Canadian Ethical Mutual Funds: Risk-adjusted Performance

Jianying Liang

A Thesis

In

The John Molson

School of

Business

Presented in Partial Fulfillment of the Requirements

For the Degree of Master of Science (Administration) at

Concordia University

Montreal, Quebec, Canada

December 2012

CONCORDIA UNIVERSITY
School of Graduate Studies

This is to certify that the thesis prepared

By: _____

Entitled: _____

And submitted in partial fulfillment of the requirements for the degree of

---

Complies with the regulations of the University of Meets the accepted standards with respect to originality and quality.

Signed by the final examining committee:

_____Ulrich Wassmer_____ Chair

_____Gregory Lypny _____ Examiner

_____Rahul Ravi_____ Examiner

_____Latha Shanker_____ Supervisor

Approved by _____
Chair of Department or Graduate Program Director

_____
Dean of Faculty

Date _____

Abstract

Canadian Ethical Mutual Funds:

Risk-adjusted Performance

Jianying Liang

Is it possible to "do well while doing good"? This is a question that investors whose investment objective is to invest in ethical investments would like to know. I answer this question by addressing the risk-adjusted performance of ethical mutual funds. Ethical mutual funds are funds that incorporate Environment, Social and Governance (ESG) criteria in selecting investments. While previous studies addressed funds based in the United States and the United Kingdom, I focus on a sample of Canadian ethical mutual funds addressing the period of the financial crisis and immediately after. In previous studies of the performance of ethical mutual funds, measures of the funds' systematic risk were assumed to be constant over the period studied, resulting in possibly biased measures of performance. Using a conditional model of fund returns, I allow the measures of risk to be time-varying, incorporating information variables which proxy for the state of the economy. Canadian ethical mutual funds tend to underperform the market index by 4% per year, thus it is difficult "do well while doing good" in bad times. However, investing in the category of Canadian Fixed Income tends to produce superior performance to the market by 5% per year therefore it may be a good investment strategy for ethical investors.

Acknowledgement

I would like to thank all the people who have helped and inspired me during my graduate studies. I especially want to acknowledge, with gratitude, my deep thanks to Professor Latha Shanker. She continually conveyed a spirit of diligence and adventure in regard to my thesis study and research. In addition, she was always accessible and willing to help her students with their research. As a result, research life became smooth and rewarding for me. Without her valuable guidance and persistent help this thesis would not have been possible.

I would like to thank my committee members, Professor Gregory Lypny and Professor Rahul Ravi, for their help, encouragement and insightful comments. All my lab buddies at the MSc lab made it a convivial place to work. Thanks.

My deepest gratitude goes to my family for their unflagging love and support throughout my life; this dissertation is simply impossible without them. I cannot ask for more from my mother, Aiting Wu, as she is simply perfection. I have no suitable word that can fully describe her everlasting love for me, for her love, her care and her continual support.

Last but not least, thanks are to God for my life through all tests during these two years. Life is challenging but always full of hope.

List of Tables

List of Figures

Contents

Chapter I Introduction

I.1 Socially Responsible Investing (SRI)

The initiatives of Socially Responsible Investing (SRI) vary and there is no unified definition of SRI. Bruyn (1987) and Hylton (1992) first use the term SRI to study social investments and examine the investment performance. Following this, researchers and professionals use the terms "social", "ethical", "responsible", "socially responsible", "sustainable" and others to address SRI. Generally speaking, the criteria of Environment, Social and Governance (ESG) will be employed during asset selection and management of SRI (PRI[1] 2012 annual report). More specifically, a combination of "positive" and "negative" investment criteria was employed (Hamilton et al. (1993)) for SRI portfolio selection. The positive criteria include good employee relations, good records for advancing minorities, and good pollution-control management. The negative criteria include weapons, alcohol, or tobacco production.

The root of SRI can be traced back to the 1920s, when religious organizations made efforts to introduce ethical elements into investment policies (John Hancock (2002), pg.20). In the 1960s, socially concerned investors made efforts to address equality for women, civil rights, and labour-management issues. This is when the modern root of SRI began (Bauer et al. (2005)). In the early 1990s, the focus of ethical investment was on the political situation in South Africa and environmental sustainability (John Hancock, pg.21). In the 2000s, the industry of SRI has matured to a high level, with researchers studying and discussing SRI from many perspectives. In Schueth (2003), the author points out that there are three influential factors for the industry growth of SRI: better education, women investors and the good performance of SRI during the

[1] PRI : Principles for Responsible Investment initiative.

sample period. Nilsson (2008) confirms that women and better-educated woman invest more in SRI. In Sparkes and Cowton (2004), investors in the U.S. have asserted social and environmental objectives and influenced companies over the last 30 years.

From that time on, Rio+20[2] offered opportunities to investors to foster a sustainable global financial system. More recently, some investors have attempted to address the rights of indigenous people (2007 SRI in the Rockies Conference) or better corporate governance of greater transparency and accountability (Socially Responsible Investment Conference Winter 2011 Report[3]).

In 2005, the UN-backed Principles for Responsible Investment initiative (PRI) was launched. The PRI is an investor initiative in partnership between the UN and global investors. It promotes SRI worldwide and supports signatories to fulfill the six PRI Principles. The number of signatories increased from 20 to 1100 in six years with assets under management of approximately U.S. $30 trillion. The PRI signatories are located in 50 counties. Figure I presents the number of signatories of the PRI at the end of May 2012. The PRI signatories are located in 50 countries 28% of the signatories are U.K. and U.S. institutions. 4% of the PRI signatories are Canadian institutions and the number of Canadian signatories is 42.

The U.S. Forum for Sustainable and Responsible Investment (U.S. SIF) is a national non-profit association dedicated to SRI. From 2007 to 2010, SRI under professional management in the U.S. reached an estimated $3.07 trillion out of a total of $25.2 trillion according to the Forum

[2] Rio+20: The United Nations Conference on Sustainable Development aims to put the world on a more sustainable course, in the environmental, social, economic and governance spheres.
[3] SRI Winter 2011 Report:http://www.firstaffirmative.com/resources-news/publications/affirmative-thinking/affirmative-thinking-winter-2011/affirmative-thinking-winter-2011-full-version

for Sustainable and Responsible Investment (US SIF) 2011 report[4]. Of every eight dollars under management in the U.S. market today, one dollar is involved in sustainable and SRI, as tracked by Thomson Reuters Nelsons. Most of the assets are in separate accounts, and portfolios are managed for institutional and individual clients. The fastest growing area is community investing[5] in the last three years, increasing from $25 billion to $ 41.7 billion dollars. Institutional investors constitute the largest segment of SRI.

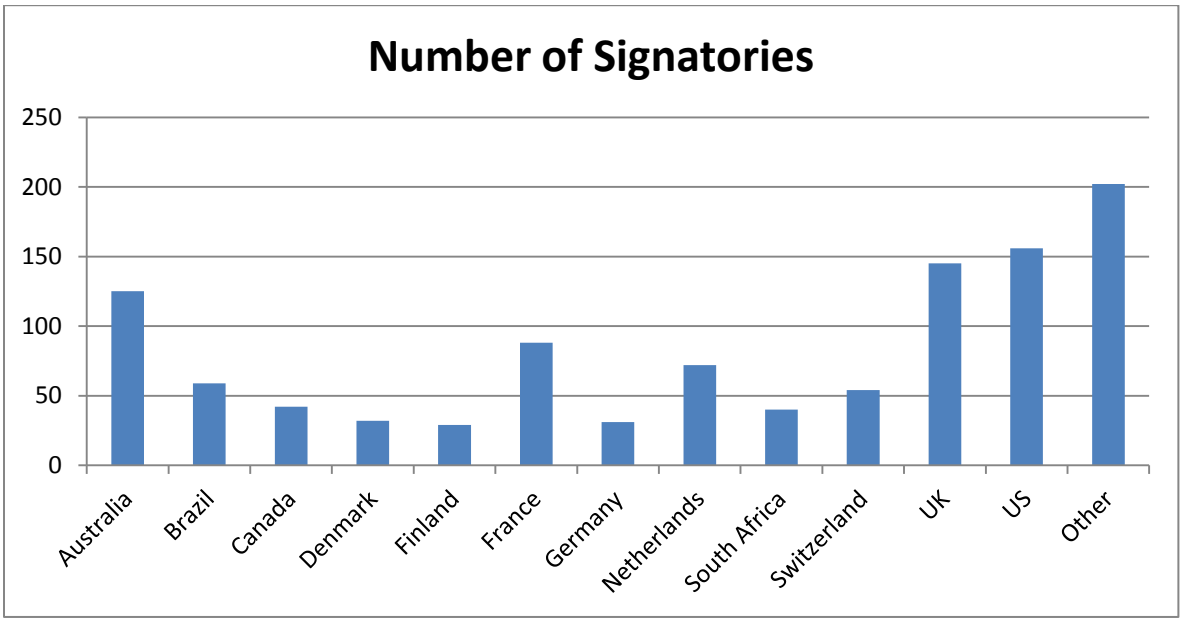

Figure 1.The number of signatories of the Responsible Investment initiative (PRI), May 2012.

(Source: the Responsible Investment initiative (PRI) 2012 Annual Report.)

Eurosif (the European Sustainable Investment Forum) is a not-for-profit organization that "develops sustainability through European financial markets". Every two years, Eurosif releases a report concerning the current status and future trends of SRI in Europe. The 2010

[4] SIF 2011 Report: http://ussif.org/resources/pubs/trends/
[5] Community investing earns competitive returns and produces a social return that is attractive to investors and helps communities in need.

European SRI Study report[6] notes the enormous growth in the European SRI market. SRI under professional management has increased from €2.7 trillion in 2008 to €5 trillion, as of December 31, 2009. The main driver of this growth is asset class diversification. Previously, the main vehicle of SRI in Europe was equity but now fixed income investing represents 53% of total SRI assets. Among European countries, the U.K. is acknowledged as a leader in sustainable and socially responsible finance. An Ethical Investment Research Service (London EIRIS) survey[7] indicated that 90% of the participants are willing to switch to a different provider if it offered green or ethical investment products[8].

I.2 Ethical Mutual Funds

The vehicles of Socially Responsible Investing (SRI) range from stocks, mutual funds, exchange-traded fund, bonds, to retail venture capital, etc. One of the main vehicles of SRI is ethical mutual funds, which are geared towards the individual and institutional ethical investors. Professional fund managers are responsible for the labour-intensive process of screening, selection, and management of investment portfolios. In 2010, assets under management (AuM) of ethical mutual funds in the U.S. reached U.S. $ 316.1 billion.

The U.S. Forum for Sustainable and Responsible Investment (U.S. SIF) has been most influential in setting the guidelines for SRI (Ghoul and Karam (2007)). Fund managers select and manage securities within a particular universe of businesses, which operate in a manner incorporating Environment, Social and Governance (ESG) criteria. Generally speaking, fund managers combine three investment criteria: “positive”, “negative” and “restricted” criteria

[6] the Eurosif 2010 European SRI Study: http://www.eurosif.org/images/stories/pdf/Research/Eurosif_2010_SRI_Study.pdf

[7] EIRIS Survey: http://www.eiris.org/media.html#marketstats2011

[8] EIRIS Survey: http://www.eiris.org/media.html#marketstats2011

respectively. Specifically, positive investment criteria include investments with a positive impact on the environment, community investment, and employment relations, etc. Negative investment criteria exclude investments engaged in alcohol, animal testing, defence/weapons, and human rights violations, etc. while restricted investment criteria seek to avoid poorer performers in alcohol, animal testing, defence/weapons, human rights violations, etc. [9] I list examples of U.S. ethical mutual funds screening in Table I. The Appleseed Fund, for example, favours companies with good records of toxic or pollution control, and companies with good labour relations. The fund restricted investment to exclude companies that manufacture alcohol, weapons, or tobacco. The Ariel Appreciation Fund favours environmental-friendly companies. The fund does not invest in companies that manufacture weapons or tobacco. From Table I, we can see that 5 out of 5 funds aim to make a positive impact in the areas of environment and community. 3 funds use positive investment criteria in the area of board issues. 5 funds restricted or make no investment in the areas of defence and tobacco.

There was an increased growth in ethical mutual funds in recent decades. In 1995, there were 55 ethical funds with assets under management of USD 12 billion. In 2010, there were 250 ethical mutual funds in the U.S., with assets under management of USD 316.1 billion. In Europe, the ethical mutual funds market is also booming. According to the 2010 Vigeo report[10] "Green Social and Ethical Funds in Europe", the number of European ethical mutual funds has jumped to 879 with assets under management of €75 billion. 36% of the assets under management in European ethical mutual funds belong to mutual funds based in France. As

[9] US SIF: http://ussif.org/resources/mfpc/screening.cfm

10 The Vigeo Italia reports are recognised as one of the important European reference studies on SRI, and offer a general outlook on ethical mutual funds in Europe.

investment in these funds grows tremendously, U.S. and European researchers are enormously interested in the financial performance of ethical mutual funds.

Table I

Examples of Screening Used by U.S. Ethical Mutual Funds

Table I presents the screening used by five U.S. ethical mutual funds. There are 14 criteria for screening ranging from "climate/clean tech" to "tobacco", and five examples of ethical mutual funds: Appleseed Fund, Ariel Appreciation Fund, Ariel Fund, Parnassus Fund and Portfolio 21. I select these five funds randomly. N stands for Negative Investment criteria, which means to exclude investments engaged in this activity. P stands for Positive Investment criteria, which seeks investments with positive impact in this area. R stands for Restricted Investment criteria, which seeks to avoid poorer performers in this area. A blank means no investments are screened in this area.

(Source: The U.S. Forum for Sustainable and Responsible Investment (U.S. SIF), March 2012.)

	Appleseed	Ariel Appreciation	Ariel Fund	Parnassus	Portfolio 21
Climate/Clean Tech.	P			P	P
Pollution/Toxics	P			P	P
Environment/Other	P	P	P	P	P
Community Dev.	P	P	P	P	P
Diversity& EEO		P	P	P	R
Human Rights	P			P	R
Labour Relations	P			P	R
Board Issues		P	P	P	P
Executive Pay				P	R
Alcohol	R			R	
Animal Testing				R	R
Defence/Weapons	R	N	N	R	R
Gambling	R			R	R
Tobacco	R	N	N	R	R

I.3 The Canadian Case

As of June 2010, the Canada Social Investment Organization (SIO) noted that there was CAD $530.9 billion in socially responsible investment assets, which is about one-fifth of the assets under management in the Canadian financial industry. Canadians are open to SRI provided that investment returns are similar to comparable investments, according to a new Standard Life survey[11] of over 1,000 Canadian investors. Ethical mutual funds represent a big part of SRI funds currently available in Canada, according to information obtained by the SIO. By March 2012, total assets under management of Canadian ethical mutual funds reached CAD $5,394.40 million.

In order to be defined as a "socially responsible mutual fund," a fund manager must use one or more SRI strategies as part of the investment selection process, and these strategies must be communicated in the fund's prospectus. Examples of SRI strategies are as follows[12]:

- **Positive and Negative screening** aim to positively select companies considered "best of sector" or to screen out companies violating value beliefs. The screening criteria include alcohol, animal testing, defence/weapons, human rights etc.
- **Community Investment** aims to contribute to the growth and well-being of low-income communities.
- **Socially responsible lending** is the process of lending to ethical borrowers in line with the criteria of Environment, Social and Governance (ESG).

[11] Standard Life Survey: http://www.newswire.ca/en/story/866269/socially-responsible-investing-consumer-driven-ipsos-survey

[12] http://www.socialinvestment.ca/Investor%20Information/InvestorsFactSheet1.htm

- **Combining ESG strategies with financial goals in investment analysis.**
- **Proxy voting and corporate engagement** result in positive ethical changes of corporations. For example, 3 Canadian companies from the extractive industries adopted policies proposed by11 individual investors to manage indigenous rights risks, according to the 2012 Principles for Responsible Investment (PRI)[13] initiative report.

It has been discussed for a long time whether it is possible to "do well while doing good" but no conclusive studies appear. Grossman and Sharpe (1986) is an early study of socially responsible investment. The authors conclude that socially responsible stocks slightly outperform conventional stocks and attribute the return increase to small stock bias of socially responsible stocks. Konar and Cohen (2001) indicate that companies with a good environmental record improve financial performance due to intangible asset value increase. Brammer et al. (2006) find that ethical stocks earn abnormal returns after the announcement of ethical operation strategies. A good public image helps to improve financial performance. However, ethical screening makes the portfolios less diversified thus return may decrease. In Brammer et al. (2006), ethical stocks yield negative risk-adjusted returns one year after the announcement.

I.4 Motivation for the problem addressed

Previous research results on SRI performance are mixed (Sauer (1997), McWilliams and Sigel (2000), Brammer et al. (2006)). In order to contribute to the debate on whether it is possible to "do well while doing good", I choose to examine the risk-adjusted performance of ethical mutual funds. Ethical mutual funds are important vehicles of SRI which are available to

13 The PRI is an investor initiative in partnership between the UN and global investors.

both individual and institutional investors. As a result, an analysis of ethical fund performance is appropriate.

Although previous research has addressed the performance of ethical mutual funds, this research has been confined to funds based in the U. S. or European market. An analysis of Canadian ethical mutual funds will be informative for the Canadian investor. I use daily data to examine the risk adjusted performance of the funds and the addressed period includes the period of the financial crisis and immediately after.

In my empirical research, I find that ethical mutual funds underperform the market index by up to 4% per year. Consequently investing in ethical investments may not be an appropriate strategy in bad times. However, the category of Canadian Fixed Income funds beat the market by 5% per year thus investing in this category may produce superior return even in bad times.

My thesis is organized as follows. First, I review the previous literature in Chapter II, explain the data sources and variables in Chapter III, and present the methodology and empirical results in Chapter IV. Conclusions are presented in Chapter V.

Chapter II Literature Review

II.1 Performance of Socially Responsible Investing (SRI)

As the SRI industry grew rapidly since the early 2000s, the topic of SRI attracted the attention of many researchers. The question is whether the market prices ethics and sustainability in investment. The studies are concentrated on mutual fund performance (Luther

et al. (1992), Hamilton et al. (1993), Bauer et al. (2005)). The empirical results generally indicate that ethical funds perform as well as conventional funds or the market as a whole.

SRI stock performance and SRI indices performance have also been studied. The empirical results are similar. In the early studies of Sauer (1997) and Dhrymes (1997), the authors both conclude that there is no adverse impact of social screening on stock risk-adjusted returns. In McWilliams and Sigel (2000), the authors use an improved model, controlling for the investment in R&D, and conclude that ethical companies perform no better or worse than their conventional peers. Both Schroder (2007) and Consolandi et al. (2009) find limited differences in performance between SRI indices and conventional indices.

However, there are different results when different dimensions of SRI criteria were examined in recent years. In Margolis et al. (2007), the authors conclude that there is a strong positive link between stock risk-adjusted returns and company charitable contributions, revealed misdeeds and environmental performance. In Brammer et al. (2006), the authors used stock risk-adjusted returns to represent financial performance of the U.K. companies. Companies with high records on the environment and on community activities underperform conventional peers while companies with a high record of employment outperform their peers. Galema et al. (2008) find that a high level of Corporate Social Responsibility (CSR) results in lower book-to-market ratios of US companies instead of generating positive alphas. Besides, the relationship between book-to-market ratios and diversity, environment, and product is significantly negative. In Edmans (2011), companies with high records on employee satisfaction generate superior long-run stock returns. In conclusion, certain SRI screens may be priced and environment performance is an important dimension (Margolis (2007), Brammer et al. (2006) and Galema et al. (2008)). Thus green investing is a hot topic for researchers. Ambec and Lanoie (2008) review previous articles

of green investing and conclude that expense related to environment is partly or completely offset by gains in better access to certain market, differentiating products and selling pollution-control technology. Climent and Soriano (2011) find that green funds underperform their conventional peers. Performance of faith-based investments attracts the attention of religious investors. Forte and Miglietta (2007) verifies that Islamic investments show different characteristics in economic profile and asset allocation compared to SRI. In Al-Shakfa and Lypny (2011), the authors conclude that there is positive expected cost of observing Islamic investment guidelines.

II.2 Performance of Ethical Mutual Funds

The number of ethical mutual fund performance studies is substantial and many influential studies flourished in the1990s (Luther et al. (1992), Hamilton et al. (1993), Mallin et al. (1995)). In the beginning, the literature focused on the U.S. and U.K. retail market. In more recent years, studies with a broader focus appeared (Kreander et al. (2005), Jones et al. (2008), Cortez et al. (2009)).

II.2.1 Performance of U. S. Ethical Mutual Funds

The empirical results on U.S. fund performance indicate that there is no statistically significant difference between the performance of ethical funds and conventional funds. Hamilton et al. (1993) is an early study of U.S. ethical mutual fund performance. Previous studies (Rudd (1981), Grossman and Sharpe (1986)) focused on the performance of stock of companies either with or without operations in South Africa. In Hamilton et al. (1993), the authors first "embrace" broader criteria of weapon-free and pollution-free investments and conclude that there is no statistical difference between the performance of ethical mutual funds

and conventional ones. In Goldreyer and Diltz (1999), the authors examine a larger sample of funds than previous studies did and include 49 ethical mutual funds with 5 to 7 years of monthly data. The results are somehow mixed but still, ethical screening does not affect the investment performance of mutual funds, which is consistent with Hamilton et al. (1993). In Statman (2000), the author confirms that ethical mutual funds perform as well as conventional ones. In Blanchett (2010), the author finds that ethical funds outperform the non-ethical peers but the results are not statistically significant.

II.2.2 Performance of U. K. Ethical Mutual Funds

The investment performance of U.K. ethical mutual funds is another literature focus. The results are similar to that of U.S. funds, that there is no significant performance difference between U.K. funds and their conventional peers or between U. K. ethical mutual funds and the market as a whole. Luther et al. (1992) is an early study of U.K. ethical mutual funds, which however, focuses on a limited sample. The authors conclude that there is weak evidence of over-performance of U.K. ethical mutual funds over conventional funds. As a preliminary work, this article produces an inspirational result. 15 ethical unit trusts with monthly data are included in the data sample, which is skewed towards small market capitalization stocks. This small company effect turns out to be an influential factor for U.K. ethical funds. In Luther and Matatko (1994), the small company effect is confirmed and ethical fund performance was insignificantly better than conventional fund performance. In Mallin et al. (1995), the authors construct a sample of non-ethical funds with matched size and age characteristics to those of the ethical funds. There was weak outperformance by ethical funds but the authors attributed this to a temporary strong investment interest in ethical mutual funds. In Gregory et al. (1997), the authors confirm that ethical mutual funds have a greater exposure to small companies. Second,

there is no significant difference between the performance of ethical mutual funds and other funds. Gregory and Whittaker (2007) endorses that ethical funds perform neutrally. Furthermore, the performance persistence of ethical funds is stronger than that of conventional funds.

II.2.3 Performance of Ethical Mutual Funds in Other Countries

There are some studies on countries other than the U.S. and the U.K. after 2005. In Kreander et al. (2005), the authors conclude that ethical mutual funds have a performance similar to that of the market index. Four countries in the U.K., Sweden, Germany and the Netherlands are included in the sample. In Bauer et al. (2005), the authors analyze the German, U.K. and U.S. data and they find no significant difference between the performance of the ethical funds and that of the market index. Second, ethical indexes are not more capable of explaining the ethical mutual funds return. In Cortez et al. (2009), the authors examine the performance of the ethical mutual funds of seven European and confirm that ethical mutual funds perform neutrally to the market index. Second, ethical funds are more exposed to the conventional index of MSCI AC Europe indices than to the ethical index of FTSE4Good Europe. In contrast to previous studies, Jones et al. (2008) finds significant underperformance of Australian ethical funds with respect to the market.

In recent years, the topic of green funds began to attract researchers. Mallett and Michelson (2010) is the first paper to study the performance of green funds and the empirical results indicate there is no difference between the performance of green funds and index funds. However, in Climent and Soriano (2011), the authors suggest that U.S. green mutual funds underperform their conventional peers.

II.2.4 SRI and Ethical Mutual Funds in Canada

In Canada, the SRI industry, including the ethical fund industry, has grown to a considerable extent. But previous research on Canadian SRI or Canadian ethical funds is less developed.

First, the topic of corporate social performance (CSP) of Canadian firms has been addressed for a long time. The Canadian public has a highly developed sense of conscience, health and environment issues. The corporate social performance in Canada is driven by society pressures, unlike that in the U.S., which is more driven by developments. In the early paper of Brooks (1989), the author discusses possible approaches to corporate social performance under growing society pressure. Brooks (1997) analyzes corporate social performance pressures from society, ethical investors and corporation members. Makni et al. (2009) state there is significant negative relationship between CSP and market returns. The authors conclude that socially responsible firms experience lower profits. On the other hand, Gargouri et al. (2010) used a sample of 109 Canadian companies and conclude that there is a positive relationship between CSP and earnings management. There is a positive relationship between CSP ratings related to environment and employee and earnings management.

The topic of Canadian ethical funds is less discussed than that of CSP. There are two published studies which focused on Canadian ethical funds. Foerster and Asmundson (2001) is the first published study. In this paper, the authors find there is no significant performance difference between ethical mutual funds and the TSE 300 Index. However, the sample was limited to six mutual funds and the evidence is weak. In Bauer et al. (2007), the authors confirm there is no significant difference between Canadian conventional funds and ethical funds. The sample includes funds with domestic equity orientation and excludes foreign and balanced funds.

In contrast, Renneboog et al. (2008) indicates that ethical mutual funds all underperform the market index in 17 countries including Canada. There is one interesting paper, Schwartz (2003), in which information transparency and advertising issues of ethical funds in the U.S. and Canada are discussed. Obligations are not met for some funds including the Canadian Ethical Funds.

II.2.5 Factors Responsible for the Differential Performance

In general, previous studies suggest that there is no substantial difference between the performance of ethical funds and that of conventional funds (Bauer et al (2005) and Ceu Cortez et al (2009)). However differing opinions exist. According to Ghoul and Karam (2007), ethical investors focus more on long-term returns and thus provide the funds more stability. On the other hand, the better image of ethical funds is promising of a better financial performance. Weber et al. (2010) find that ethical mutual funds perform better than the market index during the 2002 to 2009 period. The authors compared the performance of ethical mutual funds to that of the MSCI World Index[14]. The authors attributed the results to the high stock market price fluctuations and high risks during this period. In contrast, a restricted investment set and the high cost of screening are attribute to the underperformance of ethical funds in Jones et al. (2008) and Renneboog et al. (2008). Mallett and Michelson (2010) conclude that the S&P 500 Index Fund performs marginally better than the ethical funds.

II.3 Methodology Used in Performance Analysis of Mutual Funds

II.3.1 Methodology Used in Mutual Fund Performance Analysis

[14] The MSCI World Index is a free-float weighted equity index. MXWO includes developed world markets, and does not include emerging markets.

Jensen's alpha (1968) is a simple but classic measure of mutual fund performance, for both researchers and practitioners. Jensen's alpha is based on the four CAPM assumptions: (1) investors are risk adverse; (2) investors have homogeneous expectations; (3) investors are able to choose among portfolios according to expected return and variance; (4) transaction costs and taxes are zero. In addition, the capital market is assumed to be in equilibrium. The intercept α_p is the estimate of performance and the slope β_p is the estimate of systematic risk[15]. Both beta and Jensen's alpha are constant. However, the time variation in mutual funds' performance has been recognized for a long time. In Jensen (1972), the author indicates that the incorporation of market forecasts into investment management may cause time variation of risks. Thus the assumption of constant systematic risk can be questioned.

In Ferson and Schadt (1996), the authors incorporated information variables into the estimation of Jensen's alpha[16]. Beta is allowed to be time-varying[17] and conditioned on the state of the economy. This is called the conditional model. In contrast, the beta of traditional models of Jensen's alpha, the Sharpe ratio, and the Fama-French three-factor model is not conditioned on the state of the economy. These models are called unconditional models. In Zheng (1999), the author conducts conditional CAPM and finds evidence of persistent good performance of funds. In Kacperczyk et al. (2005), four lagged information variables of the short-term rate, dividend yield, term spread and quality spread are used. The authors confirm the value of information advantages of concentrated industries for asset allocation. In Kacperczyk et al. (2005), the alphas in the conditional approach are statistically more significant than the ones in

[15] The CAPM model: $r_{p,t}=\alpha_p + \beta_p\, r_{m,t}+\varepsilon_{p,t}$.

[16] The Ferson and Schadt(1996) model: $r_{p,t} =\alpha_p + \beta_1\, r_{m,t} + \beta_p{}'(Z_{t-1}\, r_{m,t})+\varepsilon_{p,t}$.

[17] The equation for beta:$\beta_p\,(Z_{t-1}) = \beta_1 + \beta_p{}'\, Z_{t-1}$.

the unconditional approach. In Wemer (2003), the author conducts an improved approach by combining the spirit of the Ferson and Schadt (1996) approach with that of Carhart (1997). Carhart (1997) adds the returns on size-sorted, book-to-market-sorted and a momentum factor to the CAPM. In this study, the author confirms the persistence of mutual fund performance. New measurement techniques are added in the conditional approach. In Kosowski et al. (2006), the authors combine the bootstrapt statistic technique and conditional CAPM to examine the performance of mutual funds. The empirical results suggest that the good performance of mutual funds persist. In Mamaysky et al. (2008), the authors incorporate information variables into a Kalman Filter model and find that it tracks the portfolio beta of mutual funds better than the normal Kalman Filter model does. The conditional model is also applied in pension fund performance. In Ferson and Khang (2002), the authors study the performance of U.S. pension funds and the empirical estimates of performance are more precise than previous unconditional measures.

II.3.2 Methodology Used in Ethical Mutual Fund Performance Analysis

The studies of ethical mutual funds flourished during the 1990s with focus on the U.S. market and the U.K. market. Although the methodology used in conventional mutual fund performance has been highly developed, most previous studies on ethical mutual fund performance focus on unconditional models such as those of Jensen's alpha, the Sharpe ratio or the Treynor ratio (Hamilton et al. (1993), Statman (2000), Bauer et al. (2005)). In these empirical studies, Jensen's alpha is applied to study the performance of ethical mutual funds in different contexts, such as different countries, and different time periods. Hamilton et al. (1993) is an early study of ethical mutual funds. The authors use monthly data to obtain Jensen's alpha. By analyzing the significance and the sign of Jensen's alpha, the authors conclude that ethical

mutual funds perform as well as conventional ones. Ethical mutual funds in the U.K. tend to favour small market capitalization companies, thus using a matched pair approach to control for the size effect is important when analyzing a sample of U.K. mutual funds (Mallin et al. (1995), Kreander et al. (2005)). The model of Fama-French (1993) is applied in Gregory et al. (1997) and Bauer et al. (2005). In the Fama-French (1993) three-factor model, a market proxy, the returns on size-sorted and book-to-market-sorted factors are included, accounting for the cross-sectional variation of fund returns.

Two published papers conduct a conditional model in studying ethical fund performance. Bauer et al. (2007) is an early study using the conditional model. The authors confirm that there is no significant performance difference between ethical funds and conventional peers. The four standard information variables of interest rates, dividend yield, term spread and quality spread are incorporated into the model. In Cortez et al. (2009), beta is allowed to be time-varying while the alpha remains constant. A January dummy is added to capture the seasonality in returns and risk. As the study examines a sample of seven European countries, a global index is used since these funds mainly invest globally. In accordance with the results of previous studies, ethical mutual funds perform no better or worse than the market index.

Chapter III Data

III.1 Sample of Ethical Mutual Funds

The performance of the funds is analyzed at the individual fund level and at the fund category level. At the fund category level, equally weighted funds are used for each fund category.

The Social Investment Organization (SIO) defined an ethical mutual fund as a fund which must use one or more SRI strategies as part of its investment selection process, and which must communicate these strategies in the fund's prospectus. A complete list of these funds in Canada is available in the SIO Mutual Fund report[18]. The SIO Mutual Fund report is provided by Fandata Canada Inc., an independent source of mutual fund information. I exclude funds that have existed for less than 12 months. Thus 28 Canadian ethical mutual funds are included in the whole sample, which is described in Table II below. The whole sample of 28 ethical mutual funds is classified into 10 categories, "Canadian Equity Balance", "Canadian Fixed Income", "Canadian Focused Equity", "Canadian Focused Small/Mid Cap Equity", "Canadian Neutral Balanced", "Canadian Small or Mid Cap Equity", "Canadian Dividend and Income Equity", "Global Equity", "Global Neutral Balanced" and "International Equity". This classification is the highest level of local classification and the data is available for U.K., Japanese, Brazilian, Indian, French, Korean and Canadian mutual funds, according to the Bloomberg local classification system. This classification system is widely used for Canadian mutual funds. Table II shows the age, size and investment objectives of the 28 Canadian ethical mutual funds. We note that NEI Canadian Bond Fund Class A was first priced on April 3, 1967

[18] SIO report: http://www.socialinvestment.ca/mutualfunds.htm

and it existed for the longest period of all funds in the sample. 20 out of 28 funds were first priced in 2000 or after 2000. The average existing period for the sample of funds is approximately 14 years. The asset sizes range from 1.32 million Canadian dollars for the Matrix Sierra Equity Fund to 716.90 million Canadian dollars for the Investors Summa SRI FundTM, with average asset size of 196.90 million Canadian dollars for the sample. The categories of Canadian Focused Small/Mid Cap Equity, Canadian Neutral Balanced, Global Equity and International Equity focus on small asset size. The asset sizes are 35.77 million Canadian dollars, 29.58 million Canadian dollars, 15.92 million Canadian dollars and 31.10 million Canadian dollars respectively. 8 funds indicate growth as the investment objective in the prospectus and 7 indicate sector focus on environment, social responsibility, etc. In the category of Canadian Focused Equity, 5 out of 8 funds indicate growth as the investment objective and 3 indicate sector focus on social responsibility. In the category of Canadian Small and Mid Cap Equity, 2 out of 2 funds indicate growth and small capitalization as investment objectives.

Table II

Description of Canadian Ethical Mutual Funds used in the study

Table II describes features of the 28 Canadian ethical mutual funds used in the study. Fund names are updated names obtained from Bloomberg on March 2012. The fund groupings are derived from the Bloomberg local classification system, ranging from "Canadian Equity Balance", "Canadian Fixed Income", "Canadian Focused Equity", "Canadian Focused Small/Mid Cap Equity", "Canadian Neutral Balanced", "Canadian Small or Mid Cap Equity", "Canadian Dividend and Income Equity", "Global Equity", "Global Neutral Balanced" and "International Equity". Mnemonic is the ticker which identifies each fund in the Bloomberg database. Inception date is the first business day that the fund is priced and usually occurs after the initial subscription period. Asset size is the total amount of money invested in the fund, including cash and securities and the amount is displayed in millions and in Canadian dollars. Investment objective is the Bloomberg fund classification system that identifies the fund's objective as stated by management in the prospectus. The classification system was implemented on March 17, 2000.

Fund Name	Mnemonic	Inception Date	Asset size	Investment Objective
Canadian Equity Balanced				
AGF SOCIAL VALUES BALANCED-A	CLEBALC CN Equity	1/22/1992	63.60	Balanced
AGF SOCIAL VALUES BALANCED-F	CLEANFBF CN Equity	10/2/2000	63.60	Balanced
ETHICAL BALANCED FUND-A	ETHBALD CN Equity	6/1/1989	308.18	Region Fund-Geo Focused-Asset
ETHICAL BALANCED FUND-D	ETHBLCD CN Equity	1/10/2000	308.18	Region Fund-Geo Focused-Asset
Canadian Fixed Income				
MERITAS CANADIAN BOND FUND-A	MERCDNBO CN Equity	3/30/2001	103.06	Government/Corporate
NEI CANADIAN BOND FUND-A	ETHINCO CN Equity	4/3/1967	352.85	Balanced
NEI CANADIAN BOND FUND-D	ETHINCD CN Equity	1/10/2000	352.85	Balanced
Canadian Focused Equity				
AGF SOCIAL VALUES EQUITY-A	ACSVCDEQ CN Equity	9/29/2000	37.70	Sector Fund-Socially Responsible
AGF SOCIAL VALUES EQUITY-F	ACSVCDEF CN Equity	9/29/2000	37.70	Sector Fund-Socially Responsible
ETHICAL GROWTH FUND-A	ETHGROW CN Equity	1/6/1986	233.82	Growth
ETHICAL GROWTH FUND-D	ETHGRWD CN Equity	1/10/2000	233.82	Growth

Table II Continued

Fund Name	Mnemonic	Inception Date	Asset Size	Investment Objective
Canadian Focused Equity				
INVESTORS SUMMA SRI FUNDTM-C	INVSUMA CN Equity	1/12/1987	716.90	Growth
INVESTORS SUMMA SRI FUNDTM-A	INVSUMFA CN Equity	7/28/2003	716.90	Growth
INVESTORS SUMMA SRI CLTM-A	INVSUMFC CN Equity	10/24/2002	34.70	Sector Fund-Socially Responsible
INVESTORS SUMMA SRI FUNDTM-B	INVSUMBB CN Equity	7/28/2003	716.90	Growth
Canadian Focused Small/Mid Cap Equity				
AGF CLEAN ENVIRONMENT EQTY-F	CLEANEFF CN Equity	10/2/2000	53.00	Global Equity
AGF CLEAN ENVIRONMENT EQTY-A	CLEEQTY CN Equity	1/3/1995	53.00	Global Equity
MATRIX SIERRA EQUITY FUND-A	YMGSUDEV CN Equity	6/1/1999	1.32	Sector Fund-Environment Friendly
Canadian Neutral Balanced				
MERITAS BALANCED PORTFOLIO-A	MERBALPA CN Equity	2/2/2004	29.58	Sector Fund-Asset Allocation
Canadian Small or Mid Cap Equity				
ETHICAL SPECIAL EQUITY FD-D	ETHSPED CN Equity	1/10/2000	285.31	Growth-Small Cap
ETHICAL SPECIAL EQUITY FD-A	ETHSPEQ CN Equity	1/11/1995	285.31	Growth-Small Cap
Canadian Dividend and Income Equity				
ETHICAL CANADIAN DIVID FD-A	ETHCDNDV CN Equity	10/1/2002	253.48	Growth and Income
Global Equity				
ACUITY SOCIAL VAL GLBL EQY-A	ACSVGLEQ CN Equity	9/29/2000	9.76	Sector Fund-Socially Responsible
ETHICAL GLOBAL EQUITY FUND-A	ETHGLEQ CN Equity	1/10/2000	24.32	Global Equity
MACKENZIE UN SUST OPP CLS-A	MKUGECCL CN Equity	10/26/2000	13.70	Sector Fund-Socially Responsible
Global Neutral Balanced				
DESJARDINS SOCIETERRA GRTH-A	DESETBAL CN Equity	1/10/2000	162.66	Balanced
International Equity				
ETHICAL INTERNATIONAL EQTY-A	ETHINTEQ CN Equity	10/1/2002	33.21	International Equity
MERITAS INTERNATIONAL EQTY-A	MERINTEQ CN Equity	3/30/2001	28.99	International Equity

III.2 Fund and Index Data

In this thesis, daily data is used and the time period is January 1, 2008 through March 14, 2012. I obtain daily data on the net asset value (NAV) of the funds and the daily value of the S&P/TSX Composite Index from Bloomberg. The NAV is the price per share of the mutual fund. It is calculated once a day based on the closing market price of the securities in the fund's portfolio.

The S&P/TSX Composite Index represents the price of the largest companies on the Toronto Stock Exchange (TSX). All Bloomberg indices data is based on a per share bases. I obtain the mid-price per share of the S&P TSX Composite Index.

Dividend per share of mutual funds and that of the market index are obtained. It is calculated by adding the gross amounts of all dividends in the past 12 months, including special cash dividends, divided into each trading day.

III.3 Data on Lagged Information Variables

The following lagged information variables are used to represent the state of the economy. I obtain the following data sets from Bloomberg.

- I obtain the mid-price of the CDOS01 Interbank index to determine the Canada Interbank 30-day rate, which is a proxy for the Canadian 30-day risk free rate. The mid-price is the average of the bid and ask price.
- The dividend yield is represented by the gross aggregate dividend yield of the S&P/TSX Composite Index.

- The last prices of the 3 month Canadian T-bill Index and the 10 year Canadian Treasury Bond Index are obtained from Bloomberg. Last price is the final price at which a security is traded at a given trading day. I use these data to calculate the term spread, which is the difference between the 3 month Canadian T-bill Index rate and the 10 year Canadian Treasury Bond Index rate.
- The last prices of the AAA 10 year government bond Index and BAA 10 year corporate bond Index, which I use to calculate the quality spread, which is the difference between the two indices.

Chapter IV Methodology

IV.1 Calculation of Variables

IV.1.1 Portfolio Excess Return and Market Excess Return

In order to calculate the portfolio excess return (r_p), I need the risk-free rate (R_f) and the portfolio return (R_p).

$$r_p = R_p - R_f \quad (1)$$

The mid price of the CDOS01 Interbank index (C), the proxy for the short-term interest rate, is used to calculate the risk-free rate (R_f):

$$R_f = (C_t - C_{t-1}) / C_{t-1} \quad (2)$$

where C_t is the mid-price on day t and C_{t-1} is the mid-price on day (t-1).

The following equation is for the portfolio return (R_p):

$$R_p = (NAV_t + Dvd_t - NAV_{t-1}) / NAV_{t-1} \quad (3)$$

where NAV_t is the net asset value (NAV) of the portfolio on day t and NAV_{t-1} is the net asset value (NAV) on day (t-1). Dvd_t is the dividend (income distribution) on day t.

The market excess return (r_m) is calculated by the following equation:

$$r_m = R_m - R_f \quad (4)$$

The midprice of the S&P/TSX composite Index is used for the daily market price (P_t). The market return (R_m) is calculated as:

$$R_m = (P_t + D_t - P_{t-1}) / P_{t-1} \quad (5)$$

where P_t is the market price on day t and P_{t-1} is the market price on day (t-1). D_t is the market index dividend on day t.

IV.1.2 Calculation of Lagged Information Variables

Each data set of information variables is lagged by SAS software before calculation.

The lagged short-term rate is the lagged risk-free rate (R_f), whose calculation is described in sub-section IV.1.1. The lagged dividend yield is represented by the lagged gross aggregate dividend yield of the S&P/TSX Composite Index.

The term spread (TS) is calculated as follows:

$$TS=YR-MR \quad (6)$$

Where YR is the 10 year Canadian Treasury Bond Index rate and MR is the 3 month Canadian T-bill Index rate.

The 10 year Canadian Treasury Bond Index rate (YR) is calculated as follows:

$$YR= (Y_t - Y_{t-1}) / Y_{t-1} \quad (7)$$

where Y_t is the last price of the 10 year Canadian Treasury Bond Index on day t and Y_{t-1} is the last price on day (t-1).

The 3 month Canadian T-bill Index rate MR is calculated follows:

$$MR= (M_t - M_{t-1}) / M_{t-1} \quad (8)$$

where M_t is the last price of the 3 month Canadian T-bill Index on day t and M_{t-1} is the last price on day (t-1).

The quality spread (QS) is calculated as follows:

$$QS=CR-GR \quad (9)$$

where CR is the BAA-rated 10 year corporate bond Index rate and GR is the AAA-rated 10 year government bond Index rate. These rates are calculated as follows:

The BAA-rated 10 year corporate bond Index rate (CR) is calculated as follows:

$$CR= (C_t - C_{t-1}) / C_{t-1} \quad (10)$$

where C_t is the last price of the BAA-rated 10 year corporate bond Index on day t and C_{t-1} is the last price on day (t-1).

The AAA-rated 10 year government bond Index (GR) is calculated follows:

$$GR= (G_t - G_{t-1}) / G_{t-1} \quad (11)$$

where G_t is the last price of the AAA-rated 10 year government bond Index on day t and G_{t-1} is the last price on day (t-1).

IV.1.3 Summary Statistics for Returns

Panel A of Table III presents the descriptive statistics for daily returns of the 28 Canadian ethical mutual funds and 10 fund categories used in the study. We note that the return mean of Canadian Fix Income category is 0.0494, the highest among 10 categories. Subsequently the return mean of Canadian Equity Balanced is 0.0291, ranks the second. The return mean of Global Equity is the lowest and equals to -0.0001. During this period, an investment in the Global Equity would make investors lose money. 5 out of 28 funds have negative returns. The return standard deviation of Canadian Neutral Balanced, Global Neutral Balanced and Canadian Fixed Income are 0.0060, 0.0082, 0.0104 respectively, which are the lowest among 10 categories, indicating the returns fluctuate from the mean the least. The distribution of Canadian Neutral Balanced, Global Equity and Canadian Fixed Income return is most symmetric among 10 categories with skewness of -0.1132, -0.1658, -0.6057 respectively. The left tails of these three categories returns are slightly longer than the right tails. The kurtosis of Canadian Focused Small/Mid Cap Equity is 2.5854, the highest among 10 categories, indicating that there is a distinct peak relative to the normal distribution. The absolute value of the kurtosis of the Canadian Dividend and Income Equity and Canadian Fixed Income funds are 0.7995 and 0.9137, the lowest among 10 categories, indicating that there are similar peaks relative to the normal

distribution. The negative signs for these categories indicate that the distributions are flatter than a normal distribution.

In Panel B, the mean return of the market index is higher than that of the equally-weighted portfolio of the 28 Canadian ethical mutual funds and the risk-free rate. The risk-free rate is more volatile than the return on the market index and the equally-weighted portfolio of the 28 Canadian ethical mutual funds, with a standard deviation of 0.0592. The right tails of the distribution of the market index, equally-weighted portfolio of the 28 Canadian ethical mutual funds and the risk-free rate are longer than the left tails and there is a distinct peak for the market index, the equally-weighted portfolio of the 28 Canadian ethical mutual funds and the risk-free rate relative to the normal distribution.

The descriptive statistics of the four information variables is reported in Panel B. The mean of the term spread is -0.0012, indicating that the short-term rate is higher than the long-term rate. The mean of the quality spread is 0.0000, indicating the corporate bond index rate is the same as the government bond index rate, on average. The term spread is most volatile during this period with a standard deviation of 0.0772. The short-term rate has a long right tail with skewness of 3.0231 and the term spread has a long left tail with a skewness of -3.6831. The distribution of the four information variables has a distinct peak relative to the normal distribution.

Table III

Summary Statistics for Returns from January 1, 2008 to March 14, 2012

Panel A of Table III presents the descriptive statistics for daily returns of the 28 Canadian ethical mutual funds used in the study. The statistics of 10 fund categories are reported in bold face. Panel B reports descriptive statistics for daily returns of the equally-weighted portfolio of the 28 Canadian ethical mutual funds and S&P/TSX Composite Index (market index). In addition, the descriptive statistics of the data for four information variables, namely the short-term rate (also the risk-free rate in this study), the market dividend yield, the term spread and the quality spread.

Panel A

Fund Name	Mean	Standard Deviation	Skewness	Kurtosis
Canadian Equity Balanced	**0.0291**	**0.0158**	**1.3207**	**2.0824**
CLEBALC CN Equity	0.0279	0.0480	1.3910	0.5109
CLEANFBF CN Equity	0.0125	0.0236	2.8542	2.4073
ETHBALD CN Equity	0.0455	0.0211	-0.4170	-1.3205
ETHBLCD CN Equity	0.0308	0.0096	1.0989	2.3763
Canadian Fixed Income	**0.0494**	**0.0104**	**-0.6057**	**-0.9137**
MERCDNBO CN Equity	0.0666	0.0270	-0.5258	-1.3845
ETHINCO CN Equity	0.0371	0.0060	-1.2128	2.1304
ETHINCD CN Equity	0.0444	0.0053	-0.6027	0.4095
Canadian Focused Equity	**0.0093**	**0.0181**	**1.1702**	**2.3523**
ACSVCDEQ CN Equity	0.0072	0.0204	1.6626	1.8484
ACSVCDEF CN Equity	0.0165	0.0226	1.7591	2.4723
ETHGROW CN Equity	0.0155	0.0327	1.5976	2.2122
ETHGRWD CN Equity	0.0206	0.0420	1.5896	1.6597
INVSUMA CN Equity	0.0018	0.0170	-0.2039	3.4629
INVSUMFA CN Equity	0.0015	0.0161	-0.1754	2.0012
INVSUMFC CN Equity	-0.0002	0.0153	-0.4044	2.3227
INVSUMBB CN Equity	0.0015	0.0161	-0.1735	2.0308
Canadian Focused Small/Mid Cap	**0.0061**	**0.0161**	**1.1430**	**2.5854**
CLEANEFF CN Equity	0.0061	0.0142	-0.6632	2.8395
CLEEQTY CN Equity	-0.0003	0.0135	-0.6134	2.6710
YMGSUDEV CN Equity	0.0126	0.0314	2.3375	2.0270
Canadian Neutral Balanced	**0.0000**	**0.0060**	**-0.1132**	**1.2240**
MERBALPA CN Equity	0.0000	0.0060	-0.1132	1.2240
Canadian Small or Mid Cap Equity	**0.0145**	**0.0192**	**0.7981**	**-0.2667**
ETHSPED CN Equity	0.0188	0.0261	1.0535	-0.0331
ETHSPEQ CN Equity	0.0102	0.0152	1.1144	1.4640
Canadian Dividend and Income Equity	**0.0226**	**0.0223**	**0.5347**	**-0.7995**
ETHCDNDV CN Equity	0.0226	0.0223	0.5347	-0.7995
Global Equity	**-0.0001**	**0.0127**	**-0.1658**	**2.3054**
ACSVGLEQ CN Equity	-0.0001	0.0130	-0.2691	1.9020
ETHGLEQ CN Equity	0.0000	0.0118	-0.0890	2.0969
MKUGECCL CN Equity	-0.0001	0.0144	0.1219	2.6252
Global Neutral Balanced	**0.0029**	**0.0082**	**1.2413**	**2.4042**
DESETBAL CN Equity	0.0029	0.0082	1.2413	2.4042
International Equity	**0.0018**	**0.0116**	**0.8814**	**2.1693**
ETHINTEQ CN Equity	-0.0002	0.0119	-0.0610	2.5736
MERINTEQ CN Equity	0.0037	0.0130	1.4804	1.4871

Table III Continued

Panel B

Name	Mean	Standard Deviation	Skewness	Kurtosis
Equally-weighted Portfolio of Ethical Mutual Funds	0.0148	0.0115	1.2973	2.5491
S&P/TSX Composite Index Return	0.0294	0.0173	0.6657	1.2118
Canadian 1-Month T-bill	0.0002	0.0592	3.0231	1.9782
S&P/TSX Composite Index Dividend Yield	0.0002	0.0169	0.6874	1.6296
Term Spread	-0.0012	0.0772	-3.6837	2.9852
Quality Spread	0.0000	0.0067	0.4745	2.4361

IV. 2 Measurement of Performance

IV.2.1 Methodology of the Unconditional Model

Jensen's alpha (1968) is a widely used measure of performance and it is based on the Capital Asset Pricing Model (CAPM). The measure is estimated using the unconditional model as follows:

$$r_{p,t}=\alpha_p + \beta_p\, r_{m,t}+\varepsilon_{p,t} \qquad (12)$$

where $r_{p,t}$ is the excess return of the ethical fund p on day t, $r_{m,t}$ is the excess return of the market on day t, β_1 is the systematic risk of the fund and $\varepsilon_{p,t}$ the error term. The intercept (α_p) or Jensen's alpha is a measure of the relative performance of the fund when compared to the market. If the intercept is positive, then the fund performs better than the market and vice versa. In the unconditional model, both the intercept α_p and the slope β_1 are constrained to be constant.

IV.2.2 Results of the Unconditional Model

I apply the above equation to evaluate the performance of the ethical mutual funds at three levels: the aggregate level, the fund category level and the individual level. Empirical results are presented in Table IV through Table VI.

IV.2.2.1 Results at the Aggregate Level

At the aggregate level, I used all the 28 ethical mutual funds in the sample to construct an equally-weighted portfolio. Table IV displays the regression results. The excess returns are shown in the second column of Table IV. In the unconditional model the alpha is -0.0001, indicating that ethical mutual funds tend to underperform the market index slightly. The third column of Table IV displays the adjusted R-squared in the unconditional model, which suggests that 98.02% of the variation in the returns can be explained by the variation in the return on the S&P/TSX Composite Index. The coefficient of the market index (β) in the unconditional model is close to 1 and highly significant, confirming that ethical fund returns follow that of the market index at the aggregate level.

Table IV

Results of the Unconditional Model at the Aggregate Level

This table shows the unconditional and conditional regression estimates of the equally-weighted portfolio of the ethical mutual funds at the aggregate level. Daily data from January 1st, 2008 to March 14th, 2012 are used to estimate the equation.

The unconditional model can be represented by the following equation:

$$r_{p,t}=\alpha_p + \beta\, r_{m,t}+\varepsilon_{p,t} \qquad (12)$$

where $r_{p,t}$ is the excess return of the ethical fund p on day t, $r_{m,t}$ is the excess return of the market on day t and $\varepsilon_{p,t}$ is the error term. α_p represents the measure of performance Jensen's alpha. Beta (β) is the systematic risk of the mutual fund portfolio. The adjusted coefficient of determination (R^2) is reported.

Table IV Continued

	α	Adjusted R^2(%)	β	
Unconditional Model	-0.0001	98.02%	0.9697	***

* significant at the 10% level ** significant at the 5% level

*** significant at the 1% level

IV.2.2.2 Results at the Fund Category Level

At the fund category level, funds are classified into 10 categories and each category is constructed to be equal-weighted. The third column of Table V shows that, in the unconditional model, 80% of the ethical mutual fund categories have significantly negative alphas, indicating that ethical mutual funds underperform with respect to the market index, with an average excess return of -0.0149. Significantly positive performance is only observed for the Canadian Fixed Income category, for which the alpha is 0.0213 and is significant at the 1% level. The empirical results lead to the conclusion that ethical mutual funds underperform the market index. The coefficients of the market index (β) in Table V is close to 1 on average and highly significant, indicating that Canadian ethical fund returns follow that of the Toronto Stock Exchange (TSX). The fifth column of Table V displays adjusted R-squared for the unconditional model, which is 92.97% on average. Thus, on average, approximately 93% of the variation in the returns of the aggregate portfolio of ethical mutual funds can be explained by the variation in the return on the S&P/TSX Composite Index.

Table V

Unconditional Performance at the Fund Category Level

This table shows the regression estimates for 10 equally-weighted portfolios of mutual funds using the unconditional model. This model can be represented by the following equation:

$$r_{p,t}=\alpha_p + \beta\, r_{m,t}+\varepsilon_{p,t} \qquad (6)$$

where $r_{p,t}$ is the excess return of the ethical fund portfolio p on day t, $r_{m,t}$ is the excess return of the market on day t and $\varepsilon_{p,t}$ the error term. Daily data from January 1st, 2008 to March 14th, 2012 are used to estimate the equation. α_p represents the measure of performance Jensen's alpha. Beta (β) is the systematic risk of the mutual fund portfolio. The adjusted coefficient of determination (R^2) is reported.

Category of Funds in Portfolio	Number of Funds in the Category	α_p		β		Adjusted R^2(%)
Canadian Equity Balanced	4	0.0007		0.9623	***	91.40
Canadian Fixed Income	3	0.0213	***	0.9187	***	86.56
Canadian Focused Equity	8	-0.0195	***	0.9754	***	94.69
Canadian Focused Small/Mid Cap	3	-0.0220	***	0.9720	***	96.23
Canadian Neutral Balanced	1	-0.0280	***	0.9528	***	95.75
Canadian Small or Mid Cap Equity	2	-0.0128	***	0.9851	***	91.35
Canadian Dividend and Income	1	-0.0096	***	0.9702	***	89.91
Global Equity	3	-0.0287	***	0.9720	***	95.94
Global Neutral Balanced	1	-0.0249	***	0.9564	***	94.90
International Equity	2	-0.0257	***	0.9418	***	94.26

* significant at the 10% level ** significant at the 5% level

*** significant at the 1% level

IV.2.2.3 Results at the Individual Fund Level

Table VI displays the regression results at the individual level. The average excess returns of ethical mutual funds at the individual level are shown in the second column of Table VI. In the unconditional model of Table VI, the average alpha for the individual funds is -0.0136. 21 out of

28 funds have statistically significantly negative alphas, confirming that ethical mutual funds underperform the market index. The coefficients of the market index (β) in Table VI is close to 1 on average and highly significant, confirming that Canadian ethical fund returns follow that of the Toronto Stock Exchange (TSX). The fifth column of Table VI displays the adjusted R-squared of all fund portfolios in the unconditional model, which is 89.17% on average.

Table VI

Unconditional Performance at the Individual Fund Level

This table shows the regression estimates for 28 individual funds using the unconditional model. This model can be represented by the following equation:

$$r_{p,t}=\alpha_p + \beta\, r_{m,t}+\varepsilon_{p,t} \qquad (12)$$

where $r_{p,t}$ is the excess return of the ethical fund p on day t, $r_{m,t}$ is the excess return of the market on day t and $\varepsilon_{p,t}$ is the error term. Daily data from January 1st, 2008 to March 14th, 2012 are used to estimate the equation. α_p represents the measure of performance Jensen's alpha. Beta (β) is the systematic risk of the mutual fund portfolio. The adjusted coefficient of determination (R^2) is reported.

Fund Name	α_p		β		Adjusted R^2 (%)
Canadian Equity Balanced					
CLEBALC CN Equity	-0.0010		0.9837	***	60.37
CLEANFBF CN Equity	-0.0144	***	0.9654	***	83.58
ETHBALD CN Equity	0.0158	***	0.9238	***	83.73
ETHBLCD CN Equity	0.0025	***	0.9764	***	97.08
Canadian Fixed Income					
MERCDNBO CN Equity	0.0383	***	0.8813	***	69.81
ETHINCO CN Equity	0.0093	***	0.9290	***	89.50
ETHINCD CN Equity	0.0164	***	0.9459	***	90.86
Canadian Focused Equity					
ACSVCDEQ CN Equity	-0.0208	***	0.9839	***	93.20
ACSVCDEF CN Equity	-0.0107	***	0.9908	***	92.08
ETHGROW CN Equity	-0.0117	***	0.9875	***	77.17
ETHGRWD CN Equity	-0.0042		0.9255	***	58.35
INVSUMA CN Equity	-0.0272	***	0.9812	***	98.28
INVSUMFA CN Equity	-0.0272	***	0.9809	***	98.26
INVSUMFC CN Equity	-0.0288	***	0.9726	***	97.91
INVSUMBB CN Equity	-0.0271	***	0.9809	***	98.26

Table VI Continued

Fund Name	α_p		β		Adjusted R^2(%)
Canadian Focused Small/Mid Cap Equity					
CLEANEFF CN Equity	-0.0216	***	0.9643	***	96.65
CLEEQTY CN Equity	-0.0288	***	0.9676	***	97.20
YMGSUDEV CN Equity	-0.0155	***	0.9842	***	80.96
Canadian Neutral Balanced					
MERBALPA CN Equity	-0.0280	***	0.9528	***	95.75
Canadian Small or Mid Cap Equity					
ETHSPED CN Equity	-0.0087	***	1.0067	***	86.63
ETHSPEQ CN Equity	-0.0169	***	0.9634	***	92.18
Canadian Dividend and Income Equity					
ETHCDNDV CN Equity	-0.0096	***	0.9702	***	89.19
Global Equity					
ACSVGLEQ CN Equity	-0.0289	***	0.9779	***	95.94
ETHGLEQ CN Equity	-0.0285	***	0.9676	***	95.24
MKUGECCL CN Equity	-0.0287	***	0.9705	***	95.62
Global Neutral Balanced					
DESETBAL CN Equity	-0.0249	***	0.9564	***	94.90
International Equity					
ETHINTEQ CN Equity	-0.0280	***	0.9420	***	94.24
MERINTEQ CN Equity	-0.0235	***	0.9416	***	93.06

* significant at the 10% level ** significant at the 5% level

*** significant at the 1% level

IV.2.3 Methodology of the Conditional Model

In the conditional model, the systematic risk of the funds is allowed to be time-varying and the measure of performance, alpha, is constrained to be constant. There are three assumptions of this model. First, it is a form of an asset pricing model which describes the conditional expected returns available to portfolio managers (Ferson and Schadt (1996)). Second, the market price

fully reflects publicly available information. Third, there is a functional form for the portfolio beta (Ferson and Schadt (1996)). The coefficient β_1 may be interpreted as an average beta, i.e. the unconditional mean of the conditional beta. (β_p') is the response coefficient of the conditional beta $\beta_p(Z_{t-1})$ with respect to a vector of information variables Z_{t-1}, that represents the public information available at time t-1 for predicting the return of the fund at time t. Thus, the fund's conditional beta (β_p) can be represented by the following equation:

$$\beta_p(Z_{t-1}) = \beta_1 + \beta_p' Z_{t-1} \quad (13)$$

where β_1 is the unconditional mean of the conditional beta, and β'_p represents the response coefficients of the conditional beta with respect to the information variables.

The conditional model is represented as:

$$r_{p,t} = \alpha_p + \beta_1 r_{m,t} + \beta_p'(Z_{t-1} r_{m,t}) + \varepsilon_{p,t} \quad (14)$$

The regression above is based on a single-factor model and includes the lagged information variables of the short term interest rate, term spread, dividend yield and quality spread. In this model, $r_{p,t}$ represents the excess return of fund p at time t, $r_{m,t}$ represents the market excess return at time t, β_1 is the unconditional mean of the conditional beta, β'_p is the response coefficient of the conditional beta with respect to the information variables. α_p represents the conditional performance measure and is assumed to be constant. $\varepsilon_{p,t}$ is the error term. Assuming that a fund manager wishes to keep the fund volatility relatively stable over time, the manger will lower the fund portfolio beta (systematic risk) when the market is volatile and vice visa. The following situations are associated with good economic states: (1) a lower short-term rate helps households and businesses finance and give the economy a boost; (2) a higher term spread and index dividend yield are associated with future increases in economic activity;

(3) a lower quality spread reflects a lower cost of debt for businesses. Thus the fund manager tends to increase the fund beta. If the fund manager uses only public information Z_{t-1}, then I would expect that the ethical mutual funds perform neutrally and the performance measure alpha should equal zero. Otherwise, the alpha should be positive (negative) if the fund outperforms (underperforms) the market.

IV.2.4 Results of the Conditional model

The performance of ethical mutual funds is examined at the aggregate level, the fund category level and the individual level. Regression results are presented in Table VII to Table XI.

IV.2.4.1 Results of the Conditional Model at the Aggregate Level

At the aggregate level, I used all the 28 ethical mutual funds in the sample to construct an equally-weighted portfolio. Table VII displays the regression results in the unconditional and conditional model. The excess returns are shown in the second column of Table VII. In the unconditional model the alpha is -0.0001, indicating that ethical mutual funds tend to underperform the market index slightly. In the conditional model the alpha is 0.0000, indicating that ethical mutual funds perform neutrally and there is no performance difference between ethical mutual funds and the market index. The third column of Table VII displays the adjusted R-squared in the unconditional model and the conditional model. At the aggregate level, the explanatory power of the conditional model is slightly higher by 0.1% than that of the unconditional model. The coefficient of the market index (β) in unconditional model is close to 1 and highly significant, confirming that ethical fund returns follow that of the market index at the aggregate level. The average beta (β_1), the unconditional mean of the conditional beta is highly significant and equals 0.9542, indicating the ethical mutual fund returns follow that of the

market index in spite of the state of the economy. The absolute value of response coefficients with respect to the information variables (β_2 to β_5) is small, indicating the influence of economic states on fund returns tend to be trivial.

Table VII

Unconditional versus Conditional Model at the Aggregate Level

This table shows the unconditional and conditional regression estimates of the equally-weighted portfolio at the aggregate level. Daily data from January 1st, 2008 to March 14th, 2012 are used to estimate the equation.

The unconditional model can be represented by the following equation:

$$r_{p,t}=\alpha_p + \beta\, r_{m,t}+\varepsilon_{p,t} \qquad (12)$$

where $r_{p,t}$ is the excess return of the ethical fund p on day t, $r_{m,t}$ is the excess return of the market on day t and $\varepsilon_{p,t}$ is the error term. α_p represents the measure of performance Jensen's alpha. Beta (β) is the systematic risk of the mutual fund portfolio. The adjusted coefficient of determination (R^2) is reported.

The conditional model is represented as:

$$r_{p,t}=\alpha_p + \beta_1\, r_{m,t} + \beta_p^{'}(Z_{t-1}\, r_{m,t})+\varepsilon_{p,t} \qquad (14)$$

where $r_{p,t}$ represents the excess return of fund p at time t, $r_{m,t}$ represents the market excess return at time t, Z_{t-1} represents the lagged information variables of the short term rate, term spread, dividend yield and quality spread and $\varepsilon_{p,t}$ is the error term. Alpha (α) represents the performance. Beta (β_1) is the average beta and $\beta_p^{'}$ ($\beta 2$ to $\beta 5$) is the response coefficients of the conditional beta with respect to the information variables. The adjusted coefficient of determination (R^2) is reported.

	α	Adjusted R^2(%)	β /β_1		β_2	β_3	β_4		β_5
Unconditional Model	-0.0001	98.02%	0.9697	***	-	-	-		-
Conditional Model	0.0000	98.12%	0.9542	***	-0.0244	-0.0328	-0.0430	***	-0.0099

* significant at the 10% level ** significant at the 5% level

*** significant at the 1% level

The conditional portfolio beta is presented by the blue line in Figure 2. The red line stands for the unconditional beta of the portfolio, which equals 0.9697. There are two periods in which the portfolio's conditional beta is higher than its unconditional beta. These periods are: April 2009 to July 2010 and from December 2010 to May 2011. Between January 2010 and May 2010, the conditional portfolio beta is greater than 1. There are two periods that the conditional betas are extremely low: from October 2008 to March 2009 and from November 2011 to January 2012.

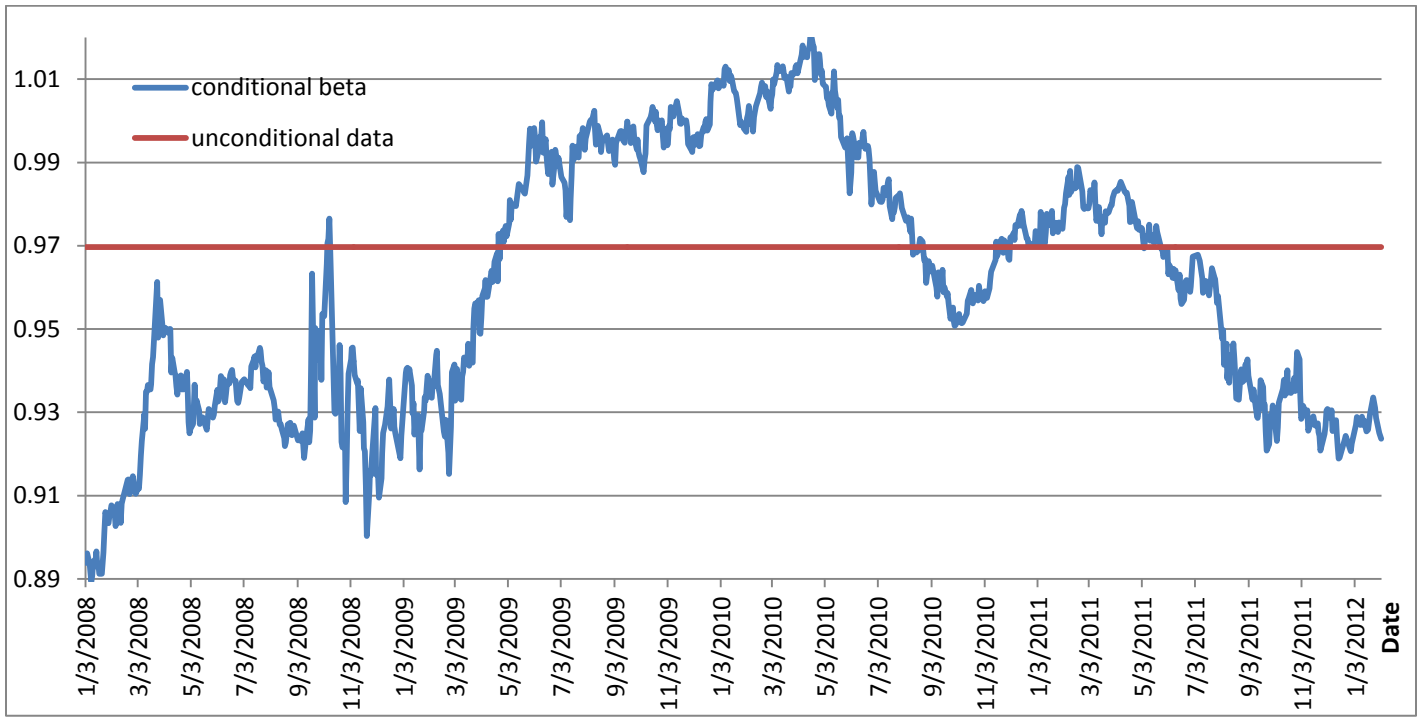

Figure 2.Unconditional beta and conditional beta of the Equally-weighted Portfolio of Ethical Mutual Funds.

IV.2.4.2 Results at the Fund Category Level

Table VIII shows the regression results at the category level. The second column of Table VI shows that, at the category level, the excess return under the conditional model is -1.5 %. 9 out of 10 fund categories have significant alphas. The fund categories of Canadian Equity Balanced and Canadian Fixed Income have higher alphas than other categories. Only the category of Canadian Fixed Income has a statistically significant positive alpha. The overall results indicate that ethical mutual funds underperform the market index slightly at the category level. In the third column, the average betas (β_1), the unconditional mean of the conditional beta of all categories are highly significant, indicating the ethical mutual fund returns follow that of the market index in spite of the economic state at the category level. The absolute value of response coefficients with respect to the information variables (β_2 to β_5) is small in general, indicating the influence of economic states to fund return tends to be trivial. However, the response coefficients with respect to the quality spread (β_5) of Canadian Fixed income, Canadian Neutral Balanced and Global Neutral Balanced equal -2.9506, -2.2708 and -2.5743 accordingly. There is a tendency that the returns of these three categories move inversely with the quality spread. The eighth column of Table VIII displays the adjusted R-squared of 10 categories of mutual funds using the conditional model. The average of the adjusted R-squared equals 92.31%. Thus approximately 92% of the variation in the returns of the aggregate portfolio of ethical mutual funds can be explained by the variation in the return on the market index

Table VIII

Conditional Performance at the Category Level

This table shows the regression estimates of 10 equally-weighted portfolios using the conditional model. The conditional model is represented as:

$$r_{p,t} = \alpha_p + \beta_1 r_{m,t} + \beta_p^{'}(Z_{t-1} r_{m,t}) + \varepsilon_{p,t} \quad (14)$$

where $r_{p,t}$ represents the excess return of fund p at time t, $r_{m,t}$ represents the market excess return at time t, Z_{t-1} represents the lagged information variables of the short term rate, term spread, dividend yield and quality spread and $\varepsilon_{p,t}$ is the error term. Alpha (α) represents the daily performance. The value of alpha is small so I expressed it in per mil (‰) for comparison. Beta (β_1) is the average beta and $\beta_p^{'}$ (β_2 to β_5) is the response coefficient of the conditional beta with respect to the information variables. The adjusted coefficient of determination (R^2) is reported. Sample period: January 1st, 2008 to March 14th, 2012.

Fund Category(Fund Quantity)	α_p		β_1		β_2	β_3		β_4		β_5	Adjusted R^2(%)
Canadian Equity Balanced(4)	0.0009		0.9576	***	-0.0085	0.0271		0.0617		0.7003	89.95
Canadian Fixed Income(3)	0.0220	***	0.8919	***	-0.0884	-0.8270		0.0673		-2.9506	85.13
Canadian Focused Equity(8)	-0.0196	***	0.9806	***	0.0510	-0.4218		0.1161		0.9694	93.81
Canadian Focused Small/Mid Cap(3)	-0.0220	***	0.9730	***	0.0686	-0.1976		0.0744		0.5722	95.56
Canadian Neutral Balanced(1)	-0.0274	***	0.9344	***	-0.0725	-0.3398		0.0109		-2.2708	95.37
Canadian Small or Mid Cap Equity(2)	-0.0125	***	0.9898	***	-0.0365	-0.8975	*	0.1140		-0.5738	90.40
Canadian Dividend and Income(1)	-0.0106	***	0.9687	***	-0.0102	-0.6509		0.0845		0.9492	89.46
Global Equity(3)	-0.0285	***	0.9605	***	-0.0222	0.2997		-0.0658		-0.3085	95.56
Global Neutral Balanced(1)	-0.0245	***	0.9454	***	-0.0014	-0.3836		0.0661		-0.6424	94.16
International Equity(2)	-0.0256	***	0.9413	***	0.1030	-0.9710		0.1401	*	-2.5743	93.68

* significant at the 10% level ** significant at the 5% level

*** significant at the 1% level

IV.2.4.3 Comparison of the Results of the Conditional Model and Unconditional Model for the Different Categories of Funds

Table IX

Comparison of the Unconditional Model and Conditional Model at the Category Level

Table X records excess return (α) and adjusted R-squared for 10 fund categories under the unconditional model and conditional model. The last row presents the average excess returns (α) and average adjusted R-squared for 10 fund categories under unconditional model and conditional model.

Fund Name	Unconditional Model			Conditional Model		
	α		Adjusted R^2(%)	α		Adjusted R^2(%)
Canadian Equity Balanced	0.0007		91.40	0.0009		89.95
Canadian Fixed Income	0.0213	***	86.56	0.0220	***	85.13
Canadian Focused Equity	-0.0195	***	94.69	-0.0196	***	93.81
Canadian Focused Small/Mid Cap	-0.0220	***	96.23	-0.0220	***	95.56
Canadian Neutral Balanced	-0.0280	***	95.75	-0.0274	***	95.37
Canadian Small or Mid Cap Equity	-0.0128	***	91.35	-0.0125	***	90.40
Canadian Dividend and Income Equity	-0.0096	***	89.91	-0.0106	***	89.46
Global Equity	-0.0287	***	95.94	-0.0285	***	95.56
Global Neutral Balanced	-0.0249	***	94.90	-0.0245	***	94.16
International Equity	-0.0257	***	94.26	-0.0256	***	93.68
Estimates Average	-0.0149	-	93.10	-0.0148	-	92.31

* significant at the 10% level ** significant at the 5% level

*** significant at the 1% level

The excess return (α) and adjusted R-squared under the unconditional model and conditional model are listed in Table IX for comparison. The results are similar under the unconditional model and the conditional model. The average excess returns are -0.0149 under the unconditional modal and -0.0148 under the conditional model, indicating that ethical mutual funds tend to slightly underperform the market index. In addition, ethical mutual funds tend to

perform slightly more neutrally under the conditional model than that under unconditional model. According to Table IX, the average adjusted R-squared is 93.10% under the unconditional model, slightly higher than that under the conditional model.

IV.2.4.4 Results at the Individual Fund Level

Table X shows the regression results at the individual level. The second column of Table X shows that the excess return under the conditional model is -1.3 %. 26 out of 28 individual funds have significant alphas. The overall results indicate that ethical mutual funds underperform the market index slightly at the individual level. In the third column, the average betas (β_1, the unconditional mean of the conditional beta) of all funds are highly significant and close to 1, which indicates that the fund returns follow that of the market index in spite of the economic state. The absolute value of response coefficients with respect to the short-term rate, market dividend yield and term spread (β_2 to β_4) is small in general, indicating the influence of these information variables to fund return tends to be trivial. However, the absolute value of the quality spread (β_5) response coefficients equals 2.2285 in average. The quality spread tends to influence the fund returns. The eighth column of Table X displays the adjusted R-squared of all mutual funds using the conditional model. The average of the adjusted R-squared equals 88.14%. Thus approximately 88% of the variation in the returns ethical mutual funds can be explained by the variation in the return on the market index.

Table X

Conditional Performance at the Individual Level

This table shows the regression estimates of 28 individual funds in conditional model. The conditional model is represented as:

$$r_{p,t} = \alpha_p + \beta_1 r_{m,t} + \beta_p' (Z_{t-1} r_{m,t}) + \varepsilon_{p,t} \quad (8)$$

where $r_{p,t}$ represents the excess return of fund p at time t, $r_{m,t}$ represents the market excess return at time t, Z_{t-1} represents the lagged information variables of the short term rate, term spread, dividend yield and quality spread and $\varepsilon_{p,t}$ is the error term. Alpha (α) represents the daily performance. The value of alpha is small so I expressed it in per mil (‰) for comparison. Beta (β_1) is the average beta and β'p (β_2 to β_5) is the response coefficient of the conditional beta with respect to the information variables. The adjusted coefficient of determination (R^2) is reported. Sample period: January 1st, 2008 to March 14th, 2012.

Fund Name	α_p		β_1		β_2	β_3		β_4		β_5		Adjusted R^2(%)
Canadian Equity Balanced												
CLEBALC CN Equity	-0.0018		1.0267	***	0.2801	0.9816		0.3212		6.8343		57.80
CLEANFBF CN Equity	-0.0134	***	0.9420	***	-0.1131	-0.2393		-0.0544		-1.4607		80.94
ETHBALD CN Equity	0.0160	***	0.8968	***	-0.0611	-0.2756		-0.0184		-1.7599		81.61
ETHBLCD CN Equity	0.0029	***	0.9648	***	-0.1389	-0.3614		-0.3614		-0.8034		96.82
Canadian Fixed Income												
MERCDNBO CN Equity	0.0389	***	0.8448	***	-0.0335	-0.6594		0.0535		-3.2605		65.94
ETHINCO CN Equity	0.0102	***	0.9035	***	-0.1212	-0.9008		0.0578		-3.0384		88.57
ETHINCD CN Equity	0.0171	***	0.9275	***	-0.1116	-0.9175		0.0898		-2.5630		90.09
Canadian Focused Equity												
ACSVCDEQ CN Equity	-0.0210	***	0.9943	***	0.0436	0.4224		0.0336		2.4654		92.16
ACSVCDEF CN Equity	-0.0109	***	1.0066	***	0.0468	0.4652		0.0511		3.0905		91.12
ETHGROW CN Equity	-0.0122	***	1.0136	***	0.1538	0.7817		0.1687		5.3790		74.99
ETHGRWD CN Equity	-0.0041		0.9642	***	0.1745	-5.1728	***	0.7658	***	4.9351		55.50
INVSUMA CN Equity	-0.0268	***	0.9694	***	-0.0116	0.0007		-0.0285		-1.8315	*	98.02
INVSUMFA CN Equity	-0.0268	***	0.9691	***	-0.0085	-0.0100		-0.0233		-1.9672	*	98.01

Table X Continued

Fund Name	α_p		β_1		β_2	β_3		β_4		β_5		Adjusted R^2(%)
INVSUMBB CN Equity	-0.0268	***	0.9691	***	-0.0124	0.0065		-0.0268		-2.0326	*	98.01
Canadian Focused Small/Mid Cap Equity												
CLEANEFF CN Equity	-0.0211	***	0.9511	***	-0.0018	-0.4446		-0.0035		-1.5064		96.19
CLEEQTY CN Equity	-0.0286	***	0.9577	***	0.0311	-0.3736		0.0201		-1.3596		96.84
YMGSUDEV CN Equity	-0.0163	***	1.0102	***	0.1765	0.2254		0.2065		4.5826		78.93
Canadian Neutral Balanced												
MERBALPA CN Equity	-0.0274	***	0.9344	***	-0.0725	-0.3398		0.0109		-2.2708		95.37
Canadian Small or Mid Cap Equity												
ETHSPED CN Equity	-0.0082	***	1.0130	***	-0.1279	-1.1095	**	0.0793		-0.8003		85.27
ETHSPEQ CN Equity	-0.0167	***	0.9667	***	0.0549	-0.6855		0.1486	**	-0.3473		91.16
Canadian Dividend and Income Equity												
ETHCDNDV CN Equity	-0.0106	***	0.9687	***	-0.0102	-0.6509		0.0845		0.9492		89.46
Global Equity												
ACSVGLEQ CN Equity	-0.0286	***	0.9639	***	-0.0329	0.4948		-0.0729		0.2871		95.48
ETHGLEQ CN Equity	-0.0282	***	0.9541	***	-0.0102	0.0248		-0.0266		-1.1555		96.76
MKUGECCL CN Equity	-0.0287	***	0.9633	***	-0.0236	0.3803		-0.0980		-0.0593		95.28
Global Neutral Balanced												
DESETBAL CN Equity	-0.0245	***	0.9454	***	-0.0014	-0.3836		0.0661		-0.6424		94.16
International Equity												
ETHINTEQ CN Equity	-0.0277	***	0.9380	***	0.0754	-1.3304	*	0.1271		-3.3039	*	93.79
MERINTEQ CN Equity	-0.0235	***	0.9445	***	0.1306	-0.6119		0.1530	*	-1.8440		92.23

* Significant at the 10% level

** Significant at the 5% level

*** Significant at the 1% level

IV.2.4.5 Comparison of the Results of the Conditional Model and Unconditional Model at the Individual Fund Level

The average excess return (α) and adjusted R-squared under the unconditional model and conditional model are listed in Table XI for comparison. The results are similar under the unconditional model and the conditional model. The average excess returns are -0.0136 under the unconditional modal and -0.0135 under the conditional model, indicating ethical mutual funds tend to slightly underperform the market index. In addition, ethical mutual funds tend to perform slightly more neutrally under the conditional model than that under the unconditional model. According to Table XI, the average adjusted R-squared is 89.17% under the unconditional model, slightly higher than that under the conditional model.

Table XI

Comparison of performance measurement using the Unconditional Model and Conditional Model at the Individual Fund Level

Table X records excess return (α) and adjusted R-squared for 10 fund categories under the unconditional model and conditional model. The last row presents the average excess returns (α) and average adjusted R-squared for 10 fund categories under the unconditional model and conditional model.

Unconditional Model		Conditional Model	
α	Adjusted R^2 (%)	α	Adjusted R^2 (%)
-0.0136	89.17	-0.0135	88.15

IV.3 Analysis of Different Categories of Funds

The fund classification system in this thesis is used widely for Canadian mutual funds. The question of whether there are certain performance patterns within the same category of funds should be inspirational for investors. However, no related literature is found on this topic. I analyze the empirical results for categories of funds and find something interesting: (1) The Canadian Fixed Income category performs the best under the conditional model and unconditional model at the individual fund level and category level; (2) There is a relationship between the performance and adjusted R-squared of the two categories : Canadian Fixed Income and Canadian Equity Balanced.

IV.3.1 Analysis in Categories in Unconditional Model

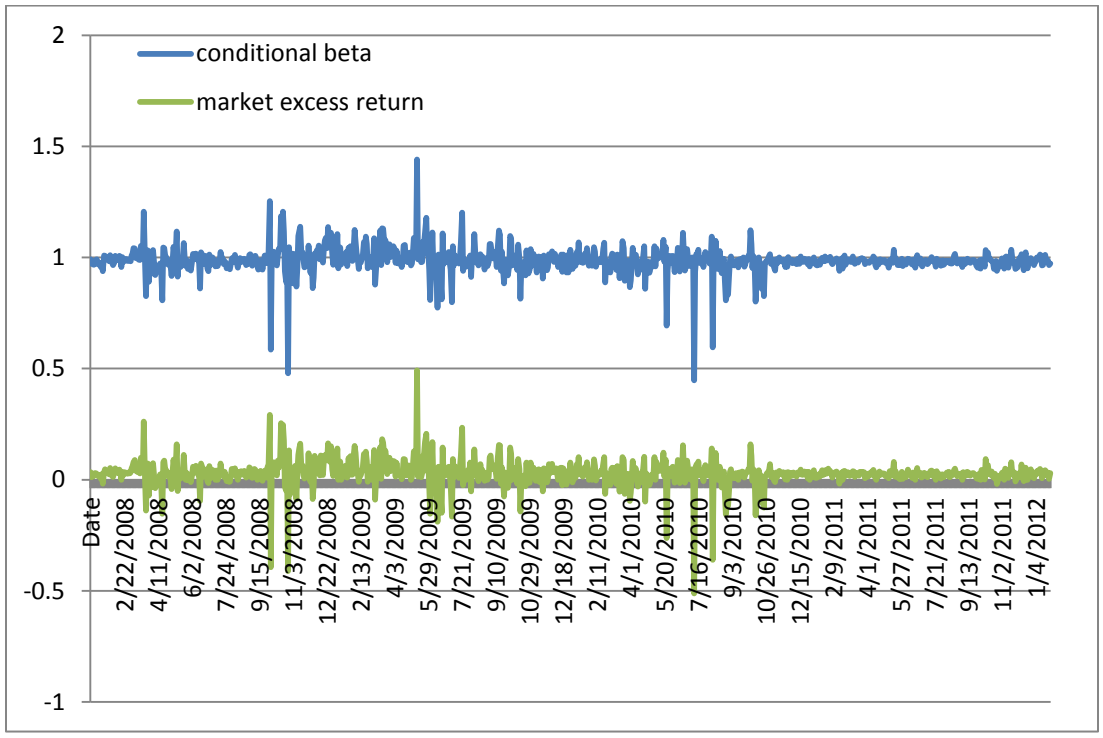

Figure 3.Market Excess Return of the S&P/TSX from January, 2004 to March 2012

The adjusted R-squared of the Canadian Fixed Income category is 86.56%, which is the lowest among 10 categories. The coefficient of the market index of the Canadian Fixed Income category is 0.9187, which is also the lowest among 10 categories. It indicates that the Canadian Fixed Income category is less volatile than the market and other categories. Investors can expect to earn a modest return by investing in Canadian Fixed Income funds with less risk. The second column of Table X presents the excess return under the unconditional model at the category portfolio level. From Table X, the Canadian Fixed Income category has excess return of 0.0213, the highest among the categories. There is a negative relationship between the performance of the Canadian Fixed Income category and the adjusted R-squared. The relationship is also found at the individual level. The average excess return for the three funds in the Canadian Fixed Income category is as high as 0.2413 and the average adjusted R-squared is as low as 83.39%. Figure 2 represents the market excess return of the S&P/TSX from January, 2004 to March, 2012. During 2008 to 2010, the market excess return is extremely volatile. The Canadian fixed Income category aims to preserve capital in equity market downturns. This may explain the good performance of this category.

The adjusted R-squared of Canadian Equity Balanced category is 91.40%, which is the second lowest among 10 categories. It indicates that 91.40% of the return variation for the Canadian Equity Balanced category can be explained by the market index. More than 70% of total assets are invested in a combination of Canadian equity securities and fixed-income securities. From Table X, the Canadian Equity Balanced category has excess return of 0.0007, the second highest among the categories. There is a negative relationship between the performance of Canadian Equity Balanced category and the adjusted R-squared. The

relationship is also found at the individual level. The average excess return in the Canadian Equity Balanced category is 0.0007 and the average adjusted R-squared is 81.19%.

However, there is no significant relationship between the performance and adjusted R-squared of other categories.

IV.3.2 Analysis in Categories in Conditional Model

According to Table X, the Canadian Fixed Income category and Canadian Equity Balanced category performs the best, which is in line with the results in sub-section IV.3.1, where fund categories are analyzed using an unconditional model.

The excess return (α) of the Canadian Fixed Income is 0.0220, which is the highest among the categories, indicating investors can expect to earn a modest return by investing in Canadian Fixed Income funds. The excess return (α) of the Canadian Equity Balanced category is 0.0007, the second highest among the categories. The adjusted R-squared of the Canadian Fixed Income category is 85.13%, which is the lowest among 10 categories. It indicates that the Canadian Fixed Income category does not act like the other categories. The adjusted R-squared of Canadian Equity Balanced category is 89.95%, which is second lowest among 10 categories. This relationship between the excess return and adjusted R-squared is also found at the individual level. The average excess return in the Canadian Fixed Income category is 0.0220 and the average adjusted R-squared is 81.53%. The average excess return in the Canadian Equity Balanced category is 0.0009 and the average adjusted R-squared is 79.29%.

However, there is no significant relationship between the performance and adjusted R-squared of other categories.

Chapter V Conclusion

The markets for Socially Responsible Investing (SRI) and ethical mutual funds are highly developed and the debate of whether it is possible to "do well while doing good" has been discussed for a long time. Ethical investors, like conventional investors, care about the financial return of an investment. There are a vast number of studies on the performance of ethical mutual funds under which the researchers could not find substantial differences in performance between ethical funds and conventional ones. However, these studies focus on the U.S. and a few European countries such as the U.K., which prevents the results from being generalized to other countries. In my thesis, I study the performance of Canadian ethical mutual funds, attempting to improve previous studies by introducing a new sample. I compare the risk-adjusted performance of Canadian ethical mutual funds to that of the Toronto Stock Exchange (TSX) by using two models at three levels, with the objective of examining the ethical funds' performance from different perspectives. I also address a recent period which includes the period of the financial crisis and immediately after. The empirical results are consistent in general, that ethical funds tend to underperform the market by 4% per year. At the aggregate level, there is no significant performance difference between ethical funds and the market index. However, most excess returns for fund categories or individual funds are significantly negative. This is important news for ethical investors and indicates that socially responsible investors in Canada cannot do well while doing good in bad times. Ethical investors should be cautious when pursuing personal socially responsible objectives. In addition, excess returns under the conditional model are slightly higher than under the unconditional model. Furthermore, the systematic risk of Canadian

ethical mutual funds is close to those of the market as represented by the Toronto Stock Exchange (TSX). The categories of Canadian Fixed Income and Canadian Equity Balanced consistently perform best of all the categories of ethical mutual funds. Thus selecting a good category of ethical funds makes the combination of ethical beliefs based investment and financial return possible.

Future research could focus on the differences in the selection processes of ethical funds and conventional funds. The performance of Canadian Fixed Income and Canadian Equity Balanced funds should be of interest to researchers. Furthermore, other ethical dimensions such as environment and community-based investment that may impact the ethical funds' performance in a more direct and significant way, according to previous articles (Margolis et al. (2007), Brammer et al. (2008)), may also be studied.

REFERENCES

Al-Shakfa, Omar, and Gregory Lypny, 2011, Islamic Investment and the Cost of Observance, *Journal of Investing* 20, 2, 101-109.

Ambec, Stefan, and Paul Lanoie, 2008, Does It Pay to Be Green? A Systematic Overview, *Academy of Management Perspectives* 22, 4, 45-62.

Bauer, Rob, Kees Koedijk, and Roger Otten, 2005, International evidence on ethical mutual fund performance and investment style, *Journal of Banking & Finance* 29, 4, 1751-1767.

Bauer, Rob, Jeroen Derwall, and Roger Otten, 2007, the Ethical Mutual Fund Performance Debate: New Evidence from Canada, *Journal of Business Ethics* 70,111–124.

Blanchett, David M., 2010, Exploring the Cost of Investing in Socially Responsible Mutual Funds: An Empirical Study, *Journal of Investing* 19, 3, 93-103.

Brammer, Stephen, Chris Brooks, and Stephen Pavelin, 2006, Corporate Social Performance and Stock Returns: UK Evidence from Disaggregate Measures, *Financial Management* 35, 3, 97–116.

Brooks, Leonard J., 1989, Corporate Ethical Performance: Trends, forecasts and outlooks, *Journal of Business Ethics* 8, 1, 31-38.

Brooks, Leonard J., 1997, Business Ethics in Canada: Distinctiveness and Directions, *Journal of Business Ethics* 16, 6, 591-604.

Bruyn, Severyn T., 1987, the Field of Social Investment (Cambridge University Press, Cambridge).

Carhart, Mark M., 1997, On Persistence in Mutual Fund Performance, *Journal of Finance* 52, 1, 57-82.

Climent, Francisco, and Pilar Soriano, 2011, Green and Good? The Investment Performance of US Environmental Mutual Funds, *Journal of Business Ethics* 103, 2, 275-287.

Consolandi, Costanza, Ameeta Jaiswal Dale, Elisa Poggiani, and Alessandro Vercelli, 2009, Global Standards and Ethical Stock Indexes: The Case of the Dow Jones Sustainability Stoxx Index, Journal *of Business Ethics* 87, 1, 185–197.

Cortez, Maria C., Florinda Silva, and Nelson Areal, 2009, the Performance of European Socially Responsible Funds, *Journal of Business Ethics* 87, 2, 573-588.

Dhrymes, Phoebus. J, 1997, Socially Responsible Investment: Is It Profitable? , Working Paper, Columbia University.

Edmans, Alex, 2011, Does the Stock Market Fully Value in Tangibles? Employee Satisfaction and Equity Prices, *Journal of Financial Economics* 101, 3, 621-640.

Fama, Eugene F., and Kenneth R. French, 1993, Common Risk Factors in the Returns on Stocks and Bonds, *Journal of Financial Economics* 33, 1, 3–56.

Ferson, Wayne, and Kenneth Khang, 2002, Conditional Performance Measurement Using Portfolio Weights: Evidence for Pension Funds, *Journal of Financial Economics* 65, 2, 249-282.

Ferson, Wayne E., and Rudi W. Schadt, 1996, Measuring Fund Strategy and Performance in Changing Economic Conditions, *The Journal of Finance* 51, 2, 425–461.

Foerster, Stephen, and Paul Asmundson, 2001, Socially Responsible Investing: Better for Your Soul or Your Bottom Line, *Canadian Investment Review* 14, 3, 1-26.

Forte, Gianfranco, and Federica Miglietta, 2007, Islamic Mutual Funds as Faith-based Funds in a Socially Responsible Context, Working Paper, Bocconi University.

Galema, Rients, Auke Plantinga, and Bert Sholtens, 2008, the Stocks at Stake: Return and Risk in Socially Responsible Investment, *Journal of Banking and Finance* 32, 2, 2646-2654.

Gargouri, Rim Makni, Ridha Shabou, and Claude Francoeur, 2010, The relationship between corporate social performance and earnings management, *Canadian Journal of Administrative Sciences / Revue Canadienne des Sciences de l'Administration* 27, 4, 320-334.

Ghoul, Wafica, and Paul Karam, 2007, MRI and SRI Mutual Funds: A Comparison of Christian, Islamic (Morally Responsible Investing), and Socially Responsible Investing (SRI) Mutual Funds, *Journal of Investing* 16, 2, 96-102.

Goldreyer, Elizabeth F., and Diltz, J. David, 1999, The Performance of Socially Responsible Mutual Funds: Incorporating Socio-political Information in Portfolio Selection, *Managerial Finance* 25, 1, 23 - 36.

Gregory, Alan, John Matatko, and Robert Luther, 1997, Ethical Unit Trust Financial Performance: Small Company Effects and Fund Size Effects, *Journal of Business Finance & Accounting* 24, 4, 705-725.

Gregory, Alan, and Julie Whittaker, 2007, Performance and Performance Persistence of 'Ethical' Unit Trusts in the UK, *Journal of Business Finance and Accounting* 37, 7, 1327-1344.

Grossman, Blake R. and William F. Sharpe, 1986, Financial Implications of South African Divestment, *Financial Analysts Journal* 42, 4, 15-29.

Hancock, John, 2002, *Ethical Money: How to Invest in Sustainable Enterprises and Avoid the Polluters and Exploiters* (Kogan Page, London).

Hamilton, Sally, Hoje Jo, and Meir Statman, 1993, Doing Well While Doing Good? The Investment Performance of Socially Responsible Mutual Funds, *Financial Analysis Journal* 41, 1, 62-66.

Hylton, Maria O'Brien, 1992, ''Socially Responsible'' Investing: Doing Good versus Doing Well in an Efficient Market, *American University Law Review* 42, 1, 1–52.

Jensen, Michael C., 1968, The Performance of Mutual Funds in the Period 1945-1964, *Journal of Finance* 23, 2, 389-416.

Jensen, Michael C., 1972, Optimal Utilization of Market Forecasts and the Evaluation of Investment Performance, *Journal of Finance* 45, 3, 453-568.

Jones, Stewart , Sandra van der Laan, Geoff Frost, and Janice Loftus, 2008, The Investment Performance of Socially Responsible Investment Funds in Australia, *Journal of Business Ethics* 80, 2, 181-203.

Kacperczyk, Marcin, Clemens Sialm, and Lu Zheng, 2005, On the Industry Concentration of Actively Managed Equity Mutual Funds, *Journal of Finance* 60, 4, 1983-2011.

Konar, Shameek, and Mark A. Cohen, 2001, Does the Market Value Environmental Performance, *The Review of Economics and Statistics* 83, 2, 281-289.

Kosowski, Robert, Allan Timmermann, Russ Wermers, and Hal White, 2006, Can Mutual Fund "Stars" Really Pick Stocks? New Evidence from a Bootstrap Analysis, *the Journal of Finance* 61, 6, 2551-2595.

Kreander, Niklas, Robert H. Gray, David M. Power and Christopher D. Sinclair, 2005, Evaluating the Performance of Ethical and Non-ethical Funds: A Matched Pair Analysis, *Journal of Business Finance & Accounting* 32, 7, 1465–1493.

Luther, Robert G., John Matatko, and Desmond C. Corner, 1992, The Investment Performance of U.K. "Ethical" Unit Trusts, *Accounting, Auditing & Accountability Journal* 5 , 4,23-26.

Luther, Robert G., and John Matatko, 1994, the Performance of Ethical Unit Trusts: Choosing an Appropriate Benchmark, *the British Accounting Review* 26, 1, 77-89.

Makni, Rim, Claude Francoeur and François Bellavance, 2009, Causality Between Corporate Social Performance and Financial Performance: Evidence from Canadian Firms, *Journal of Business Ethics* 89, 3, 409-422.

Mallett, James E., and Stuart Michelson, 2010, Green Investing: Is it Different from Socially Responsible Investing? , *International Journal of Business* 15, 4, 396-410.

Mallin, Chris A., Brahim Saadouni and Richard J. Briston, 1995, the Financial Performance of Ethical Investment Funds, *Journal of Business Finance & Accounting* 22, 4, 483-496.

Mamaysky, Harry, Matthew Spiegel, and Hong Zhang, 2008, Estimating the Dynamics of Mutual Fund Alphas and Betas, *Review of Financial Studies* 21, 1, 233-264.

Margolis, Joshua D., Hillary A. Elfenbein and James P. Walsh, 2007, does it pay to be good? A Meta-Analysis and Redirection of Research on the Relationship between Corporate Social and Financial Performance, Working Paper, Boston University.

McWilliams, Abagail, and Donald Siegel, 2000, Corporate Social Responsibility and Financial Performance: Correlation or Misspecification? *Strategic Management Journal* 21, 5, 603–609.

Nilsson, Jonas, 2008, Investment with a Conscience: Examining the Impact of Pro-Social Attitudes and Perceived Financial Performance on Socially Responsible Investment Behavior, *Journal of Business Ethics* 83, 2, 307-325.

Renneboogа, Luc, Jenke Ter Horsta and Chendi Zhangc, 2008, The Price of Ethics and Stakeholder Governance: The Performance of Socially Responsible Mutual Funds, *Journal of Corporate Finance* 14, 3, 302-322.

Rudd, Andrew, 1981, Divestment of South African Equities: How Risky? , *The Journal of Portfolio Management*, 5, 3, 5-10.

Sauer, David A., 1997, The Impact of Social-Responsibility Screens on Investment Performance: Evidence from the Domini 400 Social Index and Domini Equity Mutual Fund, *Review of Financial Economics* 6, 2, 137–149.

Schroder, Michael, 2007, Is There a Difference? The Performance Characteristics of SRI Equity Indices, *Journal of Business Finance & Accounting* 34, 1, 331–348.

Schueth, Steve, 2003, Socially Responsible Investing in the United States, *Journal of Business Ethics* 43, 3 , 189-194.

Schwartz, Mark S., 2003, the "Ethics" of Ethical Investing, *Journal of Business Ethics* 43, 3, 195-213.

Sparkes, Russell, 2001, Ethical Investment: Whose Ethics, Which Investment?, *Business Ethics: A European Review* 10, 3, 194–205.

Sparkes, Russell, and Christopher J. Cowton, 2004, The Maturing of Socially Responsible Investment: A Review of the Developing Link with Corporate Social Responsibility, *Journal of Business Ethics* 52, 1, 45-57.

Statman, Meir, 2000, Socially Responsible Mutual Funds, *Financial Analysis Journal* 56, 3, 30-39.

Weber, Olaf, Marco Mansfeld and Eric Schirrmann, 2010, the Financial Performance of SRI Funds between 2002 and 2009, SSRN Working Paper 630502, University of Waterloo.

Wemers, Russ, 2003, Is Money Really "Smart"? New Evidence on the Relation Between Mutual Fund Flows, Manager Behavior, and Performance Persistence, Working Paper, University of Maryland.

Zheng, Lu, 1999, Is Money Smart? A Study of Mutual Fund Investors' Fund Selection Ability, *Journal of Finance* 54, 3, 901-933.