CREATING A NEW TYPE OF STUDENT MANAGED FUND USING PEER-TO-PEER LOANS

Lynda S. Livingston, University of Puget Sound
Thomas Glassman, University of Puget Sound

ABSTRACT

Finance students can experience real-world challenges and enhance their learning by running an investment fund. However, most of the student-managed funds that currently exist are relatively large, equity-focused portfolios; few funds concentrate on debt, since fixed-income investing usually requires larger investments and higher expenses. In this paper, we present a new type of fixed-income fund: a peer-to-peer lending portfolio, run through the Prosper Marketplace electronic platform. Such portfolios can be hundreds of times smaller than even the smallest traditional student-managed funds. Using Prosper, business programs of almost any size can offer students the educational experience of running an investment fund.

JEL: A2

KEYWORDS: student-managed funds; peer-to-peer lending

INTRODUCTION

Finance students can gain great insight from managing their own funds. Although both students and their faculty advisors note that running a fund takes a lot of time, they also report that the experience of running real money in real time creates an understanding impossible to gain from a textbook alone (see, for example, Clinebell, *et al.*, 2008; Morgan, 2008; and Peng *et al.*, 2008). The impact of this experience is underscored by the rising popularity of student managed investment funds (SMFs): while there were only about 30 SMFs in the early 1990s, there are more than 200 today (Peng, *et al.*, 2008).

However, most of these extant student managed funds are equity funds. Incorporating fixed-income has proved unwieldy, since these assets tend to be very large and expensive to trade. In this paper, we discuss a new type of fixed-income fund, whose assets are Prosper peer-to-peer (P2P) loans. Prosper loans can be as small as $50 each, so creating funds of these loans should be possible for even the smallest business program. No special infrastructure is required, only internet access. Since students need not devote considerable time to learning the platform, which extrapolates almost seamlessly from popular social networking sites, they can concentrate their efforts on analysis, counterparty evaluation, and portfolio construction. Prosper lending thus offers unique opportunities: to students, who can experience debt trading in a cutting-edge, rapidly growing OTC marketplace; and to small schools, which may lack the resources to provide such an experience using the traditional equity-focused, infrastructure-intensive SMF model.

The paper proceeds as follows. In the next section, we briefly review the literature on student-managed funds. We also describe the Prosper electronic marketplace and survey the recent literature on Prosper, noting salient relationships to the more general work on microfinance. In the third section, we link our new SMF model to standard finance curriculum, illustrating how running a Prosper fund can enrich and support students' learning. In the fourth section, we provide details for our fund, the Four Horsemen Investment Fund, explaining our unusual business form and our lending strategies. We summarize our findings in the final section.

LITERATURE REVIEW

Student Managed Funds

The rapid spread of SMFs has been noted even in the popular press: as Gullapalli (2006) reported in the *Wall Street Journal*, "Once an anomaly, student-run investment funds are taking off as a teaching tool everywhere from the University of Texas at Austin to Cornell…" However, the funds that are "everywhere" are usually very large and focused on equity. Small, debt-concentrated funds, on the other hand, are almost nonexistent.

The equity bias of SMFs is clear from the results of recent surveys of these funds. For example, in Neely and Cooley's (2004) survey of 61 SMFs, there are only four funds (6.6%) that are restricted to bonds. Of the other 57 funds that may invest in domestic equity, only 17 may also add bonds. Thus, at least two-thirds of Neely and Cooley's funds are effectively equity-only. Similarly, Peng, *et al.* (2008) find a strong equity bias in their 35-fund sample: 98% of their funds have at least a 60% weight in equity, 69% of the funds have at least a 90% weight, and almost half, 49%, are equity-only. Only one of their funds has no stock—a fund that is required to invest solely in debt by the terms of its initial funding. In contrast, Morgan's (2008) survey has more debt-only funds: in his sample, "14% behave as if they are bond or fixed income funds," with seven funds fully invested in fixed income and cash assets.[1] However, even in this survey, 2/3 of the sample funds "act as equity funds even though some are allowed to acquire bonds." Morgan concludes that while "there is a rising interest in fixed income student-managed funds… there are currently only a handful of pure fixed income funds operating in U.S. universities."

The fixed-income funds that do exist are larger than their equity counterparts. For example, all of Morgan's "pure" fixed income funds had more than $1 million in assets, with one fund (Iowa State University's) having around $100 million. For comparison, only one-third of Peng *et al.*'s (2008) equity-heavy sample exceed $1 million. Their median fund size is $460,000; 18% of these are below $100,000, with the smallest at only $21,000. Neely and Cooley's (2004) results are similar: they estimate the "current modal value" of SMFs to be between $200,000 and $400,000, with a range of initial funding of between "less than $50,000" to $1 million. $1 million, then, is an important reference for both equity and fixed-income funds: for equity, it serves as a near-upper limit; for debt, however, it is a minimum. Morgan (2008) sums up these relative sizes by concluding that fixed income funds are "at least double or triple the size of equity funds."

Morgan attributes this size discrepancy to the underlying challenges of managing bond portfolios. For example, while the bond market may be less volatile than the stock market, it is also much less liquid and less transparent. There is less readily available information on bonds, and bonds' round-lot size is large (a minimum of $5,000 in par value). These challenges translate into higher fixed transactions costs and management expenses for bond portfolios than for equity portfolios, expenses which may be only manageable for very large funds. Thus, the existence of only a few, very large, student bond funds may be a consequence of the greater inherent difficulties of running fixed-income portfolios. We now consider how using Prosper can alleviate these difficulties.

The Prosper Marketplace and Microfinance

Prosper is an on-line, peer-to-peer lending platform launched in 2006. While there are now several other similar sites (for example, Freedman and Lin, 2008b, note that twelve such sites have opened around the world in the past three years), Prosper was the first in the U.S. It currently has about 750,000 registered members, both lenders and borrowers. So far, these participants have contracted for more than $160 million in loans, at an average size of about $6,300. As with online dating sites, not every would-be participant is successful on Prosper: fewer than one in ten posted loan requests are actually funded, which

Freedman and Jin (2008b) interpret as evidence of credit rationing. However, the lenders and borrowers who do negotiate successfully for loans may benefit from Prosper's P2P platform, splitting the spread they would otherwise pay in a traditional intermediated market.

Individuals who want loans post a "listing," noting the amount of money they want (from $1,000 to $25,000) and the maximum interest rate they are willing to pay. Before April 15, 2008, they would also specify the number of days that the bidding would stay open, from three to ten days; now, however, all loans are open for seven days. (They may also choose an "automatic funding" option, which stops the auction when enough bids have been received to fund the borrower's entire requested loan amount. Borrowers who choose this option lose the potential benefit of the auction process, because their loan rate is set at the maximum rate they specified in their listing.) Listings also note a borrower's (self-reported) income, occupation, and employment status. Borrowers may add additional information to entice lenders: for example, they may add pictures, other background information on themselves, or descriptions of their plans for the money.[2]

Prosper pulls each potential borrower's credit report, then assigns her one of seven credit grades based on her Experian ScorexPLUS[SM] credit score, which ranges from 300 to 900. Prosper assigns credit grades based on score ranges; for example, borrowers with scores above 760 are rated AA; those between 520 and 559 are rated HR ("high risk"). Borrowers with scores below 520 are not allowed to post listings on the platform. Lenders see only Prosper's credit grade, never the actual credit score. (This may lead to a "lemons" problem, where only lower-quality borrowers within a credit range choose to list on Prosper. Indeed, Freedman and Lin, 2008b, find evidence consistent with such a problem: over time, more listings and more loans on Prosper are at the lower end of each credit grade.) Summary information from the credit report is included in the listing, however: for example, the number and age of open credit lines, the bank card utilization ratio, and any delinquencies. Prosper also calculates and reports a debt-to-income ratio for the borrower, using her self-reported income and the debt amounts from her credit report.

Lenders on Prosper can be individuals or institutions. Lenders bid on listings, specifying the amount of money they will lend to a particular borrower (with a minimum of $50) and the minimum rate they will accept. If the total of all lenders' bids on a listing equals or exceeds the amount the borrower requested ("full financing"), the loan will be made, with the rate set at the lowest rate acceptable to the winning lenders. There may be hundreds of winning bids per listing: for example, in 2007, an AA-rated borrower's request for $25,000 garnered 498 bids, 201 of which won. The winning bidders lent between $50 and $1,500 each, at a rate of 11.74%. The 297 bidders who were shut out had bid for rates between 11.75% and 15%.[3]

Despite the terminology, lenders do not really "lend." Instead, they buy "notes" from Prosper. Prosper issues these notes—one for each winning bid—after it funds the loan. Thus, Prosper is an intermediary, first lending its own funds to borrowers whose listings have garnered sufficient lender bids, then selling notes in the amount of that loan to the winning bidders. Notes are "three-to-five year, unsecured, fully amortizing credit obligations of individual borrowers," which are "without recourse to Prosper" (Prosper, 2007).

Lenders and borrowers may know each other only by "screen names," pseudonyms that they adopt for use on Prosper. Participants may choose to reveal their identities, however; for example, they may identify themselves as "friends" of other participants. They may also choose to form groups, using as criteria for membership any "common interests, including social, cultural, ethnic, professional, athletic, religious, or any other official or unofficial affiliation" that they wish (Prosper, 2007). Borrowers and lenders may belong to only one group at a time. Prosper rates each of its groups based on the repayment history of its members. Thus, being a member of a group with a good rating may help a potential borrower draw more favorable bids. A borrower's group membership also may translate into better

performance for the lender; in its prospectus, Prosper states that it "believes that the group structure may positively influence Borrowers' Loan repayment performance, in that Borrowers in groups may be less likely to default since default would negatively affect the group to which they belong."

Thus, Prosper believes that group membership may inspire "consciousness of kind" and a sense of moral obligation (Herzenstein, *et al.*, 2008). This can be important for a borrower, since it is otherwise difficult to develop a positive reputation on the platform: Prosper limits borrowers to two outstanding loans, and—at least at this point—the three- to five-year terms of the loans are longer than Prosper's entire history. As Herzenstein *et al.* (2008) note, "Creating trust is relatively difficult in P2P lending communities…[borrowers] must convince lenders that they can be trusted and will repay the loan *before* they have the opportunity to demonstrate trustworthy behavior."[4] Given this difficulty, Prosper's group approach may "help identify good risks, enforce on-time payments, and expand the market beyond the reach of traditional banks" (Prosper, 2007).

Prosper's emphasis on peer relationships and group membership demonstrates a "microfinance approach" to lending (Freedman and Jin, 2008b). The literature on more traditional microfinance thus informs our expectations for the success of Prosper's strategy. For example, La Ferrara (2003) discusses "collective responsibility," illustrating how group membership can facilitate credit flows within a community. Using census data from Ghana, she shows that members of kinship groups lend much more frequently to each other than to "outsiders," and at lower rates. (For more on preferential lending within "insider" groups, see Udry, 1994.) Trust is built partially through "reciprocity," which results in intergenerational lending: a lender is more likely to help the offspring of a family who helped him in the past. Penalties for past default can also punish later generations; thus "social collateral" helps ensure current repayment. This type of enforcement mechanism works better in close-knit groups than in more general lending situations, and requires that actions are publicly observable. However, it allows for cooperation even in short-term interactions, and among different subsets of group members. Thus, this type of enforcement may be relevant within Prosper groups, whose reputation depends heavily upon the repayment behavior of past loans, whose members share information freely and publicly, and whose direct peer-to-peer interactions are relatively short-lived, one-shot deals.

Freedman and Lin (2008b) study this type of social enforcement on Prosper, and, consistent with La Ferrara's "kinship" observation, find it may work best when group members have offline ties. They observe better loan performance and higher returns to lenders when loans are made to members of small, less borrower-concentrated groups—especially if the groups are formed through alumni or other "tangible" connections—and if loans are largely funded by other group members.[5] They also show that listings with *friend* endorsements and bids are much more likely to be funded and to have lower interest rates than are other loans, and are much less likely to default.

These sorts of microfinance characteristics are features of the "democratized," P2P Prosper market, and differ substantially from traditional considerations in traditional lending. Students running a Prosper portfolio must therefore look beyond the traditional "five Cs of credit" when choosing which loans to fund.[6] We will discuss more of the unique aspects of Prosper lending in section four. First, however, we consider how a student managed fund based on Prosper loans can enrich appreciation for more standard topics throughout the finance curriculum.

USING A P2P STUDENT MANAGED FUND TO ENRICH THE FINANCE CURRICULUM

All student managed funds offer experiential learning opportunities that enhance student learning. However, basing a fund on Prosper's electronic P2P platform changes the customary SMF opportunity set, allowing unique applications for both basic and advanced finance course material. For example, for personal finance courses, instructors can use Prosper loan disclosures to illustrate consumer credit laws

(such as the federal Truth-in-Lending Act's Regulation Z disclosure requirements), or to compare these P2P loans to other types of consumer lending (such as payday loans). Students working with Prosper will also learn the importance of their credit history. Prosper's relies on credit reports to determine borrowers' credit grades; students, in turn, use these grades to determine a borrower's eligibility for the portfolio. By examining Prosper's highlighted credit inputs, students will learn about the types of data collected in a credit report, about the three agencies that maintain credit files, and about the many types of credit scores. For example, the Experian score that Prosper uses is a proprietary product "built for predicting risk on new accounts for all types of traditional consumer credit products"; students should contrast the range and inputs for this score with those associated with the more familiar FICO credit score.

Perhaps more pedagogically interesting than these personal finance applications, though, are Prosper's potential ties to the traditional finance curriculum. In this section, we highlight some of these broader curricular opportunities.

Links to Introductory Corporate Finance Courses

Instructors of introductory survey courses can use a Prosper portfolio to illustrate basic time value concepts, interest rate risk, and default and liquidity premiums. Prosper's loans are fixed-rate, fully amortizing loans, with no prepayment penalty. To illustrate basic time value principles, students can be asked to find the required monthly payment, the balanced owed after any scheduled or special payment, and the number of required payments remaining. (See, for example, Ross *et al.*, 2007, Chapter 5.) They may also verify Prosper's posted rate for resales, which is described as "the effective rate that corresponds to the offered sale price." They can justify Prosper's daily compounding interval with its monthly payment schedule. Finally, they can explain why Prosper stipulates that, on the resale platform (which we discuss below), "[t]he minimum offered sale price may not exceed the sum of (i) the total of all remaining monthly payments of principal and interest on the Note, plus (ii) accrued but unpaid late charges."

From the basic time value problems, students can begin to appreciate interest rate risk. For example, Prosper notes that when rates fall, lenders may not be able to reinvest at comparable rates if borrowers repay early—that is, lenders suffer from reinvestment rate risk. (Instructors may also take this opportunity to link this risk of prepayment to the comparable risks of securitized assets such as mortgage-backed securities.) Conversely, if rates rise, the fixed return on its notes may "not reflect the full opportunity cost to you when you take into account factors such as the time value of money." Thus, lenders holding their notes to maturity may suffer loss of purchasing power, while those who sell early on the resale platform face the risk of price declines.

In addition to time value principles, foundations courses usually consider the components of interest rates, such as liquidity and default premiums. (See, for example, Ross *et al.*, 2007, Chapter 6.) It is often difficult to illustrate the liquidity premium, but Prosper's 2007 prospectus offers a clear example. This prospectus is primarily associated with the launch of Prosper's "resale platform," a proposed market for previously issued notes. Once this secondary market is established, initial lenders who have held a note for at least three months will be able to sell it, in full, to another lender. (Once the note is trading on the resale platform, there will be no further holding period requirement.) The success of this platform depends on its liquidity, so liquidity issues figure prominently in the prospectus's discussion of risk factors. For example, the prospectus warns that large notes may be "difficult or impossible" to sell. Students should evaluate how the size of the note, the size of the full Prosper market, and the generally illiquid characteristics of debt affect the return that participants will realize.

Default risk is even easier to illustrate. Also in its prospectus's "risk factors" section, Prosper notes that "Borrowers may not view person-to-person lending obligations…as having the same significance as other

credit obligations arising under more traditional circumstances, such as loans from banks." This sort of statement should be sufficient to illustrate the need for a default premium in the stated loan rate. However, if instructors wish to dig deeper, they can link these risks of P2P lending to economic fundamentals. For example, Freedman and Jin (2008a and 2008b) note that internet lending entails significant information asymmetry, which may result in adverse selection (for example, a borrower may choose to list on Prosper because she is in the lower, "lemon," half of a credit grade; once there, she may choose to list a higher maximum rate, knowing that she will not repay the loan), moral hazard (a borrower may take risky actions even if that makes it less likely he can repay his loan), or even complete market breakdown. (In fact, Freedman and Lin, 2008b, find that Prosper loans perform much worse than Experian loans of comparable credit grade, which they attribute to these sorts of "severe" information problems.) Potential borrowers with lower credit profiles may also systematically migrate to Prosper from traditional lending venues, if they perceive the lending standards on Prosper to be more lenient (perhaps because lenders there are less savvy in evaluating credit risk than professional lenders). Students should be able to assess the qualitative effect of these risks on the stated rates determined for Prosper loans, relative to traditional consumer credit like bank or credit card loans.

Links to Advanced Courses

Running a portfolio of Prosper loans will also introduce students to practical applications of more advanced finance principles. For example, there are straightforward links to advanced corporate courses, investment courses, and financial markets courses, as we discuss briefly here.

A borrower may take out additional debt after she borrows on Prosper; more debt can make it less likely that a borrower will repay her note. Instructors in advanced corporate courses can use Prosper's warnings to lenders (e.g., "if a Borrower incurs additional secured indebtedness, the Notes will be effectively subordinated to existing and future secured indebtedness to the extent of the value of any assets securing such indebtedness") to discuss financial leverage, subordination, the ability of real assets to support debt, the value of tax shields, and other capital structure issues. The personal-finance context of Prosper loans may make such issues more accessible to students, who are often overwhelmed by the traditional Modigliani/Miller development of such topics. (See, for example, Brealey, *et al.*, 2006, Chapters 17 and 18.)

Any student managed fund is a natural complement to investments courses. For example, running a fund dramatically illustrates the benefits of diversification. As Prosper's prospectus warns, "If you do not diversify your investments in the Notes by Borrower and credit type, you may increase your risk of Borrower defaults." A more interesting wrinkle of P2P for investments students arises in performance measurement: with a Prosper portfolio, students cannot easily use standard bond index benchmarks to assess the relative performance of their assets. Developing a custom benchmark, utilizing the default characteristics posted on the platform, would be an interesting student exercise. (See, for example, Bodie, *et al.*, 2008, Chapter 24.)

Perhaps the most exciting opportunities for pedagogy are for financial markets courses. The prospectus alone gives instructors the opportunity to discuss intermediation—which is Prosper's business—and the secondary markets, since the purpose of the prospectus is to create a platform for interlender trading of "old" notes. Prosper is also, of course, a novel example of OTC trading. Electronic trading platforms are becoming increasingly common (see, for example, Brown *et al.*, 2008). Prosper provides a useful link between students' (probable) experience with auction sites like eBay and modern securities trading platforms like Nasdaq, NYSE Arca,[7] and BATS.[8]

However, the most fruitful application of Prosper's technology is in the discussion of the primary markets. (See, for example, Fabozzi, *et al.*, 2010, Chapter 13.) Prosper's prospectus is a shelf

registration; students can use it to learn about Rule 415. The proposed new resale platform requires a holding period; students can relate this to the much longer seasoning period required under Rule 144. Higher-risk borrowers may gravitate to Prosper, as discussed earlier; students can compare this to high-yield issuers' attraction to 144A issues (see Fenn, 2000). Finally, Prosper's loans are allocated through an auction system; here, the linkages for markets students are especially extensive.

Instructors often discuss Treasury auctions in markets courses,[9] and students may already be familiar with eBay auctions. (See Freedman and Lin, 2008a, for a comparison of Prosper and eBay auctions.) Prosper's listing/bidding system is yet another example of this issuance method. Since all successful lenders receive the same yield in a Prosper auction, Prosper's system is comparable to the current, single-price Treasury process (where winning bidders all receive the stop-out yield).[10] Students can compare Prosper's system to other auction models, and to the strategies that participants might employ under them. For example, bidders may bid more aggressively under Prosper's single-price system than under a discriminatory system (like the Treasury's old system), where winning bidders receive the yield for which they bid. (See Stevens and Dumitru, 1996, and Bikhchandani and Huang, 1996.) Having noted some of the possible pedagogical links between the traditional finance curriculum and a Prosper loan portfolio, we turn now to the specifics of our student managed fund.

THE FOUR HORSEMEN INVESTMENTS FUND

Our fund's mission is education, not profit. The structure of the fund—its relationship to the curriculum, the nature of the initial funding, the role of the instructor, and the responsibilities of the students—helps clarify that the participants are *students*, not investment advisors. The process that the students use to screen loans and create the portfolio ensures that they learn investment principles, while also offering them the opportunity to further some of their own charitable goals. In this section, we discuss both the structure of our fund, Four Horsemen Investments, and the students' loan-selection process.

Fund Structure

Four Horsemen Investments (4HI) is an independent, not-for-profit entity funded by a donor for the express purpose of furthering students' education in investments. Students manage a portfolio of peer-to-peer loans. While there is a faculty advisor, students are solely responsible for lending decisions. This is consistent with the usual practice for SMFs: for example, Peng *et al.*, find that students in 56% of the funds in their sample are fully responsible for trading decisions, while professors never have this power.

Despite their control over the portfolio, the students managing our fund are not investment advisors. Investment advisors are required to register under the Investment Advisors Act of 1940; our students should not be . Clinebell, *et al.* (2008) note that there are several structural features of a student managed fund that help clarify its educational mission and thereby avoid the registration requirement.[11] The first is the fund's place in the academic curriculum. The authors describe four designs for a student managed investment fund: within the curriculum, the fund may be either the focus of a special credit-bearing class or an element of an existing class (such as investments); outside the curriculum, the fund may be part of a traditional extracurricular activity, bearing no academic credit, or part of an activity for which students are paid. Clinebell *et al.* note that paying students—even with a summer stipend for shepherding the fund over summer break—makes it very possible that they would need to register as advisors. Our fund is closest to the third, "club"-type structure: it is clearly outside the normal curriculum, and does not offer credit for any course. There is no remuneration for either the students or the advisor, and no expectation of any profit. Our students, therefore, do not appear to be acting as investment advisors, and should not need to register.

Our faculty advisors should not need to register, either. Since students make all of the investment decisions, the faculty advisors do not stray from activities that are "solely incidental to the practice of their profession." Teaching and overseeing extracurricular activities are part of a professor's normal professional purview; making investment decisions probably is not. Thus, although our advisors may retain veto power, the focus of their involvement, is teaching, so they should not need to register as investment advisors.

These registration interpretations are strengthened by the source of our funding. The money that will start the fund was a gift. The gift was specifically intended to be used for student lending on Prosper. The donor retained no rights to the funds; any return will remain in the fund. Clinebell *et al.* (2008) suggest that this type of donor funding, without expectation for professional management or investment return, helps avoid any liability issues. They view it as the "safest" approach for creating a student-managed fund.

A unique aspect of our donor funding is that it will be made to an independent 501(c)(3) organization, Four Horsemen Investments, not to our university. Carving out an SMF from an endowment is a common funding strategy for SMFs, but one that requires that the university bear fiduciary responsibility. In addition, student management of university funds may deter some potential university donors, who may not wish to have their money managed by students (Gullapalli, 2006).

We explored the traditional school-sponsored structure before deciding to form an independent entity to support our Prosper fund. Our university's administration was reluctant to permit a portion of the endowment to be managed by students,[12] and the risk/return history of these P2P loans appeared inconsistent with our institution's investment policies. Returns on Prosper portfolios have been comparable to those of savings accounts and CDs; Freedman and Lin (2008a) project that future Prosper returns will be around 6%. Thus, the suitability of these loans for the University of Puget Sound (U.P.S.) would appear to be governed by our Pooled Cash Investment Policy (as opposed to the policy governing our endowment, which calls for equity-like investments and expected returns). Our cash policy calls for "preservation of capital, maintenance of necessary liquidity, and maximization of investment return within appropriate risk constraints," none of which aligns with our expectations for our Prosper portfolio. No U.P.S. cash investment can exceed two years to maturity; all of Prosper's primary-market loans do. Until the resale platform is launched, there is no liquidity in this market. The risk and return associated with these loans depend upon the borrower characteristics chosen by the students; we cannot guarantee "maximization" subject to constraints, and may not even want to (since we are motivated by our educational mission). Thus, we will run our fund as an entity completely separate—in fundraising, investing, charitable outreach, and membership—from our university.

Student Involvement, Goals, and Lending Criteria

While Four Horsemen Investments is not officially affiliated with our university, the founding members are alumni and maintain strong ties to our business school. They will be making presentations to our investment club, hiring interns, and visiting finance courses. We expect that these contacts will generate interest in—and recruits for—4HI.

We plan to have students involved in the fund for at least two years. This two-year term corresponds with the U.P.S. finance curriculum, which begins in the junior year. Having members involved for two years also should allow them to observe problems with the loans they choose, since Freedman and Lin (2008b) show that Prosper loans are much more likely to "misperform"—default, make a late payment, or miss a payment—within the first 18 months. (After that, there is no significant increase in payment risk.) Finally, the two-year participation commitment should allow us to take advantage of the students' growth as lenders.

Freedman and Lin (2008a and 2008b) have shown that Prosper lenders change their behavior over time: they learn. For example, newer lenders tend to be more active than more experienced ones, and to concentrate their loans in extreme credit grades (AA/A and E/HR). As they mature as lenders, they migrate toward the middle-grade loans—B through D—moving to better credit grades if they experience a default. This learning is successful: "As lenders age, they clearly fund loans with a higher rate of return" (Freedman and Lin, 2008b). These successful, experienced lenders also become exemplars for novices. This is true not only for individual lenders, but also for cohorts, since, as Freedman and Lin (2008b) note, "new cohorts pick up the market trend." This cohort learning is facilitated by the now-numerous third-party websites that summarize Prosper's historical loan performance. Even Prosper itself has evolved in response to past performance (for example, by providing more information on borrowers, and by denying those with credit scores less than 520 access to the platform). We expect that our senior mentors will pass along these sorts of experiences to their junior protégés, so that we will be able to take advantage of both new-lender enthusiasm and experienced-lender learning as students cycle through the two-year program.

The founding members of the group have already demonstrated a commitment to such an approach. These students have identified two short-term and three long-term goals for the group, which are listed in Table 1. As one of their two short-term goals, they identified "positive reinvestments," which they described this way: "By analyzing the data we will acquire and by evaluating our experiences, we will be able to reinvest the money with the sound strategies we will gain from experience and research."

Table 1: Goals for Four Horsemen Investment Fund

Short-Term Goals	**Discussion**
create a legacy	We would like our endeavor to carry on to students in the future. We would like to set up a sound system of investing that allows future students to experience finance outside the classroom.
positive reinvestments	By analyzing the data we will acquire and by evaluating our experiences, we will be able to reinvest the money with sound strategies that we will gain with experience and research.
Long Term Goals	**Discussion**
create a scholarship fund	In the future, if this money could help fund a student's education, it would be being put to good use.
create a business experience fund	Money could be put toward other projects that would enhance learning. For example, it could help take students to conferences to present their research.
create an emergency discretionary fund	Money could be used to help students who come down with a sudden illness or get into any sort of accident.

This table lists and describes the goals determined by the founding members of Four Horsemen Investments.

The goals described in Table 1 also demonstrate clearly that our founding members have chosen to incorporate a charitable aspect in their lending. Charitable lending is not only consistent with the not-for-profit educational mission of our fund, it is also consistent with the behavior of many other participants on Prosper. Several authors note that some lenders, especially newer ones, enjoy the connection to "real people" that they get from Prosper's P2P network: Meyer (2006) describes this desire for connection as P2P lending's "anti-establishment twist."[13] Charity is also a feature of many other student managed funds, some of which explicitly incorporate social responsibility screens in their equity portfolios. For example, those at Villanova University manage their funds in accordance with the United States Conference of Catholic Bishops' Socially Responsible Investment Guidelines (Nawrocki, 2008). There is also a possible element of reciprocity, as in La Ferrara's (2003) microfinance/kinship study, since our founders wish to create a legacy, and hope that current borrowers within the student group become future donors and lenders.

Of course, if charity drives the loan choices, we may expect a lower return from the portfolio (Freedman and Lin, 2008b). However, we—like many SMF sponsors—are more concerned with furthering an educational goal than with generating above-average returns. (See Morgan, 2008.) Thus, the early

(relatively poor) performance of Prosper loans is not necessarily a deterrent to our lending (as it has not deterred other Prosper lenders, as documented by Freedman and Lin). However, our founding members nonetheless wish to make prudent loans, and have enumerated a set of criteria to guide their lending. For example, experienced Prosper lenders recommend lending no more than $50 to any borrower; we have adopted this limit as a guideline.[14] This allows us to be as diversified as possible, even with our small size. (This diversification requirement is consistent with those of other fixed-income funds concerned with preservation of principal; see Morgan, 2008.) In addition, a majority of Four Horsemen's members must approve any loan before it is funded. The basic risk-management screens that will guide this approval are listed below in Table 2.

Table 2: Criteria for Initial Portfolio Loans

Criterion	Justification
no loans below credit grade C (below 640 credit score)	This was the consensus risk/reward cutoff.
no loans to borrowers with DTI above 20%	DTI > 20% signals too little available cash flow for loan service.
no loans for debt consolidation	"We do not want to become the new creditors they [borrowers] avoid."
no loans for start-up businesses	These sorts of loans were deemed too risky.
borrower must have been employed for more than 2 years at same job	Consistent employment signals stability. ("We like consistency.")
borrower should be a home owner	Homeownership also signals stability.

This table lists the lending criteria established by the founding members of Four Horsemen Investments. All quotations come from their project proposal (Glassman et al., 2008).

These criteria have been informed by the academic studies that have characterized lender learning during Prosper's first two years. For example, Herzenstein *et al.* (2008) show that Prosper listings are more likely to be funded as the starting interest rate rises, the amount requested falls, the listing period lengthens, the borrower's debt-to-income ratio falls, the detail in the explanation increases, and the borrower's credit rating rises. Borrowers are also more likely to have their loans funded if they are female, own a home, or are members of a group. Overall, financial metrics and effort measures are the most revealing features of a listing, while demographic factors are much less important (evidence, Herzenstein *et al.* assert, of P2P's "democratization" of lending). Ryan, *et al.*, 2007, find similar results.

Of course, our students are concerned with loan performance, not just loan funding. However, as Freedman and Jin (2008a) note, "the risk perception that lenders apply to key borrower attributes [and which presumably determines funding] is by and large consistent with how these attributes correlate with the loan's ex-post performance." Thus, by screening for borrowers with higher credit scores, lower debt-to-income ratios, and more stable jobs, our students expect our portfolio to perform acceptably well, even given its educational and charitable mission.

CONCLUSIONS

Many authors have documented the growth in student managed investment funds. These funds enhance student learning and enthusiasm through real-world experience. In this paper, we describe an unusual structure for such a fund: an independent, not-for-profit fund whose assets are Prosper peer-to-peer consumer loans.

Our fund is unique for several reasons. Most student-managed funds are run with some explicit connection to a university program; ours is independent, and is set up as its own not-for-profit entity. Debt-focused funds are rare to begin with, and ours, to our knowledge, is the only one of those that focuses on peer-to-peer lending. The debt funds that do exist are quite large; ours is extremely small, even relative to equity funds. Prosper's minimum loan size of $50 means that even the smallest schools

can create this type of fund, even if traditional types are out of reach. (The smallest fund in Neely and Cooley's, 2004 survey is *100 times* the initial size of our fund.)

The nominal infrastructure requirements add to the appeal for small schools. While there are twenty students, on average, running the fixed-income funds in Morgan's (2008) study, Prosper portfolios can be run with far fewer. Prosper's lender expense ratio (1% of the outstanding note balance per year) is higher than Morgan's average 0.4%, but infrastructure costs—i.e., internet access—are negligible. However, the minimal requirements do not translate into educational irrelevance: some projections put the P2P loan market at $9 billion by 2017. (See Herzenstein, *et al.*, 2008.) The new technology incorporated by Prosper, by itself, is an enticement for students: Brown *et al.* (2008), who let students use their own money to teach pit trading, find that "a combination of technology and direct participant interaction is most likely to be an effective [instructional] format. This provides the dual benefits of increasing students' enjoyment in learning the material while also making complex material less abstract and more intuitively accessible."

Thus, studying Prosper, the United States' oldest and largest P2P platform, not only teaches students investment basics, but also prepares them to understand and appreciate the tech-heavy P2P market's growth. Morgan (2008) notes that most existing fixed-income funds are based in "emerging" business schools—those competing with the "older, higher profile" schools. As fixed-income funds allow newer schools to compete with more established ones, so Prosper allows even the smallest schools to compete with the more well-endowed. Prosper offers an unusual opportunity for small business school: as Prosper democratizes lending, so may Prosper portfolios democratize student managed funds.

ENDNOTES

[1] It is difficult to determine the total number of respondents in Morgan's survey, but it appears that most of his tests involve between 10 and 15 funds.

[2] Through January 2008, Freedman and Jin (2008b) report that the most popular uses of proceeds mentioned in listings are consolidation of credit card debt (33%); funding of business (23%), mortgage (15%), or education (22%), "family purposes" (such as weddings; 20%); and repayment of payday loans (6%).

[3] This example was found on http://www.prosper.com/lend/, under "funded loans," accessed 2/12/09. Note that most loans end up effectively being "posted-price transactions," since lenders stop bidding once the listing amount has been reached, and the borrower ends up paying her listed maximum rate. For example, in Herzenstein, *et al.*'s (2008) sample, the correlation between final and starting rates is 0.99.

[4] Page 12; emphasis original. Also see Ye, *et al.* (2004) for a discussion of the role of "locally trusted third parties" in building trust in automated, resource-sharing P2P systems.

[5] However, they find worse performance for group loans versus non-group loans overall. This may be because before September 2007, Prosper used to compensate group leaders to new loans made to group members, which may have created the incentive for leaders to emphasize quantity over quality.

[6] The five Cs of credit are character, capacity, capital, collateral, and conditions.

[7] See http://www.nyse.com/equities/nysearcaequities/1156241406908.html for a description of NYSE Arca's electronic trading platform.

[8] See http://www.batstrading.com/ for information on the electronic BATS market.

[9] They may soon discuss auctions for more than Treasuries, as corporate issuers increasingly choose auctions over traditional underwriting. However, as the Google IPO illustrated, the technology for and acceptance of large-scale public auctions are not yet developed enough to pose a serious threat to firm commitment deals.

[10] The stop-out yield is the highest accepted yield in a Treasury auction. Freedman and Lin (2008b) assert

that, on Prosper, "the prevailing rate is set as the minimum interest rate specified by the first lender excluded from funding the loan" (page 6). However, the discussion in Prosper's prospectus is more consistent with the interpretation that winning bidders receive the yield on the last *accepted* bid, not the yield on the first bid shut out.

[11] This discussion is not meant to provide legal advice. The conclusions we draw are based heavily on Clinebell *et al*. (2008), a work still in progress. However, given the large number of student managed fund that exist, and assuming that the participants in those funds are not required to register (registration is not mentioned as a requirement in the literature we have seen on SMFs), it seems obvious that it is possible to create a fund free of registration requirements. We are currently researching this point further.

[12] One of our financial administrators put it this way: "Student investments in the name of the university are problematic on many levels, including governance, policy, resources and time constraints, etc. A great deal of learning can take place with no-money investment clubs using virtual portfolios. Why not go this route?" (Davis, 2009)

[13] See, for example, Freedman and Lin, 2008; Herzenstein, *et al.,* 2008. For a discussion of the charitable motivations of other types of P2P lending, see Kristof, 2007.

[14] Particularly strong borrowers may be lent more than $50, if a majority of the Four Horsemen membership agrees.

REFERENCES

Bikhchandani and Huang, "The Economics of Treasury Securities Markets," *The Financial Institutions and Markets Reader*, Blackwell Business Publishing, 1996.

Bodie, Zvi, Alex Kane, and Alan J. Marcus, *Investments*, 7th ed., McGraw-Hill/Irwin, Boston, MA, 2008.

Brealey, Richard A., Stewart C. Myers, and Franklin Allen, *Principles of Corporate Finance*, 8th ed., McGraw-Hill/Irwin, Boston, MA, 2006.

Brown, Jeffrey, Jonathan Clements, Terrance Grieb, and Christian West, "A Pit-Trading Approach to Teaching FOMC Announcement Analysis," *Journal of the Academy of Business Education*, Vol. 9, Proceedings 2008 (http://www.abe.sju.edu/proc2008/proceed2008.html).

Clinebell, John M., Douglas R. Kahl, David Redle, and Jerry L. Stevens, "The Fiduciary and Legal Aspects of Establishing and Operating a Student Managed Investment Fund," working paper, 2008.

Davis, Katherine, Associate Vice President for Treasury, University of Puget Sound, interview, 2/13/09.

Fabozzi, Frank J., Franco Modogliani, and Frank J. Jones, *Foundations of Financial Markets and Institutions*, 4th ed., Prentice Hall, Boston, MA, 2010.

Fenn, George W., "Speed of Issuance and the Adequacy of Disclosure in the 144A High-Yield Debt Market," *Journal of Financial Economics*, 2000.

Freedman, Seth and Ginger Zhe Jin, "Dynamic Learning and Selection: The Early Years of Prosper.com." working paper, 6/20/08 (2008a).

Freedman, Seth and Ginger Zhe Jin, "Do Social Networks Solve Information Problems for Peer-to-Peer Lending? Evidence from Prosper.com," working paper, 11/08 (2008b).

Glassman, Thomas, Michael Gordon, Max Kabrich, and Jiri Senkyrik, "Peer-to-Peer Lending Project," unpublished manuscript, Fall, 2008.

Gullapalli, D., "They Give It the Old College Try: Funds Let Students Invest Millions," *Wall Street Journal*, 7/14/06.

Herzenstein, Michal, Rick L. Andrews, Utpal M. Dholakia, and Evgeny Lyandres, "The Democritization of Personal Consumer Loans? Determinants of Success in Online Peer-to-Peer Lending Communities," working paper, 6/08.

Kristof, Nicholas D., "Internet Allows You to Help World's Poor," *New York Times*, 2007.

La Ferrara, Eliana, "Kin Groups and Reciprocity: A Model of Credit Transactions in Ghana," *American Economic Review*, December 2003, p. 1730-1751.

Meyer, Thomas, "Financial Services 2.0: How Social Computing and P2P Activity are Changing Financial Research and lending," Deutsche Bank research, August 2006.

Morgan, George, "Fixed Income Student-Managed Funds: A Report on Recent Innovations," working paper, 2008.

Nawrocki, David, "Social Responsibility and Student Managed Funds," working paper, 2008.

Neely, Walter P. and Philip L. Cooley, "A Survey of Student Managed Funds," *Advances in Financial Education*, Vol. 2, Spring 2004, p. 1-8.

Peng, Zhuoming, William P. Dukes, and Ronald Bremer, "Student-Managed Investment Fund Survey:An Analysis of SMF's Operations in 35 Universities in the U.S.," working paper, 2008.

Prosper Marketplace, Inc., Form S-1, "Registration Statement for Face-Amount Certificate Companies," 12/30/07.

Ross, Stephen A., Randolph W. Westerfield, and Bradford D. Jordan, *Essentials of Corporate Finance*, 5th ed., McGraw-Hill/Irwin, 2007.

Ryan, Joe, Katya Reuk, and Charles Wang, "To Fund or Not to Fund: Determinants of Loan Fundability in the Prosper.com Marketplace," Stanford Graduate School of Business, 1/26/07.

Stevens and Dumitru, "Auctioning Treasury Securities," *The Financial Institutions and Markets Reader,* Blackwell Business Publishing, 1996.

Udry, Christopher, "Risk and Insurance in a Rural Credit Market: An Empirical Investigation in Northern Nigeria," *Review of Economic Studies*, Vol. 61, 1994, p. 495-526.

University of Puget Sound, "Endowment Investment Policy Statement," 10/23/08, (http://www.ups.edu/Documents/Finance/PolicyEndowmentInvestment.pdf).

University of Puget Sound, "Pooled Cash Investment Policy," 5/16/08, (http://www2.ups.edu/financeadmin/Policy%20Pooled%20Cash%20Investment.pdf).

Ye, Song, Fillia Makedon, and James Ford, "Collaborative Automated Trust Negotiation in Peer-to-Peer Systems," *Proceedings of the Fourth International Conference on Peer-to-Peer Computing*, 2004.

BIOGRAPHY

Lynda S. Livingston is a professor of finance in the School of Business and Leadership at the University of Puget Sound. She teaches personal finance, corporate finance, financial markets, and investments.

Thomas Glassman received a communication degree from the University of Puget Sound in 2009. He spearheaded the Prosper project, and founded Four Horsemen Investments, while studying financial markets and investments.