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Divest, Disregard, or Double Down?

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Abstract

How much, if at all, should an endowment invest in a firm whose activities run counter to the charitable missions the endowment funds? Endowments typically disregard the objectionable nature of or divest from such firms. However, if firm returns increase with activities the endowment combats, doubling down on the investment increases expected utility by aligning funding availability with need. I call this "mission hedging." This paper offers the first model that characterizes the endowment's investment decision on the objectionable firm, defines investment trade-offs, and examines related evidence. Bad actors provide good opportunities to hedge mission-specific risks.

Keywords: Socially responsible investing, divestment, foundations, endowments, philanthropy, universities and colleges

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Private foundation, university, and college endowments manage over $1 trillion in assets in the United States (Internal Revenue Service (2011) and Berner (2015)). Recently, their investments in objectionable firms have attracted attention internationally through the fossil fuel and other divestment campaigns. When Stanford University and the Rockefeller Brothers Fund decided to divest and the Bill and Melinda Gates Foundation chose not to, and when Harvard and University of Massachusetts students were arrested while protesting their university's fossil fuel investments, they all made headlines (Wines (2014), Schwartz (2014), Piller (2007), Schroeder (2016), and Sinay (2016)). The question remains: how much, if at all, should an endowment invest in a firm whose activities run directly counter to the charitable missions the endowment funds?

The divestment debate has yielded two prominent opposing views. Socially responsible investing (SRI) calls for divestment, or "screening," of objectionable assets, whereas the "firewall" approach disregards the objectionable nature of firms in the investment process.[1] In this paper I present "mission hedging," a new strategy in which the endowment "doubles down," skewing investments toward firms it opposes. If increased objectionable activities coincide with both higher firm returns and greater foundation revenue needs (with which to counteract the objectionable activities), then the foundation can align

[1]Shareholder activism is an alternative middle ground approach in which investments are used to submit and vote on shareholder proposals that influence firms directly. Due to Securities and Exchange Commission rules, a foundation only has to own $2,000 in market value of the firm's securities (continuously for one year) in order to submit a proposal to be voted on by all shareholders (U.S. Securities and Exchange Commission (1998)). Thus shareholder activism would be an additional benefit of investing in a firm but is not expected to motivate a sizable investment level.

funding availability with need by increasing exposure to objectionable firms beyond that of a typical portfolio. Increasing investment in objectionable firms creates a hedge around the foundation's mission, maximizing expected utility.

There is a significant literature on SRI implications and reasons why individuals might rationally engage in SRI. However, despite general interest in the question of endowment divestments, I am not aware of any theory from the institution's perspective that addresses this investment decision. In this paper I present the first model that characterizes the philanthropic endowment's decision on how much to invest in an objectionable firm. Not intended to be a complete theory, my model is an abstraction that focuses on the major preferences and trade-offs that foundations factor into their investment decisions and the covariances between firm returns and foundation funding needs. In this paper, I explore the existing evidence supporting each of these trade-offs and preferences as well as empirical implications of the model.

My model centers on a foundation (or educational institution) that seeks to reduce a "bad" activity level and chooses how to allocate its endowment given assets' random return distributions and known subjective levels of "evil." After the investment is made, an exogenous shock simultaneously affects the bad activity level and asset returns. The foundation then spends its endowment to reduce the activity that it considers an economic bad.

I examine how a marginal shift in portfolio weights between two assets changes expected utility. I use the Capital Asset Pricing Model (CAPM) to decompose the effects of this shift into a set of trade-offs between expected returns, exposure to market-wide risk, and an idiosyncratic risk component.

This final component (typically minimized through diversification) increases expected utility when endowment managers boost portfolio weights on firms whose returns correlate with activities the foundation seeks to reduce. In particular, a foundation with decreasing marginal utility or a proportional intervention technology can increase expected utility by skewing investment toward the firm, yielding second-order stochastic dominance.

Despite the potential benefits, foundations do not generally practice mission hedging. To see why, I model the optimization problems implicitly solved by the SRI and firewall strategies. I allow portfolio evil levels to directly affect utility, pre-intervention bad activity levels, and fundraising. I end by examining evidence for the expanded model trade-offs. I find little consensus on trade-off magnitudes, which depend on factors like endowment size, firm fundamentals, and foundation funding. Mission hedging may be optimal but must be evaluated on a case-by-case basis.

The remainder of the paper is structured as follows. Section I provides further background and a discussion of the relevant literature. Section II lays out the basic mission hedging model, identifying trade-offs in the investment decision and demonstrating conditions under which skewing investments toward objectionable firms is optimal. Section III adds assumptions and elements consistent with the divestment and firewall strategies and presents a comprehensive mission hedging model. Section IV explores the theoretical and empirical evidence related to the trade-offs. Section V discusses market reactions and potential feedback from mission hedging. Section VI concludes with suggestions for potential tests of the empirical implications of the model

presented here and, finally, some summary remarks.

I. Background

This paper relates to a number of strands in the literature. Public finance scholars incorporate covariance in social project valuations. For example, Hirshleifer (1966) argues that one must account for funds being valued more in some states than others when evaluating government projects under uncertainty. Minken (2008) shows that in public project cost-benefit analyses the risk premium component of discount rates depends on the covariance of project returns with returns on all national assets. On the corporate and personal finance side, the Consumption Capital Asset Pricing Model (C-CAPM) builds on the basic CAPM to allow expected return to decrease with covariance between asset returns and marginal utility of consumption (Blanchard and Fischer (1989), pp. 507–508). Hedging on non-purely financial dimensions has also been proposed, as in Wolfers and Zitzewitz (2006), who suggest that individuals use political prediction markets to hedge personal unemployment risks.

A large body of literature has focused on determining whether SRI is generally beneficial in terms of financial returns and influencing firm behavior. I explore this literature in depth in sections IV.A and IV.C. Charged with a charitable mission instead of profit-maximization, a philanthropic endowment's objective function is inherently different from other investors' and thus yields different trade-offs in the SRI decision. The literature on divesting as an SRI strategy specifically for philanthropic endowments has primarily surveyed the

prevalence of or advocated for (or against) the practice (see McKeown (1997), Wood and Hagerman (2010), Emerson (2003), Kramer and Cooch (2007), and Cleveland and Reibstein (2015)). In an empirical analysis, Smith and Smith (2016) show that SRI implementation patterns at private universities and colleges are consistent with both branding motives and agency problems on the part of investment committees. However, the institutional perspective has not yet been formally modeled. This paper takes the first step toward developing such a theory by presenting an endowment objective function and using the CAPM to decompose the trade-offs of hedging around idiosyncratic risk.

The arguments in the divestment debate have typically been of the following nature. SRI proponents divest to advance missions directly through investing (Kramer and Cooch (2007)). Exclusion of objectionable firms from portfolios avoids implicit shows of support for the firms or benefiting from tainted profits, makes political statements, and potentially exerts downward price pressure on stocks to influence firm behavior.[2] Firewall foundations instead disregard interactions between missions and firms, keeping figurative firewalls between investing and charitable operations. They task money managers with maximizing risk-adjusted financial returns to yield the largest possible operating and grantmaking budgets with which to directly do good works. Firewall advocates believe any potential divestment benefits are outweighed by the costs, which include lower risk-adjusted returns from choosing investments

[2]Casual conversation with non-economists suggests that some people mistakenly believe that spending money to buy shares in a company (even on the secondary market) is equivalent to giving the company that money. A more sophisticated view that stock purchases can lower a company's borrowing cost or reward executives through increasing stock option value, however, can lead to similar concerns. Evidence for this is discussed in section III.A.

based on nonfinancial factors, higher risks from a less diversified portfolio, and administrative burdens of implementation.[3]

Unfortunately, both of these approaches ignore covariance between a firm's financial returns and activities related to the foundation's mission. The mission hedging strategy leverages this covariance by skewing investment toward the firm, making the foundation's mission outcome more certain, much as traditional hedging makes financial outcomes more certain. Thus, some endowments will want higher than normal exposure to stocks that reward the behaviors they are fighting. For example, a lung-cancer-fighting foundation could benefit from investing even more heavily in tobacco than a standard portfolio would.

II. Mission Hedging Model

I now consider a foundation established with a mission to reduce or eliminate some bad activity, the initial level of which is denoted by b_0.[4] This foundation begins with an initial endowment a_0, which it invests as it chooses in a set of assets. The world then experiences a shock that simultaneously affects the bad activity level (now b_1) and asset returns, yielding endowment value a_1.

[3]Other relevant concerns have historically included that foundation managers' fiduciary duties might prohibit them from engaging in divestment activities that could potentially lower returns. American legal scholars have argued that it is at the very least legally acceptable for trustees to engage in social investing and perhaps the prudent course (Solomon and Coe (1997a), Solomon and Coe (1997b), and McKeown (1997)). Recently, students sued Harvard University over its failure to divest, claiming that fossil fuel investments violated fiduciary duties. The suit was dismissed by the court (Klein and Delwiche (2015).)

[4]I will use the term *foundation* throughout the remainder of this analysis. However, as described in the introduction, the results apply to other entities like some educational institutions.

After the state of the world has been revealed and the endowment has earned its returns, the foundation spends a_1 on its intervention to reduce b_1.

In investing its endowment, the foundation chooses an asset allocation consisting of a set of weights $\boldsymbol{\alpha} = \{\alpha_i\}$ for each possible asset i, where an asset may be an individual security or a collection of securities like a fund. It must always hold that

$$\sum_{i=1}^{n} \alpha_i = 1. \tag{1}$$

Each asset is characterized by the distribution of its random return r_i and a measure of evil e_i, a known static scalar that is subjectively determined by the foundation.[5] Thus an endowment's portfolio return (r_p) and evil level (e_p) are[6]

$$r_p = \sum_{i=1}^{n} \alpha_i r_i \qquad \text{and} \qquad e_p = \sum_{i=1}^{n} \alpha_i e_i. \tag{2}$$

The foundation spends its assets on an intervention. I model this intervention technology as

$$y(a_1, b_1) = b_2, \tag{3}$$

where a_1 and b_1 are the post-shock, pre-intervention endowment and bad activity levels, respectively, and b_2 is the final bad activity level. This intervention has the following derivatives:

[5]The same asset allocation may be considered evil by one foundation and good by another. For example, a foundation opposed to abortion would consider an abortion pill producer objectionable, while a pro-reproductive-rights foundation might favor it.

[6]For simplicity I have specified the portfolio level of evil to equal the weighted average of individual asset evil levels. However, it could take a different form so that $e_p = g(\boldsymbol{\alpha}, \boldsymbol{e})$, where $\boldsymbol{e} \equiv [e_1 ... e_n]'$. The functional form does not play a role in the basic model presented in this section. However, one can imagine manager and donor preferences (as included in section III) that correspond to a portfolio evil measure of, for example, $e_p = \max e_i$.

$$\begin{aligned} \tfrac{dy}{da_1} < 0, \quad \tfrac{d^2y}{da_1^2} \geq 0, \\ \tfrac{dy}{db_1} > 0, \quad \tfrac{d^2y}{db_1^2} \leq 0, \\ \text{and } \tfrac{d^2y}{da_1 db_1} \leq 0. \end{aligned} \tag{4}$$

The production function $y(\cdot)$ yields the final bad activity level b_2. Thus a weakly negative first derivative dy/da_1 means that a foundation's ability to decrease the bad activity level increases with the final endowment value, though at a weakly decreasing rate due to the positive second derivative d^2y/da_1^2. A higher initial bad activity level increases the post-intervention bad activity level, as indicated by the positive first derivative of dy/db_1. However, this increase may have a constant scale (if $d^2y/db_1^2 = 0$ and $d^2y/da_1db_1 = 0$) or be proportional (if the second derivatives are strictly negative, meaning that a higher initial level of bad activity yields a higher absolute decrease in final bad activity.)

Figure 1 depicts two alternate intervention technologies fitting these characteristics. The bottom curve depicts an intervention with decreasing returns in a_1 given a lower initial bad activity level b_{1L}. The dashed middle curve shows the corresponding final bad activity level curve given a higher initial bad activity level of b_{1H} if the intervention technology is proportional. In this example, the intervention yields a given fractional reduction in b_1, where this fraction increases at a declining rate with a_1. This corresponds to $\frac{d^2y}{db_1^2} < 0$ and $\frac{d^2y}{da_1db_1} < 0$. The dotted top curve depicts the final bad activity level given the higher initial bad activity level of b_{1H} and a non-proportional intervention technology. Here the absolute reduction in the bad activity level for a given a_1

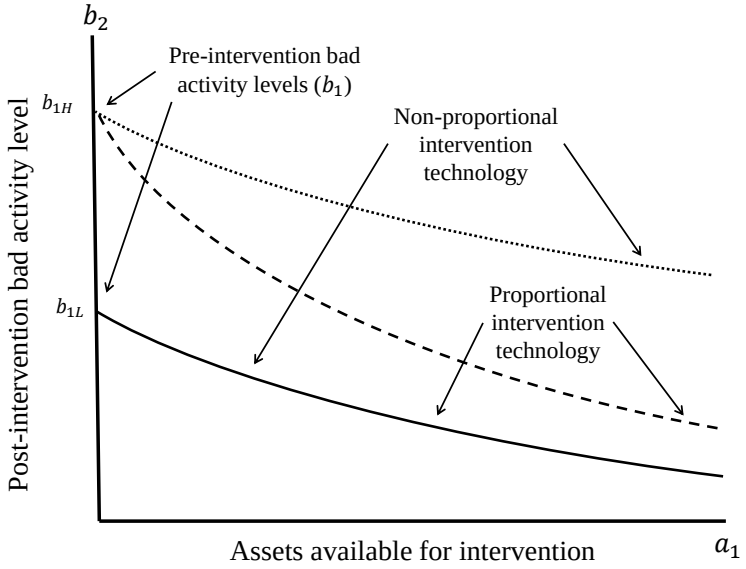


Figure 1: Proportional and non-proportional intervention technologies.

is independent of the initial bad activity level. Thus, the two non-proportional curves have the same slope at each a_1 with $\frac{d^2y}{db_1^2} = 0$ and $\frac{d^2y}{da_1 db_1} = 0$.

The foundation seeks to maximize expected utility, which in this basic setup decreases in the final bad activity level. (In section III.A, the possibility that the portfolio's level of evil enters into the utility function directly is considered.) Specifically,

$$\max_{\alpha} E\left[U\left(b_2\right)\right] = \max_{\alpha} E\left\{U\left[y\left(a_1, b_1\right)\right]\right\}, \tag{5}$$

where

$$a_1 = a_0(1 + r_p) \tag{6}$$

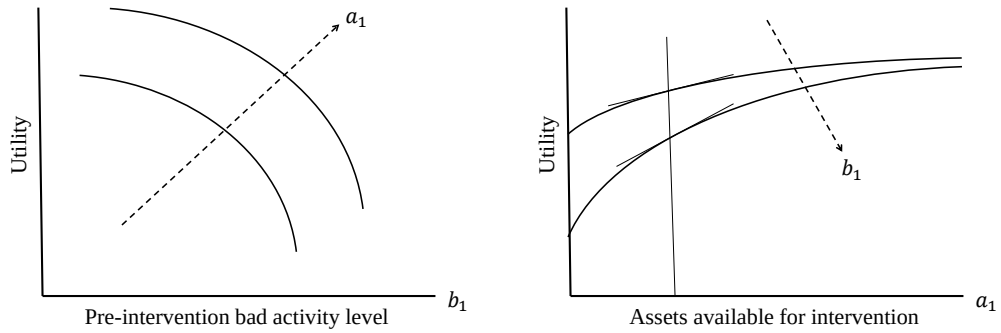
are the assets available for the intervention and b_1 is the bad activity level re-

alized after the shock that simultaneously affects r_p. Furthermore, $dU/db_2 < 0$ and $d^2U/db_2^2 \geq 0$. The optimality of mission hedging, or increasing investment in an evil firm, follows given the additional assumption that the derivative products are

$$\begin{aligned} U_A \equiv \tfrac{dU}{da_1} = \tfrac{dU}{dy}\tfrac{dy}{da_1} > 0, \quad U_A^2 \equiv \tfrac{d^2U}{da_1^2} > 0, \\ U_B \equiv \tfrac{dU}{db_1} = \tfrac{dU}{dy}\tfrac{dy}{db_1} < 0, \quad U_B^2 \equiv \tfrac{d^2U}{db_1^2} < 0, \\ \text{and } U_{AB} \equiv \tfrac{d^2U}{da_1 db_1} > 0. \end{aligned} \tag{7}$$

These derivative conditions can be satisfied through decreasing marginal utility in the bad activity (which is equivalent to increasing marginal damages) and/or a proportional intervention technology. Pollution reduction and habitat loss prevention are examples of foundation missions that could yield decreasing marginal utility in the bad activity.[7] A marketing campaign that causes a certain fraction of smokers to quit is an example of a proportional intervention technology. The more money available for the marketing campaign, the greater the fraction of smokers who are affected. The higher the number of smokers, which would be represented by an increase in b_1 in this model, the more people the campaign can help with the same amount of money. Decreasing marginal utility and proportional intervention technology both make the same dollar more valuable to the foundation on the margin when pre-intervention bad activity levels are higher (see Figure 2).

[7]For intuition, consider habitat loss, where the first portion of a species' habitat lost results in very low damages. But the marginal damages due to the loss of the last remaining bit of habitat are extremely high.



(a) Utility curves at different b_1. (b) Utility curves at different a_1.

Figure 2: Foundation utility function curvature with respect to post-shock pre-intervention assets and bad activity levels.

A fully expanded version of this optimization problem is

$$\max_{\alpha} E\left\{U\left[y\left(a_0\left(1+\sum_{i=1}^{n}\alpha_i r_i\right), b_1\right)\right]\right\}. \tag{8}$$

Now consider a marginal shift between assets j and k, which is essentially a change in weights α_j and α_k:[8]

$$dEU = E\left\{\frac{dU}{dy}\frac{dy}{da_1}\left[a_0(d\alpha_j r_j + d\alpha_k r_k)\right] + \frac{dU}{dy}\frac{dy}{db_1}\left(\frac{db_1}{d\alpha_j} + \frac{db_1}{d\alpha_k}\right)\right\}. \tag{9}$$

For now, assume that $\frac{db_1}{d\alpha_j} = \frac{db_1}{d\alpha_k} = 0$, so that the investment itself does not directly affect the pre-intervention bad activity level. (This assumption is

[8]This step and that in equation (10) follow the methodology in Shalit and Yitzhaki (1994).

relaxed in section III.A.) Equation (9) can thus be simplified to the following:

$$dEU = dE\left\{\frac{dU}{dy}\frac{dy}{da_1}\left[a_0(d\alpha_j r_j + d\alpha_k r_k)\right]\right\}. \tag{10}$$

Substitute $d\alpha_j = -d\alpha_k$, which must hold in order to preserve equation (1). This action yields the following:

$$\frac{dEU}{d\alpha_j} = E\left\{U_A\left[a_0(r_j - r_k)\right]\right\}. \tag{11}$$

Recall that $Cov(X,Y) = E[XY] - E[X]E[Y]$. Then:

$$\frac{dEU}{d\alpha_j} = a_0 Cov\left(U_A, r_j - r_k\right) + a_0 E\left[U_A\right] E\left[r_j - r_k\right]. \tag{12}$$

The first term on the right-hand side of equation (12) shows that to the extent that asset j's returns have higher covariance with marginal utility, a shift from asset k to asset j increases expected utility. In other words, under the right circumstances, a foundation can benefit from skewing its investment toward assets that correlate with the foundation's mission-based need. The second term indicates that this increase may be augmented or offset by differences in expected returns, weighted by expected marginal utility of assets.

I now decompose these effects by applying the CAPM, according to which the expected return of a firm can be expressed as follows:

$$E\left[r_i\right] = r_f + \beta_i\left(E\left[r_m\right] - r_f\right). \tag{13}$$

where r_f is the risk-free rate, r_m is the market return, β_i is the beta coefficient such that $\beta_i = \text{Cov}(r_i, r_m)/\sigma_m^2$, and σ_m^2 is the variance of market return.

The realization of firm i's returns is

$$r_i = r_f + \beta_i (r_m - r_f) + \varepsilon_i. \tag{14}$$

Thus according to the CAPM, an asset's realized return is the sum of the risk-free rate, a risk premium that accounts for the asset's exposure to market-wide risk, and an asset-specific or idiosyncratic risk realization ε_i.

Plugging equation (14) into equation (12) and without loss of generality assuming that $a_0 = 1$, the marginal effect of a shift from asset k to asset j is

$$\begin{aligned} \frac{dEU}{d\alpha_j} =& E[U_A] E[r_j - r_k] + (\beta_j - \beta_k) Cov(U_A, (r_m - r_f)) \\ &+ Cov(U_A, \varepsilon_j - \varepsilon_k). \end{aligned} \tag{15}$$

The trade-off to expected utility between two assets is therefore a combination of three different effects. The first is expected returns, which may augment or offset the other two covariance effects. The second is covariance between foundation marginal utility and market risk. To the extent that market returns are positively correlated with foundation marginal utility of assets, a higher β_i will increase expected utility. For example, a foundation focused on job training programs for the unemployed might prefer a low β_i if its needs are greater when the economy and markets are doing worse. However, a foundation focused on preserving open spaces from development might prefer a higher β_i if development accelerates in bull markets.

Covariance between foundation marginal utility and idiosyncratic risk is the third component. I call this the *idiosyncratic risk trade-off*. Consider, for example, shifts in smoking rates that affect a lung cancer-fighting foundation and a tobacco company's returns but not necessarily the broader economy. This trade-off component lies at the heart of the mission hedging strategy to increase investments in firms whose returns are correlated with bad activity levels. As depicted in figure 2b, the marginal utility of assets a_1 increases with b_1 (as shown by the higher slope on the bottom curve for a given a_1) so that this covariance term will be positive if asset j's returns are more positively correlated with b_1 than asset k. All other things being equal, shifting to an asset whose idiosyncratic risk has a higher covariance with U_A yields second-order stochastic dominance in expected utility. Although investors typically seek to eliminate this idiosyncratic risk through diversification, a foundation can benefit from taking more of it on when this risk is properly aligned with the foundation's mission-determined states of high marginal utility of assets.

In the optimal asset allocation, either these three trade-off components sum to zero or there is a corner solution. If one asset had an extremely high covariance between the marginal utility of assets and idiosyncratic risk returns but is in other respects very similar to other assets, then it is conceivable that a foundation could maximize its expected utility by investing completely in that asset. What kind of asset might yield such a covariance? A firm whose business activity is closely intertwined with the foundation's targeted bad activity may yield returns that covary positively with bad activity levels. And often these firms are considered to be evil incarnate. For example, foundations

working on global warming, lung cancer, or animal welfare could, respectively, consider fossil fuel producers, tobacco companies, or meat producers to be objectionable. My result implies that such endowments may benefit from skewing investment toward these seemingly reprehensible companies so long as the expected return from such investments is not so low relative to other opportunities that no investment in the objectionable firm is warranted.

It follows that foundations that do not account for covariance between idiosyncratic risk and marginal utility of assets will generally under-invest in high covariance assets. Because objectionable firms are more likely to have such covariance, firewall foundations will underinvest in these firms by disregarding the mission in the investment process. SRI foundations will tend to underinvest in these firms even more by avoiding them altogether.

III. Model Extensions

The basic model presented in the previous section demonstrates how mission hedging can make foundations more successful. However, foundations have not been implementing this strategy. I now explore why they choose to divest from or disregard the nature of objectionable firms in the investment process. In this section I set up models consistent with the SRI and firewall strategies and then combine all the components presented into a comprehensive mission hedging model. In particular, I incorporate fundraising and pre-intervention bad activity level effects and expand the objective function to allow the level of portfolio evil to directly affect utility.

A. Socially Responsible Investing Model

An SRI foundation that fundamentally objects to investing in reprehensible firms may experience direct negative utility effects from doing so. As raised by Dam and Scholtens (2015), a low portfolio evil level may give investors a "warm glow," as described by Andreoni (1990). This may be true for foundation managers.[9] I model this warm-glow effect by including portfolio evil directly in the foundation utility function as follows:

$$\max_{\alpha} E\left[U\left(b_2, e_p\right)\right]. \tag{16}$$

Furthermore, SRI proponents have argued that investing in objectionable firms helps those firms increase bad activity levels, or conversely that the divestment act lowers bad activity levels.[10] In other words, contrary to the assumption made in the basic model in section II, $\frac{db_1}{d\alpha_i} \neq 0$. Finally, an SRI foundation may rely on fundraising and worry that resources could be negatively affected by objectionable investments.[11] The SRI foundation solves the following expanded expected utility optimization problem:

[9]Except in the case of family foundations where the donors are also the trustees making divestment decisions, one might argue that this direct disutility is attributed to endowment managers and thus constitutes an agency problem.

[10]This effect may be indirect, as student leaders of the Harvard fossil fuel divestiture campaign argued that they "do not expect divestment to have a financial impact on fossil fuel companies.... Divestment is a moral and political strategy.... Divestment calls on citizens to build a powerful climate movement and pressure elected representatives to enact meaningful legislation" (Maxmin et al. (2013)).

[11]School endowment concerns about student enrollment are analogous to fundraising concerns if some prospective students are inclined to enroll at colleges and universities with objectionable investments, as suggested by Smith and Smith (2016).

$$\max_{\alpha} E\Bigg\{ U\Bigg[y\Bigg(a_0\left(1+\sum_{i=1}^{n}\alpha_i r_i\right) + D\left(\sum_{i=1}^{n}\alpha_i e_i\right), \\ B\left(b_0, s_b, \sum_{i=1}^{n}\alpha_i e_i\right)\Bigg), \sum_{i=1}^{n}\alpha_i e_i\Bigg]\Bigg\}. \tag{17}$$

This problem differs from the basic mission hedging model presented above in equation (8) in the following ways. First, $D(e_p)$, with $dD/de_p \leq 0$ where defined, represents donations received by the foundation as a function of portfolio evil level. Receiving less of a warm glow, donors contribute less to a foundation with more objectionable investments if the first derivative is strictly negative. These donations are added to endowment assets in the intervention technology function. Second, $B\left(b_0, s_b, e_p\right)$, where s_b is the stochastic component affecting the post-shock bad activity level, represents the viewpoint that investments in objectionable firms result in increases in bad activities (and divestments in decreases), with $B_e(e_p) \equiv dB/de_p > 0$. Finally, in the last term e_p enters directly into the utility function.

In addition, an SRI foundation behaves as if there is no relationship between any firm's returns and marginal utility of assets, or $Cov\left(U_A, \varepsilon_j - \varepsilon_k\right) = 0$. Solving this problem using the same steps as in the derivation of equation (15) yields the following trade-off equation:

$$\begin{aligned}\frac{dEU^{SRI}}{d\alpha_j} =& E\left[U_A\right] E\left[r_j - r_k\right] + \left(\beta_j - \beta_k\right) Cov\left(U_A, \left(r_m - r_f\right)\right) \\ &+ \left(e_j - e_k\right)\left\{E\left[U_A D'(e_p)\right] + E\left[U_B B_e(e_p)\right] + E\left[U_e\right]\right\},\end{aligned} \tag{18}$$

where $U_B \equiv {}^{dU}/_{dy} \cdot {}^{dy}/_{db_1} < 0$ and $U_e \equiv {}^{dU}/_{de} < 0$ (where defined). An SRI foundation optimizes with respect to expected returns, systematic risk premiums, donation changes, effects on pre-intervention bad activity levels, and the direct disutility of a high portfolio level of evil. However, it does not generally consider the idiosyncratic risk trade-off.

Given all of these trade-offs, one can see how an SRI foundation might optimize by divesting completely of objectionable firms. In particular, if even very low portfolio evil levels trigger significant drops in donations or major dissatisfaction for foundation managers, then taking on additional evil in the portfolio might not be justified by other increases to expected utility. Evidence for these trade-offs is discussed in section IV.

B. Firewall Model

Firewall proponents typically argue that the direct effect of investing on bad activity levels is negligible. Their choices reveal limited disutility of evil investments and concerns about their investment decisions affecting fundraising. They tend to support the basic model from section II and the assumptions that $db_1/de_p = 0$ and $dD/de_p \approx 0$. However, in arguing that investments should be made in a values vacuum, firewall advocates like SRI practitioners act as if $Cov\left(U_A, \varepsilon_j - \varepsilon_k\right) = 0$. In other words, firewall advocates optimize as if the trade-off faced by the foundation equals the following:

$$\frac{dEU^F}{d\alpha_j} = \left(\beta_j - \beta_k\right) Cov\left(U_A, \left(r_m - r_f\right)\right) + E\left[U_A\right] E\left[r_j - r_k\right]. \qquad (19)$$

By ignoring the idiosyncratic risk trade-off, firewall foundations may make suboptimal portfolio allocations and miss opportunities to increase expected utility. In particular, they will underinvest in objectionable firms whose idiosyncratic risk returns covary strongly with the marginal utility of assets.

C. Comprehensive Mission Hedging Model

Adding equation (17) SRI model components to the basic mission hedging model with the idiosyncratic risk covariance term yields these trade-offs:

$$\begin{aligned}
\frac{dEU}{d\alpha_j} \;=\; & E\left[U_A\right] E\left[r_j - r_k\right] && \text{[Expected Return]} \\
& + \left(\beta_j - \beta_k\right) Cov\left(U_A, \left(r_m - r_f\right)\right) && \text{[Market Risk]} \\
& + Cov\left(U_A, \varepsilon_j - \varepsilon_k\right) && \text{[Idiosyncratic Risk]} \\
& + (e_j - e_k) E\left[U_A D'(e_p)\right] && \text{[Fundraising]} \\
& + (e_j - e_k) E\left[U_B B_e(e_p)\right] && \text{[Direct Investment Effects]} \\
& + (e_j - e_k) E\left[U_e\right] && \text{[Direct Disutility]}
\end{aligned} \tag{20}$$

This is a generalized model, where equation (15) is a special case that assumes that $D'(e_p) = B_e(e_p) = U_e = 0$.

IV. Evidence for Trade-Offs

I now explore the magnitude of the equation (20) trade-offs that endowment managers must weigh against the idiosyncratic risk trade-off in deciding whether to engage in mission hedging. My findings are as follows. Theoretical models show that investments can directly affect pre-intervention bad activity

levels. But empirical evidence indicates these effects only come into play with very substantial investment levels, typically far beyond what mission hedging prescribes. The fundraising trade-off may be significant for some foundations but is immaterial to the majority that do not accept any donations. There is some evidence that a subset of universities and colleges are motivated by the fundraising trade-off through student enrollment. The expected return trade-off will often augment the idiosyncratic risk trade-off core to mission hedging, as many objectionable firms are found to have higher returns. However, this may be offset by the market risk trade-off. Finally, I explore potential ethical foundations for the direct disutility trade-off and address whether this trade-off is due to agency problems. Evidence suggests that there likely will be foundations for whom increasing investment in objectionable firms is optimal, though this should be evaluated on a case-by-case basis.

A. Investment Effect on Pre-Intervention Bad Activity Level

The basic mission hedging model presented in section II assumes investments do not directly affect pre-intervention bad activity levels. In section III I introduced the trade-off term dB/de_p to allow for objectionable investments to affect bad activity levels prior to intervention. Large positive dB/de_p may make divestment optimal.

There are two key ways in which investments could directly increase pre-intervention bad activity levels. First, an investment could be seen as an endorsement of a firm, thereby increasing the firm's goodwill. If this is a real concern, a foundation can explain that its investment is strategic and not a

show of support for the firm.

Second, if the stock demand curve slopes downward, then mission hedging can raise the stock price by increasing the investor base. This could in turn cause the firm to increase bad activity through management incentives or lower cost of capital. In the context of imperfect information, Merton (1987) shows that an exogenous increase in a firm's investor base results in an increase in the optimal investment level due to a lower cost of capital.[12] Rivoli (2003) cites diverging investor opinions and imperfect substitutes as additional theoretical market imperfections that could result in downward-sloping demand curves.

Heinkel et al. (2001) show through an equilibrium-based model that green investors who shrink a polluting firm's investor base by divesting from it may cause the firm to clean up. Here, the mechanism is risk sharing. It follows that if green investors choose instead to invest in polluting firms, this could increase pollution by those firms. However, in calibrating their model, Heinkel et al. (2001) find that green investors need to initially account for at least 20 percent of all investments in the polluting firm in order to cause it to invest in cleaner technology. If the total market value is $25 trillion (the market capitalization of domestic stocks in the United States as of 2015), then this would correspond to $5 trillion of assets committed to a divestment movement.[13] In summary, theoretical evidence suggests that investments could affect pre-intervention bad activity levels, but it remains unclear whether this effect is empirically

[12]In the Merton (1987) model, each investor has information on only a subset of firms and is only willing to invest in firms on which it has information. Thus, each firm has a different subset of investors for its base.

[13]The World Bank. "Market capitalization of listed domestic companies (current US$)." `http://data.worldbank.org/indicator/CM.MKT.LCAP.CD?locations=US` (accessed September 28, 2016).

meaningful.

To address this point, one must first determine whether the investment (or divestment) is likely to have a significant effect on share prices. The two main empirical approaches to answering this question are to examine specific socially motivated divestment events and to estimate the general elasticity of demand for stocks.

The mass boycott of firms doing business in South Africa during apartheid is the most studied divestment event. However, even with this major event, there is no clear consensus on the divestment campaign's effectiveness. One key challenge in this line of research is isolating the effect of a divestment campaign from related consumer boycotts and other pressures and news. Furthermore, as demonstrated in my model, investors may be more willing to divest from socially objectionable firms if those firms face fundamental risks that make them otherwise unattractive investments. This possibility introduces potential omitted variable bias in analyses.[14]

With the above caveats in mind, highlights of results on the South African divestment movement are as follows. Kumar et al. (2002) survey research related to the divestment as a means to help end apartheid in South Africa and report mixed results. In their own analysis, they find that firms remaining in

[14]For example, a Lexis/Nexis news search on the recent fossil fuel divestment campaign reveals that the ramp-up in divestment announcements has coincided with unfavorable market conditions for the coal industry as dropping natural gas prices and tighter regulations have made coal prospects very uncertain (Macdonald-Smith (2014)). It is unclear how many organizations divesting from coal might not do so in the absence of the unfavorable outlook for the coal industry. A counterexample is the divestment campaign targeting Monsanto (see Food Democracy Now! at `http://www.fooddemocracynow.org/campaign/take-monsanto-stock-plunge-divest-monsanto-now`), which has failed to gain traction while Monsanto performed well on the stock market.

South Africa during the boycott experienced increased institutional ownership and positive abnormal returns when Nelson Mandela called for an end to the boycott. However, Teoh et al. (1999) show that only the first in a series of voluntary pension fund announcements of divestment from South Africa (during apartheid) had a significantly negative effect on relevant share prices. Thus, even within one campaign, the benefits of specific divestment activities may vary significantly. In an event study of firms announcing exits from South Africa, Posnikoff (1997) finds a positive announcement effect. Meznar et al. (1994, 1998) find that firms withdrawing from South Africa experienced negative abnormal returns. However, McWilliams and Siegel (1997) have raised concerns with Meznar, Nigh, and Kwok's methodology and in a replication study show that the abnormal returns in the South African apartheid case are small and insignificant.

Research on other divestment events is limited. However, Ding et al. (2014) examine the boycott of firms doing business in South Sudan and find that quarters with increased divestment campaign news stories coincided with decreases in stock prices and institutional stock ownership and were followed by quarters with higher returns. However, inferences are limited by the fact that stock divestment news may coincide with news about consumer boycotts and other items relating to firm fundamentals.

On the question of elasticity of demand, Loderer et al. (1991) estimate the price elasticity of demand for stock by examining primary stock offerings of already publicly traded firms. They find that offering announcements that increase the number of shares yield negative price effects. However, they are

unable to clearly attribute these changes to mechanisms like liquidity and heterogeneous beliefs that underpin theoretical explanations (as in Merton (1987)) for downward sloping demand.[15]

Another approach examines the effect of inclusion in an index, which increases firm investor bases. Petajisto (2009) finds that S&P 500 inclusion can result in price effects of up to 3 percent. Similarly, Capelle-Blancard and Monjon (2012) find evidence for significant positive abnormal returns coinciding with SRI index inclusion. However, these abnormal returns may result from information conveyed by SRI index inclusion rather than the resulting investor base increase. In summary, there is some empirical support for downward sloping demand. However, it is not clear how steep that slope is or how much of a price effect a particular investment might have.

In order for an investment (or divestment) to directly cause an increase (or decrease) in bad activity levels, any resulting stock price increase must be followed by a corresponding change in firm behavior. Although it is well understood that stock returns predict firm investment levels, it is not clear to what extent this relationship is causal. Morck et al. (1990) show that the incremental explanatory power of stock returns is small when fundamentals are accounted for, finding only limited support for the idea that stock price changes drive firm investments. Similarly, Blanchard et al. (1993) find that share price changes have a limited effect on investment unless they are matched by corresponding changes to fundamentals. Bond et al. (2012) review a large variety of models that show that the information and incentives prices provide

[15]Note that one issue with the Loderer et al. (1991) results may be their use of relative price changes rather than abnormal returns.

to management can affect firm behavior. However, there may be some heterogeneity of firm investment sensitivity to share prices. For example, Chen et al. (2007) and Baker et al. (2003) find that investment-to-price sensitivity is strongly positively correlated with the amount of private information in price and the level of firm equity dependence, respectively. These types of results may provide some guidance as to whether particular firms are likely to respond meaningfully to given stock price changes.

The magnitude of dB/de_p will increase with endowment size. Larger foundations are both more likely to negatively affect bad activities with their investments in objectionable firms and to be able to have a positive effect through screening. However, with a mean asset size of about $116 million, most of the 98 foundation signatories to the Divest-Invest Philanthropy fossil fuel divestment campaign (for whom asset data were available) are unlikely to have much individual effect on multi-billion dollar firms.[16]

In summary, there is limited evidence that investments made on the secondary market may increase pre-intervention bad activity levels. In order to change firm behaviors, divestment movements must generally occur on a massive scale beyond that prescribed by mission hedging. However, foundations considering increasing objectionable investments may mitigate concerns by ensuring that their investments (in aggregate with other foundations in the same field) are small relative to the market capitalizations and trading volumes of the narrowly targeted firms. Alternatively, endowments can, where possible, opt for alternative investments that through their correlations pro-

[16] **Divest-Invest Philanthropy.** "Signatories." `http://divestinvest.org/philanthropy/signatories/#/signatories` (accessed September 28, 2016).

vide some hedge on the mission but are not in a position to influence bad activity levels. For example, an anti-tobacco foundation could invest in a tobacco-related medical device company. A foundation could also consider investing in a factor-mimicking portfolio of stocks highly correlated with the bad firm's idiosyncratic return component. Choices like these will likely reduce the expected utility benefit from mission hedging.

B. Fundraising

I now consider whether portfolio evil level e_p might reduce endowment assets by decreasing donations due or student enrollment. Based on an examination of IRS 990-PF foundation tax returns, I find that the majority of private foundations do not accept donations and therefore are not affected by the fundraising trade-off. Table 1 shows that sixty-four percent of all foundations (holding more than half of foundation assets) accepted zero donations in 2011. Furthermore, only 30.7 percent of foundations (holding about one-third of assets) received contributions, gifts, grants, etc., in excess of 5 percent of their total expenses and disbursements that year. I designate these as "Significant Donations" foundations, providing a proxy for foundations potentially at operational risk through mission hedging. This measure likely overestimates how many foundations risk losing important donations, as many of these foundations likely rely on donors (including founders, other foundations, governments, and other institutions) whose funding decisions will not be affected by endowment investments.[17]

[17]This analysis does not include universities and colleges, which may legitimately be concerned about the effect of investments on attracting alumni donations. But divestment

Table 1: Foundation Fundraising

	All Foundations		Zero Donations		Significant Donations	
Asset Range ($mil)	Number	Assets ($mil)	Percent of fdns	Assets ($mil)	Percent of fdns	Assets ($mil)
0.0-0.1	15,785	540	48.6	315	48.2	208
0.1-1.0	34,704	14,819	68.0	10,192	26.6	3,789
1.0-10.0	24,708	77,559	69.0	52,394	25.3	20,565
10.0-34,000	6,471	525,751	60.2	269,540	30.1	184,108
0-34,000	81,669	618,670	64.0	332,441	30.7	208,671

"Zero Donations" foundations are those that reported zero contributions, gifts, grants, etc. received on their 2011 990-PF tax returns. "Significant Donations" foundations have received contributions, gifts, grants, etc. representing at least 5 percent of their total expenses and disbursements (including grants) in 2011. Foundations that started or ended the year with no assets, made no grant payments over the year, were terminated, or were in a 60-month termination are excluded. These summary numbers have been adjusted to reflect the stratification weights applicable to each observation.

[Source] These 2011 data are based on 990-PF micro-file data from the IRS accessed at `http://www.irs.gov/uac/SOI-Tax-Stats-Private-Foundations-Harmonized-Microdata-Files-ASCII` on February 20, 2015.

The fact that most foundations are not currently divested from objectionable stocks represents additional evidence that fundraising is not a broad concern for foundations when it comes to their investments.[18] Firewall foundations have maintained their investment approach even after encountering fierce public criticism. Consider the dramatic 12-article investigative series the *Los Angeles Times* printed in 2007 that criticized the Bill and Melinda Gates Foundation for investing in firms working counter to its mission (Piller

from particular firms or sectors may work to increase or decrease aggregate donations.

[18]In a 2012 survey, the US SIF Forum for Sustainable Investing found only 95 U.S. foundations that applied environmental, social, or corporate governance criteria in their investments (US SIF: The Forum for Sustainable and Responsible Investment (2014)).

et al. (2007)). The Gates Foundation continued to invest in the questionable firms after the series ran (Piller (2007)). Like most private foundations, the Gates Foundation does not rely on fundraising. Furthermore, it is hard to imagine grantees rejecting funding from the foundation over this issue.

Colleges and universities rely in part on student enrollment as well as alumni and other contributions. Smith and Smith (2016) argue that their finding that less selective and more religious schools are more likely to engage in SRI shows that these school use SRI for branding. This further supports the conclusion that the fundraising trade-off could be significant for a subset of endowments.

A foundation concerned about public backlash against investments can explain the strategy behind its investments. If this explanation fails, the foundation may invest in alternative assets whose returns correlate with the bad activity level, as discussed in section A, or use derivatives like stock options to benefit from the exposure to a firm's idiosyncratic risk without actually owning shares. These investments could be described as a form of insurance and thus be more palatable for donors. In summary, while it may pose public relations challenges, the majority of foundations will not put necessary donations at risk through mission hedging.

C. Expected Returns and Market Risk

I now explore whether the expected return and market risk trade-offs will offset or augment the idiosyncratic risk covariance trade-off for objectionable firms. In comparing a firm's expected returns to an alternative investment,

the previously discussed possibility of a downward-sloping demand curve for stocks may augment the benefits of mission hedging. To the extent that the questionable firm is objectionable to some SRI investors, and therefore has a smaller investor base, lower share price, and higher return, a mission hedging strategy will increase the foundation's ability to directly lower bad activity levels through both the hedging aspect and higher expected returns. However, this may be offset by higher systemic risk.

While Margolis and Walsh (2003)'s review of 127 studies suggests a positive relationship between corporate social and financial performance, Hong and Kacperczyk (2009) show that "sin stocks" like tobacco, alcohol, and gambling stocks are held less by norm-constrained institutions (like pension funds) and have higher expected returns than comparable stocks. Other studies like Fabozzi et al. (2008) also find significant excess annual returns for sin stocks. This could be due to downward-sloping demand curves or unusually high risk profiles. Renneboog et al. (2008, pp. 1723) provide a good overview of some of the key empirical performance studies and find that "the existing studies hint but do not unequivocally demonstrate that SRI investors are willing to accept suboptimal financial performance to pursue social or ethical objectives." Capelle-Blancard and Monjon (2012), however, examine the trends in the SRI literature and assert that there is consensus that SRI funds perform similarly to "conventional" peers and benchmark indexes. However, they do not provide clear empirical evidence for their conclusions.

In summary, available evidence indicates that the expected return trade-off component is likely to be negligible or to augment mission hedging benefits.

However, foundations need to consider this on a case-by-case basis. If expected returns are low enough on an objectionable firm, this could outweigh other beneficial trade-offs enough to make divestment optimal. This has become a primary argument in the fossil fuel divestment campaign (see Howard (2015) and Cleveland and Reibstein (2015)). If the recent challenges faced by the coal industry (as discussed briefly in section A) are expected to continue, then expectations of inferior stock returns might make divestment optimal regardless of idiosyncratic risk trade-off benefits. On the flip side, to the extent that a foundation expects to earn superior returns on an objectionable firm, it should consider the additional market risk exposure the stock carries and whether this means that the demand curve is downward-sloping enough for the foundation's investment to meaningfully increase the firm's bad activities on the margin.

D. Direct Disutility of Evil Investments

Direct disutility of an evil investment can be experienced by the institution itself if, for example, the objectionable investment conflicts directly with the organization's mission or values, or it can be experienced by endowment managers. Smith and Smith (2016) argue show that universities and college endowment investment committees that are larger or have a smaller fraction of investment professionals are more likely to engage in SRI activities. They argue that this is evidence that some SRI activity is based on agency problems. Abstracting from questions of who experiences the disutility, I now consider the ethical concerns underlying the direct disutility of evil investments.

Irvine (1987) identifies the "Evil-Company Principle" (that it is wrong to invest in an evil company) and the "Tainted-Profits Principle" (that it is wrong to benefit from the wrongdoing of others) as flawed, though they may motivate some foundations (or their managers) to divest.[19]

Irvine (1987) next presents the "Enablement Principle" (that it is wrong to enable others to do wrong) with revisions like "act-utilitarianism" under which "it is wrong for me to do something that enables others to do wrong, unless my failure to do the thing in question will have even worse consequences (Irvine (1987, pp. 237))." He argues that the "Small-Purchase Objection," that an individual investor's small investment is acceptable because it won't have a significant effect, fails under the "Universalizability Principle," which considers an act objectionable if it causes problems when repeated by everyone.

In the framework of Irvine (1987), the morality of mission hedging relies on the act-utilitarianism revision of the Enablement Principle. A foundation invests in morally problematic firms because it is uniquely positioned to (on average) do more good than harm through this action. The aggregate assets held by all foundations targeting a particular set of firms under mission hedging are probably too small to increase bad activity levels. Thus the mission hedging prescription to increase investments in firms whose activities correlate with the foundations' missions likely passes the universalizability test. Not being subject to anti-trust regulations, foundations with common goals can collaborate to ensure that their aggregated investments will not cause problems.

[19]Note that even if there are no ethical concerns with an investment, there may be psychological or other sources of direct disutility associated with it.

V. Market Pricing of Foundation Mission Hedging

In the model presented above, the market does not react to the endowment's asset allocation and its (potential) effects on firms. A number of factors determine the validity of assuming that a mission hedging foundation's greater expected reduction of bad activity won't affect the share prices of a firm whose profitability is somehow intertwined with that bad activity. For example, a foundation funding carbon sequestration research might focus its mission hedging investments on fossil fuels. Because greenhouse gases are a byproduct of the firms' activities and successful carbon sequestration does not reduce revenues or increase costs for the firms, the stock price should not drop in response to the foundation's decision to engage in mission hedging.[20]

However, a foundation funding a proportional smoking cessation campaign that affects a fraction of smokers will on average hurt the bottom line of tobacco companies more if it implements mission hedging than otherwise. In this case the tobacco firm's share price should decrease ex ante (before the shock) under mission hedging.[21] In addition, a pre-intervention positive shock to (or increase in) smoking should result in a smaller increase in share price because the market knows the foundation, having skewed its investment toward tobacco

[20] In fact, one could argue that the greenhouse-gas-emitting firms could benefit from successful carbon sequestration projects, as consumers concerned about their carbon footprints might increase their consumption upon knowing that their emissions can be sequestered.

[21] The possibility has been raised that the foundation could benefit from shorting a firm that it will hurt through its intervention, causing share prices to fall. This relies on an assumption that the market does not know about or believe in the effectiveness of the foundation's intervention. I am operating instead under the assumption that the market already knows about and has priced in the foundation's activities and is responding to the information of the foundation's new investment.

and thus having also had abnormal positive returns to its endowment, now has more money with which to fund smoking cessation campaigns. Similarly, the negative price shock accompanying a negative smoking shock should be smaller because the mission hedging foundation now has fewer funds available for its campaign. In this situation, the foundation might be wise to announce its strategy before making its purchases so that it can benefit from the lower ex ante price.[22]

Finally, consider a foundation whose intervention technology is not proportional but will affect the firm's bottom line.[23] Mission hedging should not affect this firm's share price ex ante because the expected post-intervention bad activity level is unaffected. However, the market reaction will dampen return shocks under mission hedging versus divestment because the post-intervention bad activity levels will be less extreme. This dampening will reduce the idiosyncratic risk trade-off and mission hedging benefits.

VI. Conclusion

Both sides of the debate on whether foundations should disregard the objectionable nature of firms or divest from them have missed an important issue. Investing heavily in objectionable firms may increase foundations' expected utilities by aligning funding availability with need.

[22]In this and the next scenario, it is possible that the foundation may encounter a moral hazard problem. Knowing that the foundation endowment, which funds salaries, has significant exposure to an objectionable firm's returns, staff might decrease efforts to fight activities of that firm. This action would dampen mission hedging share price effects.

[23]One example might be a foundation seeking to help individuals reduce their fast food consumption by giving them fresh unprocessed food to consume instead. Here, fast food companies are the objectionable firms.

In this paper I have provided the first model of the endowment investment problem vis-à-vis objectionable firms. I have outlined objective functions whose solutions are consistent with the divestment, firewall, and mission hedging approaches. I have articulated the trade-offs faced by foundations deciding how much to invest in objectionable firms, identified a key idiosyncratic risk trade-off that has been absent from the debate, and examined the theoretical and empirical evidence for these trade-offs. I have shown that foundations can increase expected utility by skewing investment toward firms whose returns correlate with the activities the foundations seek to reduce or eliminate.

Although I have not included a formal analysis of a foundation with more than one mission, the intuition for this extension is as follows. The first-order condition for the ex-post allocation of funds between missions requires that the marginal utility of the money spent on program areas be equal. Making substitutions following on that fact yields the same basic analysis as the single-mission case, except that the idiosyncratic risk trade-off magnitude is probably smaller because of the split focus.

The model presented here yields a number of empirical implications that could be tested given currently unavailable data on missions, SRI participation, program area budgets, and investment allocations of foundations. For example, the model suggests that as a foundation's missions change, so should its investment allocations. Furthermore, a foundation with multiple missions will realign its budget and investment allocations as shocks shift the relative marginal utility of funds between missions. Consider, for example, a foundation seeking to reduce smoking and obesity. If smoking declines but obesity

increases, the model predicts the foundation will increase the fraction of its budget allocated to obesity. If the foundation decides to dedicate itself entirely to fighting obesity, then the model indicates it would be better served by shifting mission hedging investments away from tobacco and toward fast food and sugary drink producers.

Future work on measuring trade-off magnitudes could help answer how beneficial SRI is to foundations. Recent anecdotal evidence suggests that university alumni donations may be affected by campus divestment protests and endowment manager decisions (Rocheleau (2015)). A difference-in-difference strategy that examines the effect of changes in SRI activities on donations could estimate the magnitude of the donation trade-off. Aggregating foundation assets by mission area would help determine whether there are any program areas in which total foundation assets represent a large fraction of industry market capitalization, leading to possible concerns that mission hedging investments could affect pre-intervention bad activity levels. Analyses of how firm fundamentals and returns affect divestment campaign participation would shed light on the role of the expected return trade-off in the divestment decision (and a possible source of bias in divestment event studies like those on South Africa during apartheid.) Given a set of well-defined missions and assumptions about specific utility functions, one could estimate covariance between the marginal utility of foundation assets and idiosyncratic firm risks, the trade-off central to mission hedging. Finally, one could measure the perceived balance of trade-offs by examining how foundations whose missions target activities of objectionable firms invest in those firms. Mission hedg-

ing activity (versus divestment) would be indicated by greater-than-market weights on those firms.

Divestment is making headlines with college students pressuring administrators to divest their endowments primarily of fossil fuels, but also of guns and Israeli stocks. Major universities have announced their decisions to divest (or not) from fossil fuels. Private foundations have also joined the movement, including the high-profile Rockefeller Brothers Fund (Schwartz (2014)) as well as many smaller funds, both with and without environmentally oriented missions.[24] Just as in voting, where one individual's decision not to vote is unlikely to determine the outcome in a major election, one foundation's divestment is unlikely to change a company's behavior. The power in moves like that of the Rockefeller Brothers Fund lies more in the ability to encourage others to follow suit than in directly changing fossil fuel firm behaviors through selling shares of stock. The potential success of propelling a broad divestment movement must be weighed against all trade-offs, including the mission hedging benefit of making more funds available when they are needed the most.

While major divestment movements have the potential to bring about change, my results show that firms that are seen as bad actors may provide good opportunities for hedging foundation-specific risks. Endowment decision-makers need to ask whether divesting, disregarding values in investing, or doubling down on objectionable stocks will yield the best social outcomes given not only their values but also their unique missions and talents and the possible correlations between firm financial returns and foundation spending needs.

[24]See **Divest-Invest Philanthropy.** "Signatories." `http://divestinvest.org/philanthropy/signatories/` (accessed November 7, 2016.)

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