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The use of the sustainable investment against the broad market one. A first test in the Mexican stock market

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ABSTRACT

The present paper studies the mean–variance efficiency of the sustainable investment (SI) practice in Mexico by proving the existence of a statistical equality in the performance levels of the IPC sustainability (IPCS) index against the broad market IPCcomp one. Using daily standard deviation and Sharpe ratio levels from November 2008 to August 2013, along with variance ratio and a one-factor CAPM spanning tests, our results showed that the SI strategy in Mexico is as mean–variance efficient as the broad market one, being a good substitute of the latter in the long term. Our results also refuted the assumption of a loss of mean–variance efficiency in the sustainable subset due to a lower diversification.

1. Introduction

Sustainable investment (also known as socially responsible investment) is a tried and true activity that comes from religious practices such as the ones followed by Muslim, Jewish and Puritan groups who apply religious and ethical codes for doing business and investing. In the 1960s, the US financial industry formally adopted this investment strategy in the climate of political, social, and anti-war movements. Since then, several statements about the appropriateness of sustainable investment (SI) have arisen, such as "sustainable investment is more profitable than common (broad market) one" (Mexican Stock Exchange, 2013, pp. 18–24). From another perspective, several Modern Portfolio Theory (MPT) questions have been presented, such as the ones related to the mean–variance efficiency of the sustainable portfolio subset against a broader market investment universe.

In the case of Mexico, SI is a recent practice and started formally in 2008 when the Mexican Stock Exchange launched the sustainable IPC index (or IPCS) with stock members from the broad market IPCcomp index. This was done by following a positive sustainability screening process that is similar to the ones followed in prestigious and widely used indexes such as the Domini 400 Social Index, the Dow Jones Sustainability Index, or the FTSE4good. In the particular case of the Mexican index, the social screening process is executed with the economic, environmental and social pillars (Mexican Stock Exchange, 2006). These screenings are performed by Anahuac University and Ecovalores, a Mexican firm associated with EIRIS. By following a confidential contract with the Mexican Stock Exchange, these two rating firms evaluate all the IPCcomp members by using a similar scale and indicators of the KLD sustainability index[1] that are based and also consistent with the aforementioned three pillars of sustainability ratified by the United Nations. These indicators are also consistent with the ISO/1400 standard and with the OCDE and World Bank recommendations for corporate governance. The joint rating for each of the sustainable stocks is determined in a weighted manner.[2] By receiving a separate report from these two firms (Anahuac university and Ecovalores), the Mexican Stock

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[1] An index known today as the MSCI ESG (environmental, social and governance, ESG) index.
[2] Please refer to Mexican Stock Exchange (2013, p. 6) for further details.

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Exchange determines, from the universe of the IPCcomp, the 30 stocks that have the highest sustainability score and, therefore, will be members of the IPCS. This task is done each February.[3] With this, the IPCS is a small, mid and large-cap sustainability index that has at most 30 members, setting aside the potential benefit of investing in a wider sustainable portfolio of more than 30 stocks.[4]

As will be mentioned in the literature review, almost all the sustainable investment research has focused on the mean–variance efficiency property of either sustainable mutual funds or sustainable equity indices. To our knowledge there are no previous studies about SI in Mexico, being the present a first test in the Mexican Stock Exchange by comparing the performance of the IPC sustainability index (henceforth IPCS) against the broad market IPCcomp index.

Due to diversification issues that are the corner stone of MPT's theoretical assumptions, it is not theoretically acceptable for a subset (portfolio) to be as mean–variance efficient as either the broader market portfolio (index) or a larger set. Despite this, as Roll (1977) or Amenc, Goltz, Lodh, and Martellini (2012) stated, not all the assumptions of MPT (as the market portfolio efficiency) prove out in real life. For this reason two portfolios with different but similar cardinalities could lead to similar efficiency results even if they are not as efficient as the portfolios that belong to the efficient set (frontier).

Examples of previous research that perform this sort of test are Statman (2006) and Schröder (2007) where the conclusions show that the sustainable investment is as mean–variance efficient as the broad market one. Following this finding and noting that, to our knowledge, there are no studies applied to the sustainable investment in Mexico, the present paper tests the next hypothesis: "The IPC sustainability index is as mean–variance efficient as the IPC or the IPCcomp indexes".

Once the aim and potential results in the paper have been stated, we present the results about the Mexican sustainable investment in four parts with the next sequence: In the literature review we present some of the previous papers that study the effects of sustainable investment and also search for the main mean–variance differences between the SI and the conventional one (i.e. the investment style that does not distinguish between sustainable stocks and non-sustainable ones). Following this review, in the data and methodology part, we describe how did we processed the data, which are our main sources and how did we run the hypothesis tests. Once this is done, we discuss our findings in the results and discussion part, in order to expose our main conclusions and guidelines for further research in the concluding remarks.

2. Literature review

Sustainable investment (SI) has been studied in different countries. Moskowitz (1972) carried out one of the first reviews by testing SI mutual funds, suggesting that their extra returns against broad market investment funds were due to the mispricing of social responsibility. The literature review that follows is just the beginning of some of the most quoted or recent studies about sustainable investment.

Following Statman (2000) tested the Domini 400 Sustainable Index against the S&P500 and also studied the performance of SI funds against common ones. He carried out his study by using a statistic based in Modigliani and Modigliano (1997) performance measure. What he found was that even though the SI funds performed better than non-SI ones, no statistical proof existed to support this result. Boutin-Dufresne and Savaria (2004) also studied the performance of Canadian SI funds against their common counterparts. They also compared SI funds against a broad market index (S&P-TSX index), finding the same results as in Statman's study and noting that SI funds have less diversifiable risk.

With another performance measure, Schröder (2004) analyzed the performance of 56 SI funds from the US, Germany and Switzerland, along with 10 SI benchmarks by using the Jensen's alpha with data from 2000 to 2002. He tested the potential underperformance of the SI against the broad market funds and his results showed no statistical evidence to support his hypothesis.

By using the same performance measure in Carhart (1997) multi-factor model, Bauer, Koedijk, and Otten (2005) tested the German, US and UK SI funds against their respective market and SI index. With their test, they found no over performance against the broad market index and the SI benchmark, and observed that the US funds were highly concentrated in blue chip stocks whereas the UK and the German ones preferred small cap stocks. By using Carhart's multifactor model and a standard CAPM one, Scholtens (2005) also studied the performance of Dutch SRI mutual funds against the AEX market index. Like the two previous studies, he found no statistical significance in the Jensen's alpha.

In order to confirm his previous results, Schröder (2007) tested 29 SI worldwide indexes by using Huberman and Kandel (1987) one factor CAPM spanning test with the next null hypothesis H_0: $\alpha = 0$, $\beta = 1$. He also used his own version of the Fama and French (1992) model in a regression equation system solved with the Seemingly Unrelated Regression approach. With his tests, he did not find any significant alpha of the studied sustainable benchmarks against the broad market indexes and observed that even though the risk level in SI investment was higher against the broad market one, the performance was the same among them. He also concluded that, thanks to the spanning test results, the broad market indexes could not be used as a substitute of the SI ones, suggesting that both indexes should not be used indistinctly in a stock portfolio.

To study the Dow Jones Sustainability Stoxx (DJSS) index, Consolandi, Jaiswal-Dale, Poggiani, and Vercelli (2008) created a surrogate non-sustainable index with the stocks that do not belong to the DJSS and are members of the Stoxx 600 index. Their results demonstrated that sustainable investment did not lead to a higher performance against the non-sustainable one. In the same paper, the authors performed an event study to test the stock price reaction after the inclusion or exclusion of the stock in the DJSS. With this, they found an important positive impact when a stock was included in a SI index but a more significant negative one when it was excluded. In another event-driven study of 827 sustainable stocks from the US, UK, Japan, Germany and France, Capelle-Blancard and Couderc (2009) tested the inclusion and exclusion from their country's sustainable index and found that the stocks price impact was observed only in the short term, finding no influence of these sorts of events in the long term.

With a global perspective, Lee and Faff (2009) tested the DJ Global Index against the DJ sustainability index by creating leading and lagging social screening sustainability indexes and by testing two versions of the DJSI: one with the stocks that matched with similar non SI stocks, and the original index. This group of indexes was tested with a six-factor model that used the global market, book value, market cap, momentum, country, and sector indexes. The results found no positive and significant alpha with this model, suggesting that the market did not value the SI status of a company.

By studying Morningstar's sustainable fund category in the 1990–2008 period, Blanchett (2010) tested the performance of SI funds against similar non-SI ones and ran a standard (one factor)

[3] For further details about the cardinality restrictions (max and min weights), please refer to Mexican Stock Exchange (2006).

[4] We are not going to study the impact of the sustainable investment in the sustainable stocks that are not members of the IPCS because, as of 2014, there were no more tan 30 members from the IPCcomp with a high sustainability score and because the impact in the asset pricing of non-sustainable stocks is on current research by some of the authors.