial return with an impact-floor' (Freireick and Fulton 2009 p. 4). Pension funds and investment banks are examples of financial-first investors, while impact-first investors include development banks, foundations and governments.

Specialized or non-specialized intermediaries connect supply-side and demand-side institutions. The London Social Stock Exchange (SSX) was officially promoted in 2013 to foster the fund raising of delivery organizations. 'It offers access to funding to impact organizations and a framework for impact assessment through the Impact Reporting Process which is the key milestone for achieving membership at the Social Stock Exchange. It offers access to the world's first regulated market dedicated to impact businesses of all sizes and investors, meaning that the SSX is a platform where accredited member companies can be traded publicly' (SSX 2017a).

Currently, the SSX has 36 members' organizations (SSX 2017b) that can be defined Social Impact Firms (SIF) for the purpose of this paper. Among these organizations, 14 are publicly listed securities and 18 are private companies whose securities are not publicly tradable. Among the public listed ones, 9 are traded on the London Stock Exchange's Alternative Investment Market (AIM) and 5 on the Social Stock Exchange segment of Icap's Securities and Derivatives Exchange (ISDX).

The total market capitalization (including the valuation of private companies) of the SSX was approximately £2.3 billion at the end of 2016 (SSX 2017a).

Literature on SIF mainly focuses on the measurement of social impact and on their financing through different architectures and channels, including innovative ones like crowdfunding. However, in order to attract financial-first investors and to channel funding to social firms, it is essential that SIIs demonstrate an attitude to obtain satisfying returns and diversification. Few studies investigated risk and return of SIIs and they focused mostly on impact investment funds (Allman and De Nogales 2015; Mudaliar and Barra 2015; La Torre and Chiappini 2016; Chiappini 2017). By contrast, an estimation of impact investments' attitude to portfolio diversification has only been conducted by the Mission Alignment Working Group (MAWG 2014) on the G8 SIIT. The MAWG estimated that the inclusion of 8-12% of impact investments within a portfolio allow investors to achieve the same financial return of a traditional portfolio, with the cons of investing in major illiquid assets and the pros of diversification. In fact, impact investments, like most other non-traditional investments (i.e. socially responsible investments) are substantially anticyclical investments (MAWG 2014). However, this estimation has been conducted without sharing information about the sample, the time period and the methodology used to conduct this analysis.

Thus, the aim of this paper is to conduct a preliminary investigation of SIF contribution to portfolio risk and performance. Data include SIF members of the SSX publically listed. The methodology applied is based on Markowitz (1952a, 1952b) and Sharpe (1963). Two contrast samples are also used to compare the results.

The paper may provide useful insights for asset managers and investors involved in portfolio choice evaluation and policy makers interested in fostering development of the social impact market, although the limited market dimension only allows us to conduct preliminary estimations.

2. Data and Methodology

2.1 Data

The sample of SIF is composed by 8 firms admitted in the SSX. Another 6 firms have been excluded from the sample due to their short series of data. Companies operate in different sectors, i.e. constructions and financial sectors (Table 1).

The time series of prices are captured from Bloomberg and they include prices from November 4, 2015 to June 21, 2017. Thus, the analysis permits for the observation of 410 daily returns. Table 1 summarizes the main features of the sample.

The first contrast sample is composed by 6 companies similar to SIF in terms of market capitalization and sector (Table 2). Specifically, 4 companies overlap with the sectors and the capitalization of SIF, while the others are similar in terms of capitalization or sector and time series.

The second contrast sample is composed by 10 FTSE All Share AIM companies with major capitalization at 21 June 2017. Data was extracted from Bloomberg. The selection of 10 companies is driven by cost-efficient reasons, allowing us to minimize the weight of major companies in the portfolio.

Table 1   Main Features of SIF

Name	Abbreviation	Exchange	Sector	Market cap
Accsys Technologies Plc	AXS LN Equity	AIM, Euronext	Construction & Materials	85.17
Ashley House Plc	ASK LN Equity	AIM	Construction & Materials	4.71
Capital for Colleagues Plc	CFCP PZ Equity	NEX	SSX - Socio - economic	6.9
Good Energy Group Plc	GOOD LN Equity	AIM	Energy	35.90
Menhaden Capital PLC	MHN LN Equity	LSE	Financial	50.40
Milestone	MSG LN Equity	AIM	Media	1.94
Places for People	EI9600542	ORB	Financial	
SurePure	SURP US Equity	OTCQB	Special industry machinery, misc	2.83

Source: authors elaboration based on SSX (2017b)

Table 2   Main Features of Contrast Samples

1st Contrast Sample: non-SIF				2nd Contrast Sample: non-SIF with highest capitalization		
Name	Exchange	Sector	Market cap	Name	Exchange	Sector
Sonae Industria Sgps Sa/New	FSTE AIM All Share	Construction & materials	94.96 M	Avacta Group Plc	FSTE AIM All Share	Costruction and Materials
St Mark Homes II	FSTE AIM All Share	Construction & materials	4.6M	K3 Business Technology Group PLC	FSTE AIM All Share	Technology
Terni Energia	FSTE AIM All Share	Energy	40.08 m	Banca Popolare di Milano	FSTE AIM All Share	Financial
Eltech Anemos S.A.	FSTE AIM All Share	Energy	127.3 M	Ferrum Crescent Ltd	FSTE AIM All Share	Construction & Materials
Centrale del Latte	FSTE AIM All Share	Food	39.5 m	Strat Aero PLC	FSTE AIM All Share	Industrial Goods &Services
Audio Visual Enterprises SA	FSTE AIM All Share	Media	3.94	FW Thorpe Plc	FSTE AIM All Share	Costruction & Materials
				Iomart Group Plc	FSTE AIM All Share	Technology
				Galantas Gold Corporation	FSTE AIM All Share	Basic Resources
				Asiamet Resources Ltd	FSTE AIM All Share	Basic Resources
				Landore Resources Ltd	FSTE AIM All Share	Basic Resources

2.2 Methodology

To assess the SIF contribution to diversification, we use the sample in Table 1 and two contrast samples showed in Table 2 and we composed:

- a portfolio including only SIF;
- a first contrast sample, including non-SIF similar in terms of market capitalization and industry;
- a second contrast sample, including companies from the of FTSE AIM All Share with major capitalization.

For any portfolio we extracted fundamental statistics, such as average return, variance and covariance with the selected index (FSTE AIM All Share). Moreover, in order to appreciate the systematic component of any stock, we calculated the beta[1].

To assess benefit of diversification, we constitute growing portfolios in terms of number of stocks included and we assess the specific and systematic component of risk. Thus, we assessed the portfolio volatility as follows:

$$\sigma_i^2 = \beta_i^2 \cdot \sigma_{mkt}^2 + \sigma_\varepsilon^2 \tag{1}$$

Were:

- $\beta_i^2 \cdot \sigma_{mkt}^2$ is the systematic component of volatility

- σ_ε^2 is the specific component.

To summarize the preliminary results, and to appreciate investors opportunity to invest in: (i) a SIF portfolio or (ii) in non-SIF portfolio or (iii) in a portfolio combining SIF and non-SIF, we use the Sharpe ratio (1963). Specifically, the Sharpe ratio measures the average return earned in excess of the risk-free rate per unit of volatility.

$$Sharpe\ Ratio = \frac{r_p - r_f}{\sigma_p} \tag{2}$$

Were:

r_p is the mean monthly return

r_f is the mean monthly return of risk-free rate

σ_p is the standard deviation of r_p

3. Performance and Risk of Impact Firms

This section analyzes the performance and risk of SIF listed in the London Social Stock Exchange. The average return in the considered time period – from November 4, 2015 to June 21, 2017 – is very low for three companies and negative for the other five companies (Table 3). On average, the return of all the SIF companies are below the market.

The volatility of SIF is higher than the market, with the exception of one company (Place for People). The beta of SIF companies is lower than 1, thus price movements are not particularly correlated with the market. Specifically, four companies show a beta close to zero, meaning that they are independent from the market price fluctuations. Other four companies show a beta from 0.46 to 0.88 (Table 3 and Figure 1).

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[1] Specifically: beta (β) is calculated as: $\beta_i = \frac{\sigma_{i,mkt}}{\sigma_{mkt}^2}$ where $\sigma_{i,mkt}$ is the covariance between the stock returns and the market returns and mentre σ_{mkt}^2 is the variance of the returns on the market.

Table 3   Performance and Risk of SIF

	AXS LN Equity	ASH LN Equity	CFCP PZ Equity	GOOD LN Equity	MHN LN Equity	MSG LN Equity	EI960042 Corp	SURP US Equity	FTSE AIM All Share
Average Return	0.17%	-0.42%	-0.67%	0.06%	-0.11%	-0.42%	0.30%	-0.95%	0.64%
Standard Deviation	1.54%	2.56%	1.11%	1.49%	1.93%	8.70%	0.53%	12.02%	0.61%
Beta	0.695	0.750	-0.097	0.801	0.026	0.630	-0.007	0.459	1
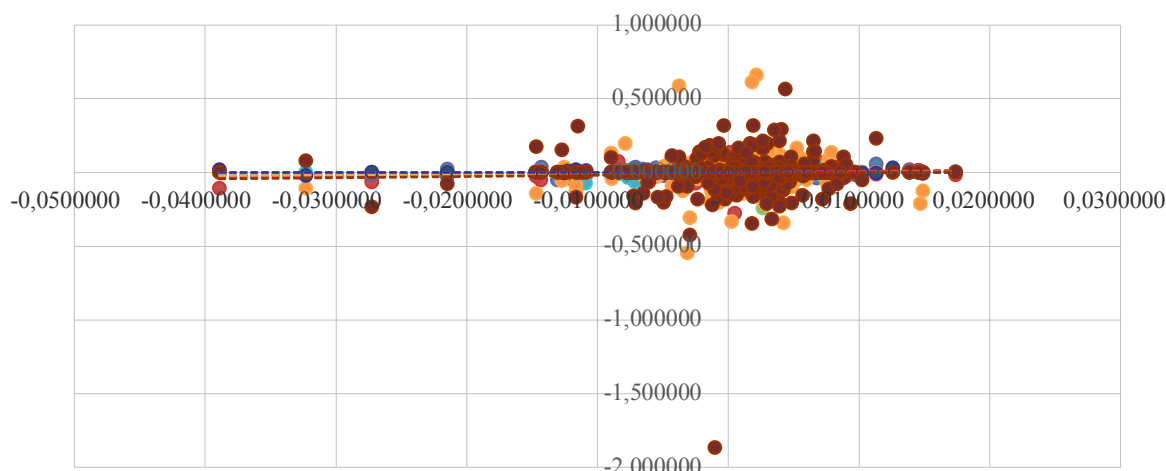
Figure 1   Distribution of SIF Returns and Characteristic Lines

4. Contribution to Portfolio Diversification

The following sections include the main results of the analysis.

4.1 Portfolios of SIF

We first tested whether a portfolio of a SIF can be considered sufficiently diversified. Thus, we progressively introduced stocks in the portfolio of a SIF, starting with the SIF showing highest beta (Table 4). The step by step introduction of stocks generated many sub-portfolios characterized by a specific component (Table 4). However, the risk of SIF portfolio decrease progressively when the number of SIF grows, due to the decrease of both specific and systematic components. Table 4 shows that the first portfolio, including two SIF, was characterized by a beta of 0,8604; the final portfolio is featured by a beta of 0,3782. Moreover, the specific component of the first sub-portfolio (two stocks) accounts for 0.0044007 (99.47%), while for the last sub-portfolio (eight stocks) it accounts for 0.0003955 (98.88%). Therefore, as the specific component decrease, it remains the main determinant of the SIF risk.

We can conclude that the companies' membership in the London Social Stock Exchange does not prevent diversification. The sector diversification, obtained by combining the 8 stocks from different sectors, is sufficient to obtain a diversified portfolio.
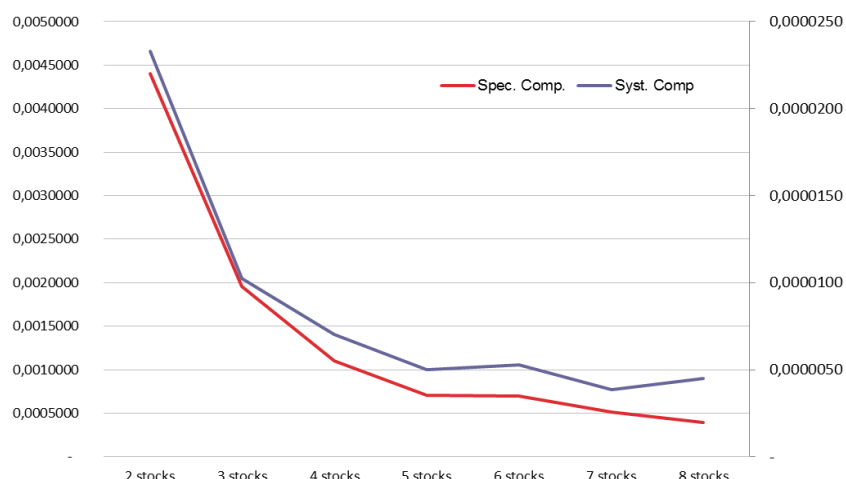
Figure 2   Portfolio of SIF, by Specific and Systematic Risk Components

Table 4   Risk of SIF Portfolios

| Portofolio	β	σ	Cov(P;Im)	σ²	Systematic Comp.	Specific Comp.	Systematic Comp.%	Specific Comp.%
2 stocks	0.8604	6.651%	0.000027053	0.442%	0.00002328	0.004401	0.5262	99.4738
3 stocks	0.5704	4.430%	0.000017934	0.196%	0.00001023	0.001952	0.5213	99.4787
4 stocks	0.4728	3.325%	0.000014866	0.111%	0.00000703	0.001098	0.6358	99.3642
5 stocks	0.3988	2.670%	0.000012538	0.071%	0.00000500	0.000708	0.7013	99.2987
6 stocks	0.4095	2.645%	0.000012875	0.070%	0.00000527	0.000694	0.7537	99.2463
7 stocks	0.3509	2.268%	0.000011032	0.051%	0.00000387	0.000510	0.7529	99.2471
8 stocks	0.3782	2.000%	0.000011891	0.040%	0.00000450	0.000395	1.1244	98.8756
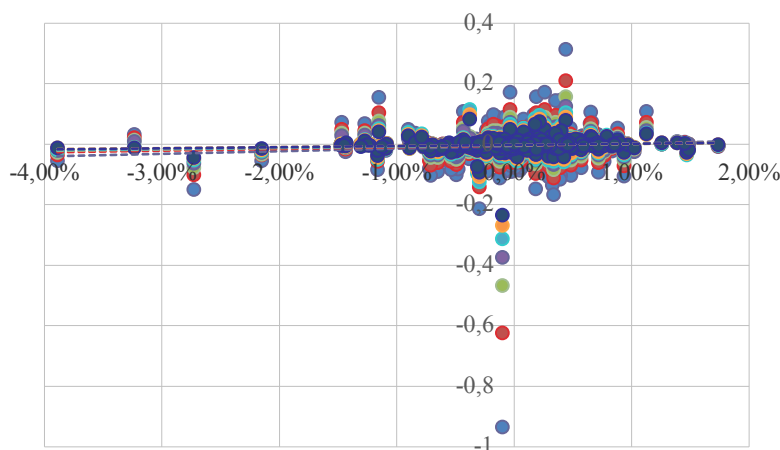
Figure 3   Distribution of SIF Returns in Contrast with Market Index

4.2 Portfolio of SIF vs a Contrast Sample of non-SIF

In order to assess whether the SIF portfolio is preferable to a non-SIF portfolio, we built a non-SIF portfolio with similar companies in terms of market capitalization and industry, as showed in Table 2.

Some non-SIF outperforms the market, while others underperform the market. All the non-SIF are risker than the FTSE AIM All Share Index (Table 5).

Table 6 summarizes the main features of the non-SIF sub-portfolios in terms of performance and risk. The

portfolio including 6 stocks is riskless than others, and it shows a reduction of specific component, although it remains very high (Figure 4).

Figure 5 compares specific and systematic risk components of the SIF and non-SIF portfolio. The specific component of the SIF portfolio is lower than the specific component of non-SIF portfolio. However, the specific component is really high for the two portfolios, thus we have controversial results concerning the risk component. Moreover, both portfolios show low beta.

The diversification effect, for both SIF and non-SIF portfolios, is realized since the inclusion of, at least, 6 stocks.

Table 5   Performance and Risk of Non-SIF

	Centrale del Latte	Audio Visual Enterprises	Sonae Industria SGPS	Eltech Anemos	Stmark homesII	Terni Energia	FTSE AIM All Share
Average return	-0.040%	0.076%	0.030%	0.167%	-0.007%	-0.102%	0.064%
Standard Deviation	2.022%	6.907%	3.051%	1.983%	1.170%	2.543%	0.561%
Beta	-0.2823	0.8013	0.3777	0.1457	0.0120	0.0898	1

Table 6   Risk of Non-SIF portfolio

Portfolio	β	ϭ	Cov(P;Im)	ϭ²	Systematic Comp.	Specific Comp.	Systematic Comp. %	Specific Comp. %
2 stocks	0.2594971	0.0362026	0.0000082	0.0013106	0.0000021	0.0013085	0.162%	99.838%
3 stocks	0.2989008	0.0264073	0.0000094	0.0006973	0.0000028	0.0006945	0.403%	99.597%
4 stocks	0.2606058	0.0208527	0.0000082	0.0004348	0.0000021	0.0004327	0.491%	99.509%
5 stocks	0.2108807	0.0168849	0.0000066	0.0002851	0.0000014	0.0002837	0.490%	99.510%
6 stocks	0.1907033	0.0154058	0.0000060	0.0002373	0.0000011	0.0002362	0.482%	99.518%
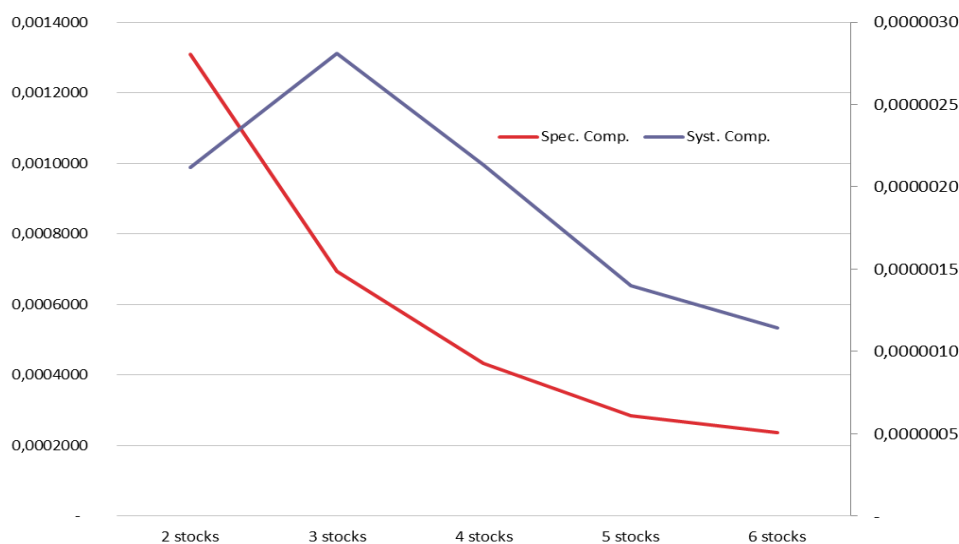
Figure 4   Systematic and Specific Components of a Non-SIF Portfolios

4.3. SIF and Portfolios of Highest Capitalization Stocks

In this section we present results of SIF inclusion in a portfolio composed by 10 companies at maximum capitalization of the FTSE Aim All Share index. The portfolio is described in Table 3.

The inclusion of SIF reduced the specific component of risk (Table 7). However, the beta shows a modest,
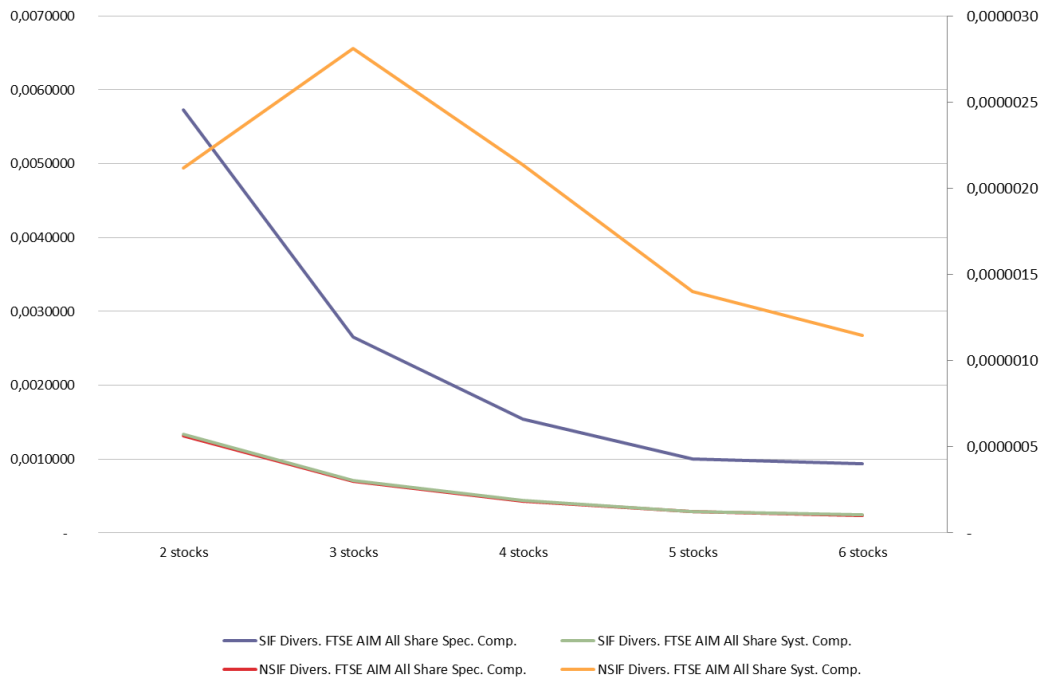
but not significant, increase.

Figure 5   Systematic and Specific Components of SIF and Non-SIF Portfolios

Table 7   Risk of Portfolios of Highest Capitalization Stocks with SIF

| Portfolios	B	σ	Cov(P;Im)	σ^2	Syst. Comp.	Spec. Comp.	Comp syst. %	Comp spec. %
Portfolio with 10 FSTE companies with highest capitalization	0.103888666	0.0223644	0.000003266	0.00050017	0.00000034	0.00049983	0.07%	99.93%
2 stocks	0.009121922	0.000678924	0.000000287	0.00000046	0.00000000	0.00000046	0.57%	99.43%
3 stocks	1.043058136	0.05444424	0.000032795	0.00296418	0.00003421	0.00292997	1.15%	98.85%
4 stocks	0.453665082	0.03390974	0.000014264	0.00114987	0.00000647	0.00114340	0.56%	99.44%
5 stocks	0.398945677	0.027152254	0.000012544	0.00073724	0.00000500	0.00073224	0.68%	99.32%
6 stocks	0.349560526	0.02271664	0.000010991	0.00051605	0.00000384	0.00051220	0.74%	99.26%
7 stocks	0.365768648	0.023125714	0.000011500	0.00053480	0.00000421	0.00053059	0.79%	99.21%
8 stocks	0.319955855	0.020240692	0.000010060	0.00040969	0.00000322	0.00040647	0.79%	99.21%
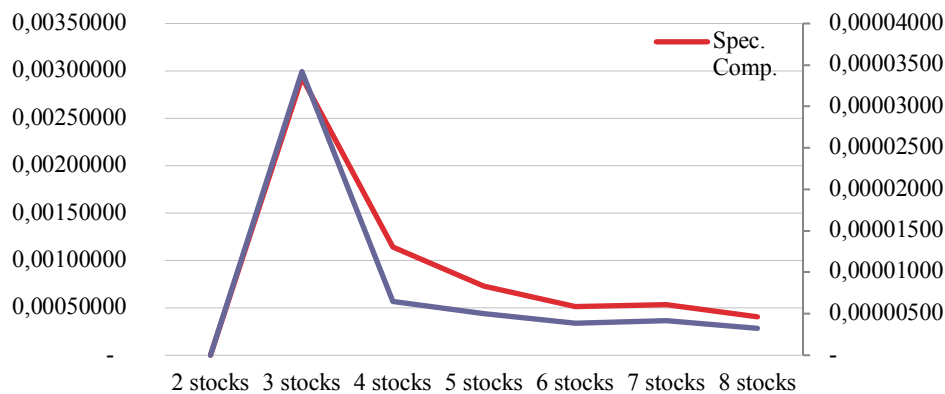
Figure 6   Systematic and Specific Components of a Portfolio Cmbining SIF and Non-SIF with Maximum Capitalization

5. Risk Adjusted Performance

The adjusted performance show that the preferred portfolio is composed by non-SIF companies. The Sharpe ratio of the SIF portfolio accounts for - 0,0876588, while the Sharpe ratio of non-SIF portfolio is 0,8792408. Moreover, the Sharpe ratio of the non-SIF and SIF portfolio accounts for - 4,5990137 (Table 8).

The risk is similar for the three portfolios, while the returns are negative for both the SIF portfolio and the portfolio including non-SIF and SIF; on the contrary, it is positive, albeit very low, for non-SIF (Table 8). Limited time series and the consideration of the period from November 4, 2015 to June 21, 2017 can affect the analysis.

Table 8   Sharpe Ratio

	SIF Portfolio	Non-SIF portfolio	Non-SIF and SIF portfolio	FTSE AIM All Share
Average return	-0.0017532	0.0002087	-0.0018841	0.0006399
Standard deviation	0.0199997	0.0154058	0.0202407	0.0056073
Sharpe Ratio	-0.0876588	0.8792408	-4.5990137	20.3533404

6. Conclusions

The investment in SIF allows investors to obtain diversified portfolios or to mitigate the risk of non-SIF portfolios. However, analyzing results in terms of Sharpe ratio, investing in non-SIF is more convenient. The investment in SIF cannot be considered indifferent, or suitable, for financial first investors, because the financial return of these investments is lower than the return generated by investment in traditional companies. Thus, this type of investment seems suitable for impact-first investors, although this paper did not directly investigate the social impact generated by SIF. According to the theoretical formulation of Saltuk and El Idrissi (2012), to assess the benefit of the investment in a portfolio composed by SIF, three variables should be considered: performance, risk and social impact. However, social impact is not unanimously defined and valued (SIIT, 2014) thus, the consideration of a social impact variable can determinate the reduction of SIF that could be included in a sample. The consideration of specific sector, like microfinance, can allow researchers to properly include the social impact evaluation as a discriminant variable, because of a high level of measurement standardization.

This study suffers from the limitation of a short time series – we only analyzed 410 daily returns starting from November 4, 2015 – and the non-perfect overlap of the contrast samples. Moreover, the absence of specific benchmarks for impact investments and SIF does not allow us to compare different markets. Thus, this analysis can be considerate market-specific, focusing on the SSX.

Future research can repeat the analysis expanding the number of SIF and the time series in order to check if the conclusion of this paper would be confirmed.

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[1] Specifically: beta (β) is calculated as: $\beta_i = \frac{\sigma_{i,mkt}}{\sigma^2_{mkt}}$ where $\sigma_{i,mkt}$ is the covariance between the stock returns and the market returns and mentre σ^2_{mkt} is the variance of the returns on the market.

Paper Acceptance Notice

October 17th, 2017

Congratulations! After a thorough double-blind review, we are pleased to inform you that your paper entitled "DO IMPACT INVESTMENTS CONTRIBUTE TO PORTFOLIO PERFORMANCE? A PRELIMINARY INVESTIGATION" (JBE20170924-2, 1st submission received: 09/24/17) has been formally accepted for publication in a forthcoming issue of Journal of Business and Economics (JBE).

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