Financing from Family and Friends

Samuel Lee Petra Persson

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Abstract

Social relations are a blessing and a curse for financial transactions. They pose a source of risk and distress for the same reason they breed trust; and as much as social relations influence financial transactions, financial transactions have repercussions for social relations. Good as it is for trust, family finance is thus an inadequate source of risk capital. Rather, family finance is a costly commitment device used only to the extent necessary, whereas formal finance is an innovation that sidesteps social frictions and thereby promotes entrepreneurial risk-taking. This creates a symbiosis between the two sources of finance, and a pecking order that runs from formal finance to family finance. We spell out the empirical predictions of this theory, and implications for development finance and contract design.

Keywords: Informal finance, family finance, entrepreneurship, social ties, limited liability, debt overhang, social frictions, pecking order, trust, risk capital, microfinance, micro venture capital

Those we hurt the most are often those we love the most. – Unknown

1 Introduction

Short on change, most of us would borrow it from friends, or relatives, rather than strangers. But would that also be true if we were to fund a risky venture, say, a small company?

Convenience matters, but the more important aspect—especially for large amounts—is that financial transactions are prone to opportunism, and opportunism breeds mistrust. People close to us, so the common argument goes, are less likely to lie or break a promise to us. "Blood is thicker than water." Social relations thus pave the way for more efficient financial contracts.

This account of social relations, or their role in finance, seems too benign. Or what is one to make of advice such as the following?

> Welcome to the world of family financing. It's an approach to raising money as complex, combustible, and rewarding as families themselves. Done right, it can provide patient capital, while building credibility with other lenders and investors. Done wrong, it can break the very bonds of familial affection. No matter what, "if a deal goes south, it can really screw up Christmas."

Or this one:

> With three words, you can sum up the most common advice about lending money to your relatives: "Don't do it."
>
> Financial planners warn that intrafamily loans can lead to trashed relationships. [...] People who've lent money to family members often complain about ingratitude, missed payments and strained holiday dinners. Even the borrowers grumble, especially when their benefactors start quizzing them about their spending.
>
> "Suddenly, [the lender] is looking at the vacation they took and saying, 'They owe us money, how can they go on vacation?'" said financial planner Karen Ramsey, author of *Everything You Know About Money is Wrong*. "The borrowers pick up on that judgment, and they get resentful."

Indeed, such caution is the rule, not the exception, on small business websites. This indicates that the benign view captures only part of the story. It invites

an analysis that derives the benefits of social relations along with *costs* that emerge in tandem. This paper offers such an analysis.

Our approach is simple. We merely add a wealthy friend to a workhorse model of entrepreneurial finance with moral hazard. The friend relies on the same information as any outside investor (she), but is in a social relationship with the entrepreneur (he) characterized by some degree of mutual altruism. That is the sole difference between formal and family finance. We unfurl this model into a social risk theory and a social debt theory.

In accordance with the benign view, we find that social relations improve commitment. So family finance provides *trust capital*. What this view misses, however, is that financial transactions have repercussions for social relations. Formal finance circumvents the social frictions undesirable outcomes provoke, and therefore encourages risk-taking. So it provides *risk capital*. This creates a symbiosis: Optimal contracts draw, when needed, on the strengths of both "familiarity" and "formality."

Social risk theory. In our first theory, the entrepreneur is confronted with a "social" version of the classic trade-off between risk sharing and incentives. Altruism causes the entrepreneur to care about cash flows to the friend. This makes family finance good for incentives, but bad for risk sharing.

The entrepreneur must retain sufficient exposure to the cash flow to have proper incentives. To preserve these incentives, it turns out, he must internalize the same amount of risk—directly through a stake or indirectly through the friend—under formal finance as under family finance. That is, inasmuch as the altruism preserves his incentives it also channels the risk back to him. Relative to keeping a direct stake, selling it to the friend has the benefit that it generates cash to fund the investment. Nevertheless, he prefers to tap the friend only to the extent necessary, and transfer as much risk as possible to an arm's-length investor. In fact, he forgoes certain (efficient) risks if formal finance is unavailable. Formal finance is the better source of risk capital.

Imagine quitting your job to open a restaurant, for which you must raise $100,000 from elsewhere. Suppose you borrow the amount from a large bank. Should you fail, you will mourn your own loss but hardly the bank's. Suppose, instead, your parents lend you their savings, or co-sign the bank loan. Now a failure would hurt double. Not only would you bemoan your own loss but also the hardship confronting your parents. You may dislike the sense of exposing them to this risk—that is, you worry about their financial future—and prefer not to involve them. But the bank may not deem you creditworthy and reject

your application; whereas your parents trust you with their money, confident you will do your utmost to repay them. Still, you might pass up your parents' offer and stay in your job, as you find the venture worth gambling the bank's money but not your parents' well-being.[1]

What emerges is a complex relationship between the two types of finance. Family finance is crucial when additional commitment is imperative. Formal finance is crucial when social risk deters risk-taking. Either, depending on the conditions, relaxes capital constraints, that is, deepens the financial market. That said, the pecking order runs from formal finance to family finance when both can be obtained. If used, family finance is a catalyst for formal finance: The entrepreneur uses only so much of it as to put proper incentives in place, and then switches to formal finance. As our second quote says, family finance builds "credibility with other lenders and investors." In fact, less of it is used, the closer the relationship—less is needed for trust.

Social debt theory. Our second theory assumes that some cash flows cannot formally be pledged at financing. These accrue to the entrepreneur after the initial project, and are non-verifiable or immune to legal recourse. In addition, we assume that the social relationship is fragile; if the entrepreneur, once able to, refuses to pay an "old debt" to the friend, their friendship suffers. Putting the friendship at risk creates, as shown by Karlan et al. (2009), social collateral that makes non-contractible cash flows pledgeable (to friends).

The premise of this theory is to distinguish legal liability from social debt. Legal liability is defined by contract and law; it applies only in contractually specified situations. Social debt is governed by norms and personal emotion. One can limit legal liability in a contract, but one cannot contract away (the repercussions of) anger or disappointment over a broken promise.

The entrepreneur trades off the benefits and the costs of limited liability. Family finance de facto eliminates limited liability, thanks to social collateral, and thereby eliminates moral hazard. At its best, that is all it does; there is no downside. Sometimes, however, the social erosion of limited liability—or to be precise, the social obligations resulting from the relationship—can alter, or distort, future decisions. To illustrate this, we formalize a debt overhang scenario where the entrepreneur's career choice is distorted by social debt: He passes up a profitable venture for a job that allows him to satisfy his social

[1] Having caused their family financial hardship leads some to tragic acts of redemption. The article "Debt destroyed my family" (*The Guardian,* June 8, 2008) recounts one such tragedy.

obligations more easily. At other times, the entrepreneur is funded by family, and later decides to default on the social obligation. He simply forfeits the collateral in what could be called a social bankruptcy. Social debt overhang and social bankruptcy raise the commitment power of family finance, as the entrepreneur strives to avert them. Yet they make that commitment costly. Formal finance hence constitutes the preferred form of finance so long as it is feasible.

The advantage of formal finance is that it lets the parties tailor "liability" more flexibly. A contract enforced only by law can limit liability where social debt would persist. It can also enforce liability where social forces would fail. For that reason, even *family* finance benefits from the use of formal contracts. Formalizing repayment commits the entrepreneur to repay in situations that might otherwise stir up social frictions. This commitment is valuable ex ante; and it is recommended by financial advisors:

> Draw up a contract. You both may be 'handshake' type of people, but in this case, put your expectations and your lender's expectations in writing and both of you sign it. ... If there's more than $10,000 involved, use a lawyer to review the contract. You'll both be much happier down the line if you have that document to refer to.

Indeed, the advisor next points out that specialized intermediaries are in the business of formalizing family transactions:

> One terrific option is to use Virgin Money's program for managing the loan. According to their website, "Virgin Money manages business loans between relatives and friends. Using us means that the business of your loan—legal documents, transfer of payments, year-end reporting—will be taken care of."

Cliff Ennico, writer and expert on small business, hits the nail on the head: "Many entrepreneurs have little choice but to tap friends and family members for their startup capital. But that doesn't mean you should treat them like 'friends and family.'"

The social debt theory delivers the same financial deepening and pecking order findings as the social risk theory: Notwithstanding that family finance improves access to capital, it is second to formal finance if both are available; and more, because of potential social frictions, some risky investments would not be undertaken if formal finance were unavailable.

The two theories share predictions due to a common underlying principle. A social relationship creates commitment but it also creates frictions. It is a *costly* commitment device. What's more, the source of the commitment—be it sympathy or pressure—is also the source of the costs. Although disposable, the device is thus not used unless necessary; the entrepreneur prefers formal finance to the extent possible, and resorts to family finance only when further commitment is imperative. Even so, in some cases, the costs can outweigh the benefits such that the commitment is not worthwhile. Both theories conform with the notion that family finance relaxes capital constraints. But they also portray formal finance as an "innovation" that circumvents the social frictions that transactions among friends and relatives evoke, or indeed, rely on. They portray formal contracts as a remedy to "excessive social enforcement."

The theory yields several empirical predictions: (I) *Risk capital*. Innovations in contract laws and enforcement that improve formal finance encourage efficient entrepreneurial risk-taking. The reasons are threefold; namely, riskier entrepreneurs are financed, formally financed ones take more risks, and fewer social obligations cast a shadow over ensuing ventures. (II) *Pecking order*. All entrepreneurs prefer to raise formal finance, but only the better ones have access to it. This implies that formally financed startups should on average be more successful than those that tap into family finance. (III) *Certification*. Family finance facilitates formal finance. Entrepreneurs with more affluent family networks should have more access to formal finance. (IV) *Social frictions*. Formal contracts protect social relations. Non-family intermediaries that structure and manage familial transactions decrease the incidence of social frictions. Note that this is a prediction about the impact of financial transactions on social relations; which is, in our view, economically as important as the impact of social relations on financial transactions.

1.1 Practical relevance

Family finance is most important in the early stages of a firm. Apart from bank lending and angel financing, it is the dominant source of "seed capital" in small and medium-sized enterprises (SMEs). Figure 1 charts data on SME financing from Canada in 2004. The numbers illustrate the importance of family finance to SMEs, even in such a developed economy.

The significance of family finance is underscored by the fact that SMEs constitute an important part of economic activity, especially in less developed countries. A 2005 OECD report estimated that 80 percent of the 12,100 firms

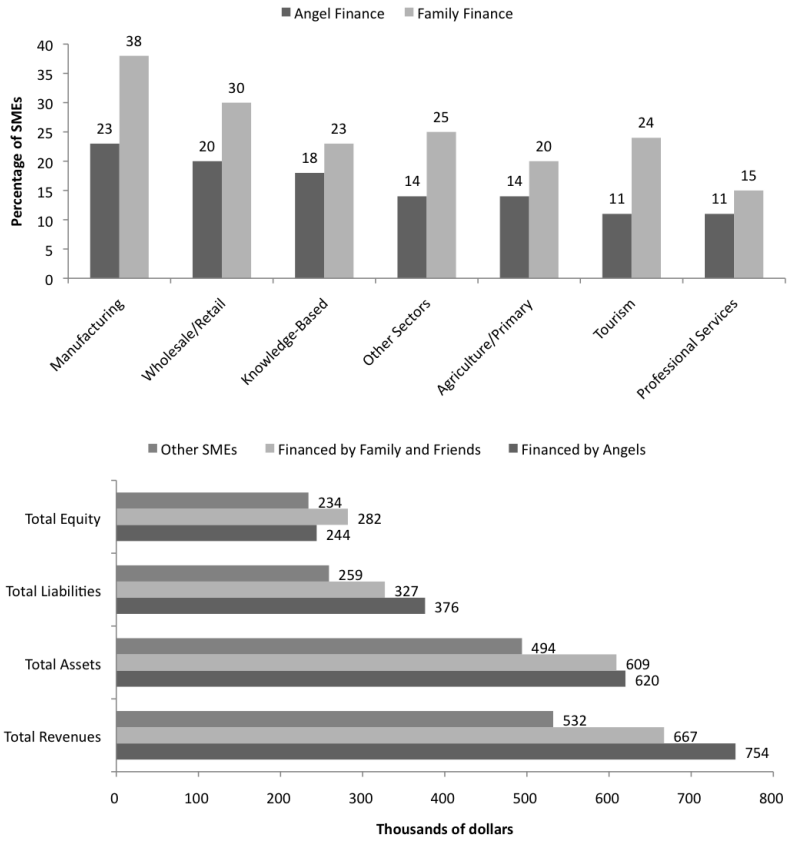

Figure 1: Taken from SME Financing Data Initiative, Statistics Canada, Survey on Financing of Small and Medium Enterprises, 2004.

in Congo had less than five employees, and 83 percent of all firms were informal; SMEs in Kenya employed 3.2 million people and accounted for 18 percent of national GDP; SMEs in Nigeria accounted for 95 percent of manufacturing and 70 percent of industrial jobs; 93 percent of all industrial firms in Morocco were SMEs and accounted for 38 percent of production, 33 percent of investment, 30 percent of exports, and 46 percent of all jobs; in South Africa, microbusiness provided more than 55 percent of employment and 22 percent of GDP, and small firms accounted for 16 percent of employment and production. Worldwide, SME activity is so large, and financing so important for it, that a 2008 industry analysis estimates the potential market for global SME financing at five trillion dollars.

Recognized as important, SME financing is also deemed to be in shortage, so much so that policy-makers speak of a "financing gap" (OECD, 2006). Government support for SME financing exists in most developed economies: The Small Business Investment Company (SBIC), a public-private partnership, has supplied almost $60 billion in subsidized long-term funding to more than 107,000 small US firms since its inception in (the wake of the Small Business Investment Act of) 1958. From 1989 until 1997, after the German re-unification, the Kreditanstalt für Wiederaufbau (KfW) disbursed subsidized loans in the amount of DM 50 billion to 65,000 firms in the former East German states.[2] But such programs do not work everywhere.

In emerging economies, policy-makers often speak of the "missing middle." This refers to three connected facts. First, the SME sector is bottom-heavy. In 2004, for example, less than a quarter of Egypt's 168,000 SMEs had more than nine employees. Second, microfinanciers and banks, respectively, serve micro-enterprises and large corporations but the middle segment often lacks adequate financial services (IFC, 2009). Third, most micro-enterprises use funds for safe purposes (e.g., working capital) but seldom for (larger) risky investments and expansion. As a result, they show little growth. In view of these facts, Abhijit Banerjee and Esther Duflo write in *Poor Economics* that "(f)inding ways to finance medium-scale enterprises is the next big challenge for finance in developing countries" (p.181).

If the challenge is to supply micro-enterprises with risk capital, we must understand, on one hand, why they lack access to formal finance. By now it is widely agreed that the main obstacles for banks to serve micro-clients are enforcement and information problems. The success of microfinance lies in its capacity to address such problems. On the other hand, we must understand why family finance and microfinance are inadequate sources of *risk* capital. Our theory offers such an understanding.

To provide it, let us first consider how poor households run their finances. According to *Portfolios of the Poor*, an in-depth field study on this question, the poor "manage a collection of relationships and transactions with others —family, neighbors, money-lenders, and savings clubs," but "the most important providers of loans are not moneylenders but friends and neighbors."[3]

[2]For the SBIC program, visit http://www.nasbic.org/?page=flowchrt_SBIC_progra. For the KfW SME program, see http://www.kfw.de/kfw/en/KfW_Group/About_KfW/Identity/History/Themenschwerpunkte/Mittelstandsfoerderung.jsp. We accessed the two websites on December 3, 2011.

[3]This conclusion—most financial activity in developing economies occurs among friends

Indeed, "almost every household borrowed informally from family and friends, and many, including the very poor, reciprocated by offering such loans to others." For all that, "many of the diarists told [the authors that] they found informal transactions unpleasant but unavoidable;" says Khadeja, "I don't really like having to deal with other people over money, but if you're poor, there's no alternative."[4]

The book also reports that the fundamental needs underlying the financial activity are to ensure *regular* and *dependable* cash flow to meet basic (daily) needs, and to *manage risks* because a sudden emergency could "derail families with little in reserve." Indeed, risk is an omnipresent concern:

> The households we met live lives that are far more uncertain than those in better-off circumstances. [They] are, as a group, less healthy, live in neighborhoods with weaker security, and face income volatility tied to the swings of local supply and demand, no matter whether they are employed or self-employed or are small-scale entrepreneurs ... most adults in poor households, we found, experience occasional or chronic anxiety about these risks, and seek to mitigate them in every way they can, including managing their money.

One way the poor deal with the enormous risks they are facing is to be very conservative, or risk-averse.[5] Our theory posits that this is true not only with respect to their own money; they also eschew risking the money of those that are close to them. For one, this is because they live in the same harsh reality: "This is one of the greatest tensions in the financial lives of the poor: the people best placed to help—neighbors and family members—are typically poor themselves." A failure to repay can seriously harm them. What's more, it may damage critical relations, as stressed in the following passage:

> Somnath from Delhi, whom we met earlier in the chapter, avoided recourse to relatives at all costs, because he was ashamed and anxious that, if he couldn't repay on time, he would strain the relationship. Similar feelings were voiced by as many as half

and relatives—was drawn already in the 1989 World Development Report (p.112).

[4]Unless otherwise noted, the quotations in this and the subsequent paragraphs are from *Portfolios of the Poor* (pp. X).

[5]Banerjee and Duflo (2010) emphasize this point and provide an example of how such conservatism may deter adoption of productivity enhancing technology (pp. 142).

> the Delhi respondents: they would go to several informal sources (colleagues, neighbors, the grocer, one's employer) before they would resort to relatives. Sultan the carpenter explained this reluctance, telling us that, although he has many relatives living close by who are in a better financial position than he, he avoids taking money from them. These relatives provide support out of love and duty, he told us, a kind of social security. If he took a loan from them and wasn't able to repay it, he might lose the social relationship with them, which he valued greatly.

In such a context, funds from social relations will serve safe purposes, or as insurance, rather than as risk capital. Indeed, ample empirical evidence shows that intra-family transfers help poor households smooth consumption (e.g., Udry 1994) and provide insurance (Ambrus, Möbius, Szeidl 2010)—quite the opposite of providing funds for *risky* ventures.

If not family finance, what about microfinance as a source of risk capital? As mentioned above, microfinance lenders overcome some of the information and enforcement problems to "bank" the poor; indeed, some of them use the power of social relations to extract information, to harness social sanctions for repayment, and to reduce collection costs. But they often do it by imposing joint liability, which makes "zero default" imperative—one defaulting group member may induce strategic defaults on the part of the others. This intolerance for failure makes microfinance institutions ineffective providers of *risk* capital (Banerjee and Duflo, 2010, Chapter 6). Further, while leveraging the positive impact of social relations on financial transactions, they focus less on minimizing the possible negative impact of financial transactions on social relations.

To better address the "missing middle," a new breed of microfinance is currently on the rise—micro venture capital funds such as Aavishkaar, Acumen Fund, E+Co, The Grassroots Business Fund, and Root Capital—to specialize on SME financing among the poor.[6] Our theory offers one prism for thinking about the provision of such capital. The lead principle would be to use social relations to incentivize entrepreneurs but, at the same time, to minimize social frictions by relying on formal intermediation. By means of illustration, consider the following tentative *intermediated social finance*

[6] *Forbes* runs a cover story on "micro" venture capital, "Can Venture Capital Save The World," in its December 19, 2011 issue. *Time* ran a cover story on the entry of microfinance lenders into the US, "Can Microfinance Make It in America," in its January 11, 2009 issue.

model for a non-governmental organization (NGO).

Example. A development NGO has a starting endowment of E. It seeks to finance SMEs in a small village. The NGO identifies candidate entrepreneurs, all of whom maintain social relations in the village. A part of the endowment, E_1, is paid into a "village" fund. By anonymous vote, the villagers rank their "investment options," the entrepreneurs, and the village fund is invested into the different businesses in accordance with the vote. The NGO complements the "village" investments with "formal" investments out of $E_2 = E - E_1$. Part of the profits that accrue to the village fund is distributed to the villagers, but the rest is used to grow the fund. Profits that accrue to the "formal" fund are paid out to the NGO. Contracts, funds, and transfers are administered by the NGO, not by the villagers. The first screening uses the NGO's expertise. The village vote and fund harness the social relations, respectively, for information and for incentives. The anonymity of the vote, the formal financing, and the NGO stepping in between the villagers and the entrepreneurs as the "formal" intermediary protect the social relations. Along the same lines, the villagers do not risk their existing wealth, and there is some diversification across the village fund's investments. The "rents" that accrue to the villagers can be interpreted as compensation for providing information and incentives.

Related literature

This paper relates to the literature that explores the role of social ties in the contracts offered by microfinance institutions. The theoretical literature points to several ways in which joint liability—which creates externalities among the group members—invokes the power of social ties to facilitate lending.

Several build on the idea that social ties harbour information: First, joint liability gives peers an incentive to monitor each other, and if peers have lower monitoring costs than the formal lender, ties help alleviate the moral hazard problem at the project selection stage (Stiglitz, 1990; Varian, 1990; Banerjee et al., 1994) and help reduce costly ex post state verification (Mokherjee and Png, 1989; Prescott, 1997). Second, already at the group formation stage, joint liability gives each borrower an incentive to form a group with "good" types, which induces assortative matching; as the group formation process itself reveals information, a lender can screen groups for quality by varying the degree of joint liability (Ghatak, 1990). We do not

assume any informational benefits of social ties, and hence rely on neither of these mechanisms.

Another branch of the literature, more closely related to the current paper, argues that social ties—by harbouring a threat of social sanctions in case of default—help enforce repayment.[7] Besley and Coate (1995) start from a given group of borrowers and model a repayment game where social sanctions represent a cost imposed on a defaulting borrower, and show that sanctions help exact repayment. Besley et al. (1993) study similar disciplinary benefits of peer pressure. Yet these papers pay less attention to the downside of such social enforcement. In the words of Ghatak and Guinnane (1999),

> The literature on group lending shies away from discussing the possible negative implications of peer pressure and other aspects of joint liability.

More precisely, reliance on social sanctions for enforcement puts the social relationship at risk. Montgomery et al. (1996), quoted in Ghatak and Guinnane (1999), provide real-world examples of Bangladesh Rural Advancement Committee (BRAC) group members taking aggressive action against defaulters.

> In some instances, action took the form of seizing the individual's assets, such as livestock or household goods. They note other examples of action that amounts to violence: for example, one group of BRAC borrowers tore down a woman's house because she had not repaid her loan.

Ghatak and Guinnane (1999) further note that

> When things go wrong, such as when an entire group is denied future loans, bitterness and recrimination among group members may have far-reaching consequences for village life. This risk is inherent in the system and needs to be viewed as a potential cost.

We concur—and formally assess the effects of the risks to social ties. While analyzing the repayment game alone abstracts from the effect of social sanctions on the incentives to seek funding in the first place, we take a step back

[7] Recent work that casts doubt on the efficacy of joint liability for enforcement emphasizes that the threat of social sanctions can be effective even in the absence of joint liability (Gine and Karlan, 2008).

to ask what source of funding a borrower chooses to utilize. This contributes the insight that the very presence of social ramifications in case of default affects the incentives to obtain financing from family, which discourages risk-taking and investment.

Our focus on the distinction between family finance and formal financing also relates our paper to the theoretical literature that seeks to understand why households rely on both formal lenders, such as banks and micro-lending institutions, and informal moneylenders. Jain (1999) argues that if informal lenders can monitor more cheaply, formal lenders may only partially finance a project to benefit from informal monitoring.[8] Similarly, Gine (2011) explains the coexistence of formal and informal credit with differences in enforcement ability and transaction costs. In our model, it can also be optimal to combine formal and informal finance. But there are meaningful differences to previous work. First, the incentive benefit of "informal" finance stems from social ties, not a superior monitoring or enforcement technology. Second, formal finance has an *endogenous* benefit: It reduces the social risks and frictions that arise in a (partly) family-financed project. This benefit, it turns out, can be crucial for entrepreneurial risk-taking.

2 Social risk

We use an off-the-shelf model of outside finance with moral hazard (see, e.g., Tirole, 2006). Penniless agent A (he) has a project idea. The project requires a fixed investment $I \in (0, \infty)$ at time 0, and generates a verifiable cash flow equaling either $R > 0$ (success) or 0 (failure) at time 1.

Short on capital, A seeks funds from two (types of) risk-neutral investors: Investor F (she) is a friend or relative. Investor O (she) is an outsider without any social relation to A. Both investors have fungible wealth $W > I$, that is, enough cash to fund the project. For simplicity, they only require break-even, and everyone discounts time at rate 0.

In this setup, a financial contract simply promises investor R_i, $i \in \{F, O\}$, a repayment $R_i \geq 0$ in the event of success. Legally, A enjoys limited liability; so, $R_F + R_O \leq R$. So, if O contributes I_O, her break-even condition is $qR_O \geq I_O$.

[8] Holmstrom and Tirole (1997) make the same point with reference to informed lending (by banks) and uninformed lending (by public bondholders) in the context of developed financial markets. They refer to this as the "certification" effect of monitored lending.

Project execution is subject to moral hazard. While running the project, A is able to consume a fixed amount $B > 0$ as private (non-fungible) benefits. Private benefit extraction makes the project less likely to succeed: It reduces the success probability from $q > 0$ to 0. Throughout the section, we maintain the following parametric assumption.

A1. $qR > \max\{I, B\}$.

The assumption states that financing a well-run project is efficient ($qR > I$) and that private benefit consumption is inefficient ($qR > B$).

We now add our two central assumptions to the model, which is standard so far. First, the social relation between A and F manifests directed altruism. Specifically, we assume that A's *social* payoffs can be expressed as

$$\pi_A^s = \pi_A + \phi\pi_F$$

where π_A and π_F are A's and F's personal (non-social) payoffs, and $\phi \in (0, 1)$ is the degree of altruism. The relationship is mutual; so, F's social payoff is analogous. No altruism exists between O and A or F.

Second, A is risk-averse. For simplicity, we model his risk-aversion through mean-variance preferences. That is, his expected utility can be written as

$$E[U_A(\pi_A^s)] = E(\pi_A^s) - \rho Var(\pi_A^s)$$

where $\rho > 0$ is the degree of risk-aversion. This formulation is convenient in that, as said, a fixed payoff X yields the same (expected) utility for everyone: $U_j(X) = X$ for $j \in \{A, F, O\}$. Note that A internalizes F's realized—not her expected—payoff. Else, A would not care about the *volatility* of F's payoff. This concludes the model description.

2.1 Perfect information

Let us now analyze A's choice of financing. We first study the benchmark setting without moral hazard, which already reveals the key insight. Suppose private benefit extraction is contractible. In that case, A optimally commits not to consume private benefits, and then sells the entire uncertain cash flow to the investor(s), who are more risk-tolerant. Thus, $R_F + R_O = R$. We will denote capital structure by a triple $\mathbf{R} = (R_A, R_F, R_O)$.

Before computing the utilities, we need to derive the monetary transfers. Given R_O, O pays A the amount qR_O at time 0. If A pledges all to O, that is, sets $R_O = R$, his expected utility $E[U_A(\pi_A^s)|\mathbf{R}]$ will be

$$E[U_A(\pi_A^s)|0, 0, R] = qR - I + \phi W, \tag{1}$$

where qR is cash from O, and ϕW is his utility from internalizing F's payoff. There is no inefficient extraction, and the risk allocation is optimal.

Given R_F, F pays A an amount I_F that meets the break-even constraint

$$W - I_F + qR_F + \phi\left(I_F + qR_O - I\right) = W + \phi\left(qR - I\right).$$

The left-hand side equals her utility if she contributes funds: $W - I_F$ is F's residual cash, qR_F her expected payoff from the project, and $\phi(I_F + qR_O - I)$ her utility from internalizing A's payoff. The right-hand side equals her utility if she stays out and O funds the entire investment; F keeps all her cash W and enjoys utility ϕqR from internalizing A's payoff. This yields

$$I_F = qR_F.$$

So, F requires to break even in *monetary* terms—exactly like O. This might seem surprising; since F cares about A, one might have thought her willing to fund the project at a negative monetary return. This would be the case if A could not realize the project without funding from F. But here, A can realize the project without F, and F is happy for A even if she is not involved.

If A pledges all to F, that is, sets $R_F = R$, his expected utility will be

$$E[U_A(\pi_A^s)|0, R, 0] = qR - I + \phi\left(W - qR + qR\right) - \phi\rho q(1-q)R$$

where qR is cash from F, $\phi(W - qR + qR)$ his utility from internalizing F's *expected* payoff, which is the retained cash $W - qR$ plus the expected future cash flow qR, and $-\phi\rho q(1-q)R$ his disutility from internalizing F's *risk*. The expression collapses to

$$E[U_A(\pi_A^s)|0, R, 0] = qR - I + \phi W - \phi\rho q(1-q)R \tag{2}$$

Comparing (2) with (1), we can now assess whom A prefers to get funding from, O or F. This yields our first result.

Proposition 1. *With perfect information, A is financed only by O.*

Proposition 1 highlights the force that is key to the subsequent results. It isolates, thanks to perfect information, the social "cost" of a financial contract between A and F. The comparison of (1) and (2) shows that $-\phi\rho q(1-q)R$ embodies this cost. Here, $q(1-q)R$ is the risk that A transfers to the investor, be it F or O. However, when he raises funds from F, he internalizes part of this risk (with intensity ϕ). Since he dislikes risk (with intensity ρ), whether for him or someone cherished, he experiences discomfort from shifting risk to F—a discomfort lacking when the risk is borne by O, whom he is indifferent to.

So A's preference for (funding from) O increases in his care for F, his risk-aversion, and cash flow risk. Let $\Delta^* \equiv E[U_A(\pi_A^s)|0,0,R] - E[U_A(\pi_A^s)|0,R,0]$ under perfect information.

Corollary 1. Δ^* *increases in* ϕ, ρ, *and* $q(1-q)R$.

It may seem peculiar that there is no countervailing positive effect of ϕ. In particular, one might think that sharing project spoils with a closer person confers more non-pecuniary utility. This is correct absent *quid pro quo*. If A had to give away profits, he would certainly prefer giving it to F rather than O. But here, A sells a financial claim to O in exchange for cash. The above benefit washes out: As much as he internalizes giving her expected cash flow of qR, he also internalizes lowering her cash stock by qR. In sum, he gets no extra benefit relative to the exchange with F. At the same time, he gets rid of all risk by selling the cash flow to O, whereas he retains "social risk" when selling it to F.

So what is social risk (as we define it)? Generally speaking, it means that the utility a person derives from social relationships can be volatile. But this can mean many things. It is therefore instructive to provide a commonplace example to clarify the specific notion used in Lemma 1. Consider the cautious father of a carefree daughter. She likes extreme climbing and backpacking in unknown places. She does not mind the risks. But her father, always worried for her safety, would like her to live less dangerously.

There is another, rather plausible, notion of social risk: The risk of harming (the quality of) the relationship itself. Specifically, it is conceivable that the volatility of monetary outcomes induces volatility in ϕ. We consider that notion in Section 3, using a somewhat modified setup.

2.2 Imperfect information

Moral hazard introduces a benefit of funding the project through F, and thus a trade-off. Unlike before, A cannot commit to abstain from private benefit extraction without keeping some ownership of the project. This gives rise to a trade-off between risk-sharing and incentive provision, which financing by F is well-suited to address.

For expositional reasons, let us first abstract from F. If A can only raise financing from O, he needs to retain a claim $R_A = R - R_O$ that satisfies his incentive-compatibility constraint

$$qR_A - \rho q\,(1-q)\,R_A \geq B$$

where B equals the private benefits he could consume, and $qR_A - \rho q\,(1-q)\,R_A$ his expected utility if he consumes no private benefits. This yields

$$R_A \geq \frac{B}{q - \rho q(1-q)} \equiv \underline{R}_A^O. \tag{3}$$

This means that he must keep a claim of at least $\underline{R}_A^O$ in order for O to consider funding the project. By the way, note that a greater risk-aversion ρ draws A further towards private benefits, assumed riskless, thus paradoxically forcing him to bear *more* risk (larger $\underline{R}_A^O$).

Given this condition, whether A can raise enough funds from O depends on whether the residual claim, $R - \underline{R}_A^O$, is large enough to compensate O for investing I.

Lemma 1. *With imperfect information, A can fund the entire project through O if and only if*

$$qR - I \geq \frac{B}{1 - \rho(1-q)}. \tag{4}$$

If he funds the entire project through O, his expected utility is

$$E[U_A(\pi_A^s)|\underline{R}_A^O, 0, R - \underline{R}_A^O] = qR - I + \phi W - \rho q(1-q)\underline{R}_A^O \tag{5}$$

Condition (4) is more likely to hold for larger B, smaller ρ (for the reason mentioned before), and larger q. The effect of the last is twofold; it increases expected cash flow and, for $q \geq 0.5$, also decreases cash flow risk, thus making it more attractive to abstain from private benefit extraction. If (4) is violated,

A must either resort to some funding from F or abandon the project. If (4) holds, both sources of financing are available.

Before we continue, we make an important observation. It is possible that (4) holds, (5) is larger than ϕW, and (2) is smaller than ϕW. This suggests that there exist projects that A would forgo unless there is formal finance. To see this quite simply, let $\phi = 1$. In this case, family finance amounts to self-finance. Consequently, if A's risk aversion is too large for him to self-finance the project, family finance does not help either. However, he might take the risk if there is formal finance.

Proposition 2. *There are projects that A undertakes with sole funding from O but would not undertake with sole funding from F.*

Now we want to argue that, irrespective of whether (4) holds, A raises as much as possible from O; that is, he raises funds from F only to the extent necessary. Suppose, for now, that (4) holds. Given a claim structure $\mathbf{R}$, if the project is run well, A's expected utility is

$$E[U_A(\pi_A^s)|\mathbf{R}] = qR - I + \phi W - \rho q(1-q)\left(R_A - \phi R_F\right). \tag{6}$$

This is lower than the perfect information benchmark (1); and the difference, $-\rho q(1-q)\left(R_A - \phi R_F\right)$, is A's disutility from bearing risk, both directly and indirectly through F. It follows immediately that A wants to maximize R_O, that is, transfer as much risk as possible to O—without, of course, forfeiting the commitment not to consume private benefits.

This brings us to A's incentive-compatibility constraint, which is

$$q\left(R_A + \phi R_F\right) - \rho q(1-q)\left(R_A + \phi R_F\right) \geq B. \tag{7}$$

The left-hand side is the change in his expected utility if he runs the project well; $q\left(R_A + \phi R_F\right)$ is expected cash flow, both his own and (the internalized) part of $F's$, while $-\rho q(1-q)\left(R_A + \phi R_F\right)$ is his disutility from bearing risk, both his own and (the internalized) part of F's. The right-hand side equals the change in his expected utility if he consumes private benefits.

Since A prefers larger R_A, he chooses R_A and R_F such that the constraint binds. Further rewriting (7) yields

$$R_A = \underline{R}_A^O - \phi R_F. \tag{8}$$

Compared with (3), we see that a larger R_F relaxes the incentive-compatibility constraint insofar as it allows A to retain a smaller stake. This is the incentive benefit of financing from F, as opposed to O.

To determine whether A would rather sell risk to F than keep it, we plug (8) into (6), which consequently collapses to (5). This is striking; it implies that A does not care about the risk allocation between himself and F, as long as the incentive-compatibility constraint binds. The explanation is intuitive: We see from (8) that R_F is an imperfect substitute for R_A in that a 1-dollar claim given up by A requires a $1/\phi$-claim taken up by F to preserve the same incentive effect. So, while A suffers less from a unit of risk held by F than by himself, F must hold commensurately more risk to exert the same incentive effect on A. Directly or indirectly, A must internalize a fixed minimum of risk to have proper incentives. Beyond that, though, he wants no more.

This leads to a first conclusion. If (4) holds, sole financing from O (Lemma 1) is (weakly) dominant, whereas sole financing from F is strictly dominated. What's more, if there was an infinitesimal cost to contracting, no matter how small, it would make sole financing from O the uniquely dominant alternative. We thus propose that, if (4) holds, A is financed only by O.

This is no longer possible if (4) is violated. Two questions arise. Can the project still be financed? And if so, who finances it? Our starting point is the observation that the project can be financed if and only if F would be willing to finance it alone. This has two reasons: F is willing to provide funding at a negative interest rate, as we will see; this makes it easier to meet the funding requirement I. Furthermore, only financing from F improves A's incentives, which makes it easier to satisfy the incentive-compatibility constraint.

So, let us set out with $I_F = I$ and $R_O = 0$. F's participation constraint is

$$W - I + qR_F + \phi\,(I + qR_A - I) \geq W.$$

The left-hand side equals her utility if she funds the project: $W - I$ is F's residual cash, qR_F her expected cash flow, and $\phi(I+qR_A-I)$ her utility from internalizing A's payoff. The right-hand side is her utility if she refuses to fund the project; since F's participation is pivotal, the project is abandoned in that case. We rewrite this as

$$qR_F - I \geq -\phi q R_A, \tag{9}$$

and see that F is willing to accept a negative monetary return so long as the project realized. The monetary loss she is prepared to incur, $-\phi q R_A$, equals her utility from internalizing A's payoff from the project. Conditional on F's participation, it is (weakly) optimal to maximize R_A so as to provide A with the best possible incentives. So we let (9) be binding and set $R_A = R - R_F$.

These two conditions can be solved for $R_F = \frac{I-\phi R}{1-\phi}$, which is strictly smaller than R given **A1**. Finally, we plug this solution and $R_A = R - R_F$ into the incentive-compatibility constraint (8) to get

$$(1+\phi)\,R - I \geq \underline{R}_A^O. \tag{10}$$

If (10) is violated, the project cannot be financed. If (10) holds strictly, the project can be financed, and more, there is slack in the incentive-compatibility constraint for $\mathbf{R} = (R - \frac{I-\phi R}{1-\phi}, \frac{I-\phi R}{1-\phi}, 0)$. This allows A to sell some cash flow, or better risk, to O without violating incentive compatibility. We know from above that she prefers doing that to selling more (than needed) to F. In this case, A is financed by F and O. If (10) binds, the project can be financed, but there is no (incentive) slack for selling cash flow to O. Only in this knife-edge case is F the sole financier of A.

The next proposition summarizes the above conclusions.

Proposition 3. *If $R - I/q \geq \underline{R}_A^O$, A is financed solely by O. Otherwise, he is financed by O and F if $(1+\phi)\,R - I > \underline{R}_A^O$, solely by F if $(1+\phi)\,R - I = \underline{R}_A^O$, or else by no one. To the largest extent possible, he seeks funding from O.*

In light of Proposition 1, the intuition is simple. Weary of social risk, A in principle wants to raise funding only from O. However, due to moral hazard, he may not be able to do so. In that case, he must obtain *some* funding from F, but solely to preserve his incentives, and conditional thereon still sells as much cash flow as possible to O. In other words, financing from F is a costly commitment device, only used when needed.

On one hand, this means that the social relation between A and F indeed serves as a remedy to agency problems that a contract between A and O, or imperfect legal enforcement, fails to resolve. The presence of F, in this sense, relaxes capital constraints, and thus deepens the market. On the other hand, it means that A prioritizes financing from O over financing from F when both are available, or put differently, when he actually faces a choice. We illustrate both points, "financial deepening" and "pecking order" in Figure 2, where we use (10) and (4), solved for ϕ and ρ, to partition the parameter space.

There is another way to describe the relationship, or interaction, between the two forms of financing. While A prefers funding from O, he can at times not get it without complementary funding from F. That is, funding from F complements funding from O. This is most evident in that F is indispensable for the project when (4) is violated. But, in a rather nuanced way, it is also

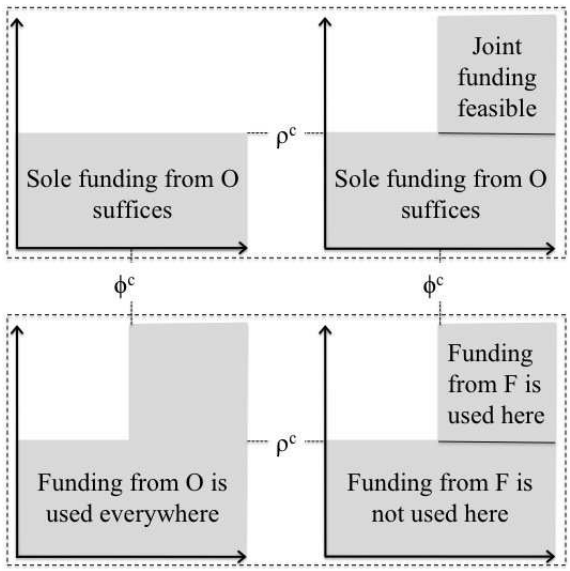

Figure 2: In the top row, the gray area on the left is where formal finance suffices to fund the project, relative to which the gray area on the right shows how family finance expands project funding. In the bottom row, both family and (at least some) formal finance are available in the gray area; but unlike formal finance (left), family finance is not always used when available (right).

manifested in the next, somewhat counterintuitive result: The closer A and F are, the more does A turn to O for funding.

Corollary 2. *If* $R - I/q < \underline{R}_A^O$ and $(1+\phi)\,R - I > \underline{R}_A^O$, R_O increases in ϕ.

When ϕ is larger, (10) has greater slack. This means that A can sell more cash flow to O, or equivalently, less to F. So, on the surface, variation in ϕ makes the two sources of financing look like substitutes. But the deep reason for this effect is actually that larger ϕ make F a stronger complement to O : Less funding from F suffices, or is needed, to get more funding from O.

This is similar to the "certification" effect of informed lending (say, banks) on uninformed lending (say, bonds) noted by Holmstrom and Tirole (1997). More to the point, it resembles the real-world practice of co-signing loans. In so-called guarantor loans, a guarantor pledges collateral or income to cover part of the loan if the borrower defaults. Typically, the guarantor is related to the borrower, which is why such contracts are often called family guarantees

or family pledge loans.[9] Parents are perhaps the most common guarantors (high ϕ), whereas more distant relatives may be considered on a case-to-case basis. We conclude with a quote:

> Jeffrey Wolfson, a Boston attorney with a family business practice, often urges clients to approach outside lenders before soliciting family funds. [...]
>
> By the same token, bankers usually regard family contributions as part of the entrepreneur's equity—and evidence that a start-up is more than a hobby. "You don't want to go back to an aunt or uncle and say, 'I lost the money,'" observes Carl Harris, first vice-president at People's Bank in Bridgeport, CT. A family commitment can also be leveraged by, for instance, getting a relative to guarantee a bank loan. That worked for Eric Weinstein, owner of Towel Specialties in Baltimore. At 23, Weinstein started his beach-products business with about $7,000 in savings and a $50,000 bank loan co-signed by his father. He later guaranteed another loan for $150,000, so his son could buy a building. Today, 13 years later, it's a $6.5 million business with 45 employees.

3 Social debt

We cast our second theory in the same basic model with a few modifications. First of all, we dispense with risk-aversion to throw out the channel studied above. A is now, like F and O, risk-neutral. Instead, we extend the timeline. At time 2, A can spend fixed effort $C > 0$ to find another project, be it novel or related, regardless of the time-1 cash flow from the first project. The new project requires, for simplicity, no financing and yields $\bar{R} > 0$ with certainty. Alternatively, he can decide to quit self-employment for a job that pays fixed salary $L > 0$. Either alternative pays out at time 3.

In addition to **A1**, we make the following parametric assumptions:

A2. $\bar{R} > \max\{C + L, I\}$.

[9] This is usually required by the lender. But even if not, few would be willing to co-sign a loan to someone they are not close to. By means of illustration, replace F with a second *outside* investor in the model: She would neither entice O to supply funds nor do so herself.

This assumption says that it is efficient for A to stay self-employed, and that the new project yields enough to fully repay the investor(s). The latter part is inconsequential for our results; it merely simplifies the analysis.

A3. $L < I$.

This assumption says that A's financing needs exceed what A can earn in the labor market if the project fails. Intuitively, it means that the investment is large, and thus presents a sizeable risk, for a person of his means. It ensures that a failure is material enough to affect his future decisions.

Another key adjustment, apart from extending the timeline, concerns the relationship between A and F. Up until time 2, nothing changes. However, at time 3, their relationship *suffers* if A decides not to use his available income to recompense F for any cash shortfall sustained at time 2. To keep it simple, we assume that, if A willfully dismisses any "old debt," their mutual altruism drops from ϕ to 0; they renounce their bonds. Of course, if there is nothing left to settle at time 3, their relationship is safe.

The idea we aim to capture is the following: Friends, or relatives, harbor a sense of entitlement that appeals to one's *personal promise* rather than just a *business contract*. While failing a promise involuntarily may be forgivable, subordinating it to one's own pleasure is a prickly matter. To indulge oneself yet refuse to pay a friend an old debt can burden one's conscience and strain the friendship. By the same token, it is hard—if not beyond one's control—to not feel let down when someone's a "friend in need but not in deed."

We adopt this idea—social relations are fragile—from Karlan et al. (2009), though our modeling is slightly different. They show that the threat of losing friends creates a form of collateral, *social collateral*, that improves incentives. This remains the case in our model. We submit that, in addition, it provokes social debts that might distort (future) decisions.

3.1 Perfect information

Again, the benchmark setting without moral hazard reveals the key insight. It is more didactic to begin with the case of family finance. Let $E(\tilde{R}_F^1 + \tilde{R}_F^3)$ be the total cash flow F expects to receive from A, including payments that are not contractually specified. Her break-even constraint is then

$$W - I + E(\tilde{R}_F^1 + \tilde{R}_F^3) + \phi E(\pi_A | I_F = I) = W + \phi E(\pi_A | I_O = I)$$

where her utility from internalizing A's payoff is $\phi E(\pi_A|I_F = I)$ if she funds the project, and $\phi E(\pi_A|I_O = I)$ if O funds the project. This yields

$$E(\tilde{R}_F^1 + \tilde{R}_F^3) = I + \phi\triangle_\pi$$

where $\triangle_\pi = E(\pi_A|I_O = I) - E(\pi_A|I_F = I)$. We shall later see that $\triangle_\pi \geq 0$, that is, F demands a premium. Since our goal is to show that formal finance is superior in this case, we will stack the deck against us by assuming $\triangle_\pi = 0$ for now, in which case F just demands to break even in monetary terms.

Let us start with decisions at time 3 and proceed by backward induction. Suppose the first project failed; hence, so far, F has "lost" money to A. We shall refer to this loss as shortfall. The shortfall after a failure is I. If (still) self-employed, A has income $\bar{R}$, into which he can tap to reduce the shortfall. Absent contractual duty, he eliminates the shortfall if and only if

$$\bar{R} - I + \phi(W - I + I) \geq \bar{R} - X. \tag{11}$$

The left-hand side equals A's utility if he fully repays F or pays her as much as he can; ϕW is his utility from the friendship he is able to safeguard in that case. The right-hand side is his utility if he repays anything less, $X \in [0, I)$, for he loses F as a friend. Provided that (11) holds, A will also repay enough to keep peace with F when the shortfall is less than I, or his disposable cash is less than $\bar{R}$; the latter is the case when he must first provide a contractual payment to F, or is not self-employed and earns L. We can reduce (11) to

$$\phi W \geq I. \tag{12}$$

Intuitively, A has an incentive to repay F if his social collateral ϕW is large relative to his social debt (which is at most I). If (12) is violated, obtaining funds from F without any contractual duty would put their friendship at risk. (We will return to this point in Section 3.2.)

Having determined the repayment decision, we now consider time 2. After a failure, A can continue to struggle with self-employment (pay C) or take a job. In making that choice, A foresees that social pressure will compel him to share the fruits of his labor. Given the shortfall, his utility as a self-employed is $\bar{R} - C - I + \phi W$ if (12) holds, and $\bar{R} - C$ otherwise; as an employee, it is ϕW if (12) holds, due to **A3**, and L otherwise. We see that he takes the efficient choice, self-employment, if (12) is violated, since $\bar{R} - C \geq L$ is **A2**. By contrast, if (12) holds, he does so if and only if

$$\bar{R} \geq C + I, \tag{13}$$

which is stricter than **A2**. That is, he is more likely to quit self-employment; which is inefficient.

If (12) and (13) hold, there is no distortion; A will stay self-employed, reap $\bar{R}$ at time 3, and pass I through to F. They can hence enter a trivial contract that lets F break even without any efficiency loss: F just asks for the initial outlay I, which A will repay one way or another. However, if only (12) holds, F can only count on L in the event of failure, and hence must be compensated through a higher payment in the event of success, most simply done through the contractual payment $R_F^1 = I/q - QL$ where $Q \equiv \frac{1-q}{q}$.

Since we assume, for now, full verifiability of cash flow, A and F can write contracts that enforce, and so replicate, the above payments even when (12) is violated. A can simply pledge to pay $I/q - QL$ (or I) at time 1, and should he fail to meet that payment, I at time 3.

The following result is therefore without loss of generality.

Lemma 2. *If $\bar{R} \geq C + I$, A pays the outlay I to F, and stays self-employed. Otherwise, in the event of success, A pays $I/q - QL$ and stays self-employed, and in the event of failure, quits self-employment and pays L.*

Funding from F is inefficient in that it can distort A's career choice. Since F breaks even, it is A who bears the cost of this distortion.

We now turn to contracts with O. The leading question is whether such a contract can remove the inefficiency. Identifying the root of the problem—the persistence of social debt prevents A from escaping "liability" after a failure—immediately leads us to the solution: limited liability.

The contract $R_O^1 = \frac{I}{q}$ and $R_O^3 = 0$ lets F break even and, by imposing no time-3 obligations, does not affect A's decisions at time 2. If entered with F, this contract would not resolve the issue; A would still face social obligations after a failure. But with O, A nurtures no such concerns.

Proposition 4. *With perfect information, A (weakly) prefers funding by O.*

The inferiority of funding from O stems from an interaction of (12) with (13). The former constraint captures the idea of social debt: Social pressure pushes A to payments she is not legally bound to make. The latter constraint captures the idea that this pressure affects not only repayment but also other decisions: In this model, it puts a damper on entrepreneurial initiative.

The distortion created by social debt need not take this particular form. In fact, a minor variation of the model produces a different one: Suppose self-

employment is less efficient but yields a riskier cash flow. In that case, calculations analogous to the above show that A's propensity for self-employment is inefficiently high. In finance terms, this is but to say that social debt can induce *risk-shifting* as much as *debt overhang*; it can nurture bad entrepreneurs as much as hinder good ones.

More broadly, the behavioral distortions induced by social debt need not relate to career choice; in fact, *any* actions the borrower would feel compelled to take, due to social debt or pressure, but deems *ex ante* unappealing would discourage family finance.

Before discussing the benefits of formal finance, let us point out in passing that indeed $\triangle_\pi \geq 0$, as posited at the beginning of the analysis.

3.2 Formal liability

The advantage that formal finance offers in the above model concerns liability. We draw, in essence, a crucial distinction between the concept of legal liability and that of indebtedness in general. To the first one is bound by law, whereas the second may also be enforced, or felt, via social mechanisms. There is little doubt that debt exists as a concept outside the legal context, both as a social and moral one. Notice, for example, the wording "forgive us our debt" in the Lord's Prayer, religious parables comparing sinners to debtors, or the phrases "you owe me" and "to pay a debt of gratitude." In certain languages, such as German, the idea is so ingrained that the same word (Schuld) means debt or guilt.[10]

Our premise is that social debt comes with *personal* liability. Historically, this used to be the norm for formal loans, too. In Ancient Greece and Rome, delinquent debtors, together with their families and servants, entered "debt slavery" until the debt was paid off. In medieval England, they were thrown into "debtor's prison" where they stayed until their families paid off the debt. At the same time, there was an early awareness that unlimited liability may be undesirable. For example, while many a law in the Old Testament applies *lex talionis* ("an eye for an eye, a tooth for a tooth"), Deuteronomy 15:1-2 says,

> At the end of every seven years though shalt make a release.
> Every creditor that lendeth ought unto his neighbour shall release

[10]Margaret Atwood elaborates the anthropological, both cultural and physical, foundations of debt as a social concept in her book *Payback*.

> it; he shall not exact it of his neighbour, or of his brother, because it is the Lord's release.[11]

In similar spirit, the Code of Hammurabi, the Ancient Babylonian law code, limited debt slavery:

> If anyone fails to meet a claim for debt, sells himself, his wife, his son, and his daughter for money or gives them away to forced labor: They shall work for three years ... and in the fourth year they shall be set free.

The roots of modern bankruptcy laws are considered to be the bankruptcy reform Julius Caesar implemented as emperor of Rome. He let moneylenders confiscate land in lieu of debt payments, but allowed a borrower to walk away from his debt after a bankruptcy with his tools of trade and the related land, and limited the personal liability of his immediate and extended family. His express intention was that they could start over, with their slate wiped clean, rather than waste their talent in bondage.

Lost in the Dark Ages, this *tabula rasa* approach to bankruptcy emerged again during the Enlightenment. By the 1800s, England periodically released debt prisoners and forgave their debts. In the United States, a federal law in 1833 abolished debtor prisons, followed by decades of legislative bargaining about bankruptcy law. In *Debt's Dominion*, David A. Skeel Jr. quotes from a speech by Daniel Webster, then senator, who voices a key concern that drove this process, namely that persistent debt can be counterproductive (p.26):

> [T]he power of perpetuating debts against debtors, for no substantial good to the creditor himself, and ... have imposed more restraint on personal liberty than the law of debtor and creditor imposes in any other ... country.

The process gave rise to the modern legal approach in which bankruptcy, as put on the Skeel's book, "signifies not a debtor's last gasp but an opportunity to catch one's breath and recoup."

[11] Asking why any lending occurred under these circumstances, Margaret Atwood interestingly submits (p.48): "Probably because the lendings and borrowings took place within small communities. You didn't have to wipe out the debt owed to you by foreigners—only those within the group where relations with the next-door neighbours were cradle-to-grave and tightly knit," and "[s]o you'd ultimately be repaid somehow for a forgiven debt, even if it wasn't with money." This is to say that, *socially*, the obligations persisted beyond the legal forgiveness.

In the same way, we argue that the possibility of limiting liability is a key advantage formal finance holds over family finance. In the former "liability" is designed by contract and law; whereas in the latter it is subject to emotion and social pressure. Formal finance can hence *eliminate* liability where family finance cannot. But by the same token, a formal contract can do the opposite, too. It can *extend* liability where emotion and social pressure have no bite.

To see this, let us revisit the model. The last point is trivially true in that A could not raise any funding from O in the absence of formal contracts. It is, however, more subtly—but in a sense more powerfully—made by considering how formal liability affects the transaction between A and F. Suppose F is the only source of finance A could tap, and formal contracts are imperfect in the sense that time-3 cash flows are beyond recourse. (Say, A can move into the informal sector, or to another jurisdiction after failure.) If the repayment constraint (12) is violated now, another type of friction arises: Since A rather loses F as a friend than uses time-3 income to repay her, a time-1 failure will ruin their friendship. It creates, as it were, "social" bankruptcy costs.

The expected social bankruptcy costs may induce A to forgo the project. In the absence of O, F's break-even condition is

$$W - I + q\left[R_F^1 + \phi(R - R_F^1 + \bar{R} - C)\right] = W + \phi\left(\bar{R} - C\right).$$

The left-hand side is her payoff if she funds the project; $W - I$ is her residual cash, qR_F^1 is her expected cash flow from the project, and $q\phi(R - R_F^1 + \bar{R} - C)$ is her utility from internalizing A's payoff after a success. In case of a failure, she is not repaid, and the friendship ends. The right-hand side is her payoff if she refuses to fund the project; she retains her wealth W, and derives utility from internalizing A's future payoff, that is, remaining friends with A.[12] We solve this for the required repayment

$$R_F^1 = \frac{I + \Phi\left[(1-q)(\bar{R} - C) - qR\right]}{q} \tag{14}$$

where $\Phi \equiv \phi/(1-\phi)$. Compared with the repayment O would require, $R_O^1 = I/q$, there are two more terms. First, $\Phi(1-q)(\bar{R} - C)$ reflects F's expected loss of friendship (utility) due to the risk of failure. This makes her reluctant to fund the project, and thus increases R_F^1. Second, $-\Phi qR$ reflects that she

[12] One might think that the friendship is also affected by F's refusal to fund the project. It should be kept in mind, however, that she funds the project so long as she breaks even. Knowing that, A would—at least, we find that reasonable—not hold a refusal against F.

gets utility from helping her friend A realize the otherwise impossible project. This makes her more willing to fund the project, and thus decreases R_F^1.

Given R_F^1, A's expected profit from (receiving funding and) implementing the project is then

$$qR - R_F^1 - (1-q)\phi W. \tag{15}$$

We know that $qR - I > 0$, by **A1**. From (14), we see that R_F^1 could be larger than I. If $(1-q)\phi W$ is large enough, it is thus possible that (15) is negative; in which case A finds that the project is not worth the risk of losing a friend, and forgoes it.

If recourse to time-3 cash flows *is* contractually enforceable, as in Lemma 2, the situation changes. By pledging time-3 cash flows contractually, A can commit to avoid social distress. In other words, formal contracting enables A and F to design their money transactions in a way that averts social frictions, and thus "keep things friendly." This yields an analogue of Proposition 2:

Proposition 5. *There are projects that A does not undertake without access to formal contracting.*

Indeed, personal finance and small business finance websites recommend that even transactions among family members, or friends, be made formal. A number of professional (online) intermediaries is even specialized in arranging, structuring, and servicing so-called "friends and family" loans. Consider Virgin Money's description of its social lending service:

> Social lending gives friends and family a more structured way to lend or borrow money with each other. Essentially, we provide a simple way to structure a social loan to help keep friendships exactly as they should be—friendly.
>
> People come to us to help facilitate all kinds of loans using our social lending construct. [...] We orchestrate the logistics of the loan from behind the scenes to ensure that both the borrower and the lender are free from the pressure that can often result from less formalized social loans.[13]

While Virgin Money exited the US market in 2010, many other intermediaries continue to offer the same service: LendFriend, Lending Karma, LoanBack,

[13] We copied this from http://www.virginmoneyus.com/Virgin_Money_Social_Loans/ accessed on March 25, 2010.

One2One Lending, WikiLoan, ZimpleMoney, Prosper, Bainco, and National Family Mortgage (founded by a former executive of Virgin Money US).

To summarize, formal finance allows for a more flexibile design of liability, providing a twofold benefit: It can limit payments that social relations would induce, and impose such that social relations cannot induce. Conversely, the strength of family finance is that it can enforce payments in situations where legal enforcement is too weak or absent, a point we turn to next by allowing for moral hazard.

3.3 Imperfect information

In this section, we consider a setting in which family finance has more power than formal finance in enforcing payments. Specifically, we make assumptions to the effect that formal finance no longer guarantees the first-best outcome, or put differently, A is capital-constrained. We show that family finance—in spite, or in fact *because*, of social frictions—relaxes these constraints.

We retain the assumption that time-3 cash flow is non-contractible. This gives social relations a role in exacting future payments. Furthermore, we let private benefit extraction be subject to moral hazard.

We analyze an *either-or* choice between formal finance and family finance, because this lays bare the forces at work. We remark on the possible benefits of combining the two sources later. Let us begin with formal finance.

Since O cannot extract payments in time 3, her break-even constraint is

$$R_O = \frac{I}{q}. \tag{16}$$

where the time superscript on the required repayment is omitted, since time-3 payments are non-contractible. A's incentive-compatibility constraint is

$$q(R - R_O) \geq B. \tag{17}$$

Plugging (16) into (17) and solving for R yields the next result.

Lemma 3. *With imperfect information, A can fund the entire project through O if and only if*

$$qR \geq B + I. \tag{18}$$

If he funds the project through O, his expected utility is

$$E(\pi_A^s | I_O = I) = qR - I + \bar{R} - C + \phi W.$$

A comparison with **A1** reveals that, if restricted to formal finance, A would be capital-constrained for $I \leq qR < I + B$; some efficient investments would not be funded. At the same time, when (18) holds, it is weakly, and at times strictly, optimal for A to raise funding from O, because funding from F may entail the social frictions discussed in sections 3.1 and 3.2.

Assume hereinafter that (18) is violated. The leading question is whether family finance is feasible, although formal finance is not. We shall not assume that F sees private benefit extraction, nor that she renounces her friendship upon suspecting it. This stacks the odds against family finance; it is otherwise trivial to show that family finance mitigates the moral hazard.

The incentive effects of family finance must then derive from interactions beyond time 1. A first subquestion is whether A would repay F in time 3 for a time-1 default. We have shown this to be the case when (12) holds. If so, a second subquestion is whether A would remain self-employed after a default. This we have shown to be the case when (18) holds. (Please see section 3.1.) Altogether then, there are three cases to consider.

First-best. Suppose (12) and (13) hold. Following a failure, A remains self-employed, repays the amount I, and stays friends with F. One contract that ensures repayment of I, and thus keeps $F's$ payoff at W, is simply to set $R_F^1 = I$.[14] Under this contract, A's incentive-compability constraint is

$$q\left(R - I + \bar{R} - C\right) + (1-q)\left(\bar{R} - I - C\right) + \phi W \geq B + \bar{R} - I - C + \phi W.$$

Note that A repays I and receives $\bar{R} - C$ from continued self-employment—irrespective of whether he succeeds, fails, or consumes private benefits. There is no career distortion, nor loss of friendhip. The constraint simplifies to

$$qR \geq B. \tag{19}$$

A comparison with (18) shows that (19) is easier to meet; in fact, (19) always holds under **A1**. In essence, (19) means that A would extract private benefits only if it were *efficient* to do so. The reason is that, due to social collateral, A *de facto* does not enjoy limited liability. He cannot simply walk away from his payment obligation even when the project fails, which makes it unattractive to consume private benefits.

[14] To consider a contract that lets F break even in monetary terms is consistent with the assumption that A feels obliged to recompense a shortfall relative to I after a default. In this case, F is actually willing to accept a negative expected return, which only strengthens the conclusion we are about to reach.

Debt overhang. Suppose only (12) holds. After a failure, A quits self-employment, repays the amount L, and remains friends with F. Before analyzing whether A consumes private benefits, we must determine the required repayment. F's break-even condition in this case is

$$W - I + q\left[R_F + \phi\left(R - R_F + \bar{R} - C\right)\right] + (1-q)\,L = W + \phi\left(\bar{R} - C\right).$$

The left-hand side is her utility if she funds the project; $W - I$ is her residual wealth, $qR_F + (1-q)L$ her expected cash flow, and $q\phi\left(R - R_F + \bar{R} - C\right)$ the expected utility from internalizing A's payoff from the project and future self-employment. The right-hand side equals her utility otherwise; she holds on to her wealth W and gets utility from internalizing A's payoff (only) from future self-employment. This yields

$$R_F = \frac{I + (1-q)\,\phi\left(\bar{R} - C\right) - (1-q)\,L - \phi R}{q\,(1-\phi)}. \tag{20}$$

There are several differences to (16): $(1-q)\,\phi\left(\bar{R} - C\right)$ reflects that A might quit self-employment due to failure, which F partly internalizes; $-(1-q)\,L$ that F receives some payment even after a failure; and $-\phi R$ that the project would not happen, and so A would not reap its benefits, without her funding; and in the denominator, $1-\phi$ that a dollar taken from A is worth less than a dollar to F. Due to these effects, (20) can be larger or smaller than (16).

A's incentive-compatibility constraint is

$$q\left[R - R_F + \bar{R} - C + \phi\left(W - I + R_F\right)\right] + (1-q)\,\phi(W - I + L) \geq B + \phi(W - I + L).$$

Note that after a failure, be it due to misfortune or private benefit extraction, A uses his future labor income L to repay F. This simplifies to

$$qR \geq B + qR_F - q\left(\bar{R} - C\right) - q\phi\left(R_F - L\right). \tag{21}$$

Compared to (18), there are three additional effects that arise from the social relationship. Let us start from the back: First, $-q\phi\left(R_F - L\right)$ reflects that A expects to repay F more, $q(R_F - L)$, if he abstains from private benefits, which he internalizes with intensity ϕ. This direct effect of friendship relaxes the constraint, that is, makes A less inclined to consume private benefits. Second, $-q\left(\bar{R} - C\right)$ is A's expected benefit from continued self-employment

if he abstains from private benefits. This relaxes the constraint by giving A an incentive to avoid social debt, and the distortion it creates at time 2.

Third, there is an indirect effect through the expected required repayment qR_F, which takes the role of I in (18). It follows from our comparison of (20) and (16) that qR_F can be larger or smaller than I. If it is smaller, then (21) is unequivocally more slack than (18) because of the two aforementioned effects and because F is more willing than O to provide funds. If it is larger, then it may (but need not) be that (21) has *less* slack than (18). Intuitively, in this case, F is very reluctant to provide funds for fear of the social frictions—the distortive social debt—that may arise. Moreover, when (21) holds, (16) holds, too: So, whenever A *could* be funded by F in this case, both of them actually prefer the project to be funded by O—to preclude social frictions.

Social bankruptcy. Suppose neither (12) nor (13) holds. After a failure, A does not repay F, loses her friendship, and stays self-employed. In section 3.2, we derived and explained the repayment F requires in this case, namely (14). A's incentive-compatibility constraint is

$$q\left[R - R_F + \bar{R} - C + \phi\left(W - I + R_F\right)\right] + (1-q)\left(\bar{R} - C\right) \geq B + \bar{R} - C.$$

Notice that A loses the utility from friendship following a default, irrespective of the cause, because he will refuse to recompense F. This simplifies to

$$qR \geq B + q\left(1-\phi\right)R_F - q\phi\left(W - I\right). \tag{22}$$

In comparison to (18), there are again three additional effects: First, $-q\phi R_F$ reflects that A expects to pay F more, qR_F, if he extracts no private benefits, which he internalizes with intensity ϕ. This direct effect of friendship relaxes the constraint. Second, $-q\phi\left(W - I\right)$ is A's expected utility from friendship that he would lose in case of a default. This is to say that A has an incentive to avoid social bankruptcy, which relaxes the constraint.

Third, there is the indirect effect through the required repayment R_F, which is given by (14). Like (20), (14) can be larger or smaller than (16); in other words, qR_F in (22) can be larger or smaller than I. Thus, as already seen in (21), social relations can but need not relax capital constraints. To see why in this case, we substitute (14) for R_F in (22) and simplify to

$$qR \geq B + I + (1-q)\,\phi\left(\bar{R} - C\right) - q\phi R - q\phi\left(W - I\right). \tag{23}$$

The last term is, as discussed above, A's incentive to avoid social bankruptcy. The other two terms, apart from $B+I$, come from F's break-even constraint:

On one hand, $-q\phi R$ reflects F internalizing that A cannot reap any project benefits without her funding; this makes her more willing to fund the project. On the other hand, $(1-q)\,\phi\left(\bar{R}-C\right)$ reflects the potential loss of friendship that may result from the financial transaction; this makes her reluctant to fund the project. If this last term is large enough, (23) is less slack than (18), and whenever A *could* get funding from F, they both agree that funding from O is preferable for its lack of social frictions.

The next result summarizes the insights of this section.

Proposition 6. *If (18) holds, it is weakly, and sometimes strictly, optimal for A to be funded by O. If (18) is violated, there are four cases:*

1. *If (12), (13), and (19) hold, A is funded by F without any inefficiency.*
2. *If (13) is violated, but (12) and (21) hold, A is funded by F, and quits self-employment after a project failure, which is inefficient.*
3. *If (12) is violated, but (23) holds, A is funded by F, and the friendship ends after a project failure, which is inefficient.*
4. *In all other instances, the project is not funded.*

The various (sub)cases are illustrated in Figure 3, where we vary qR, ϕW, and $\bar{R}$ to separately play with (18), (12), and (13).

Let us put the proposition into words. In the current setting, with moral hazard and non-contractible future cash flows, formal finance may not be feasible; but if it is, it is efficient. The entrepreneur is thus capital-constrained.

Family finance can relax those constraints. Such financial deepening relies on a social collateral mechanism. In the best case, social collateral eliminates limited liability and makes future cash flows pledgeable without creating any social frictions. In the other two cases, however, it can distort future decisions (debt overhang) or damage the social relationship (social bankruptcy).

In the latter cases, the commitment created by family finance is costly. The social collateral mechanism creates potential social frictions; at the same time, part of the commitment effect is that the entrepreneur runs the project better to avoid those frictions. As with anything, the benefits will be weighed against the costs. If too costly, the social commitment device will not be used. Friends will rather forgo than enter a financial transaction that might stir up significant social frictions in the future. (That is the fourth case.)

It is for this reason also that the pecking order runs from formal finance to family finance when both are feasible. The former sidesteps social frictions.

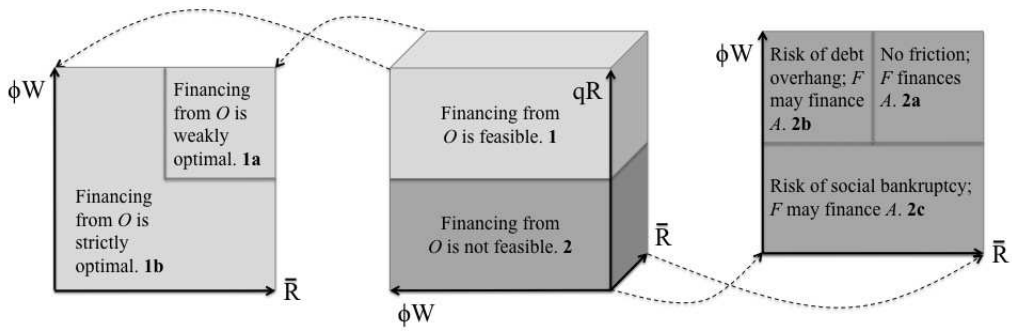

Figure 3: In the light grey cube, formal finance suffices to fund the project. The left square shows that formal finance is (weakly) preferred when feasible. In the dark grey cube, formal finance is insufficient to fund the project. The right square shows that family finance may still be feasible in that case, but also that it can give rise to social debt overhang and social bankruptcy.

4 Discussion

Before concluding the paper, we briefly remark on the empirical predictions of the two theories (Section 4.1), and the robustness of our claims to alternative model assumptions (Section 4.2) or possible extentions (Section 4.3).

4.1 Empirical predictions

The two theories we presented, social risk (SR) and social debt (SD) have common and distinct predictions. Moreover, in some instances, the predictions under perfect information (PI) deviate from those under imperfect information (II).

First, risk plays a crucial role in both theories. The very strength of formal finance is that it enables A to funnel cash flow risk out of his social sphere. Indeed, we have shown that he refrains from certain risky investments unless he has access to formal finance or formal contracting.

P1 (SRSD) Formality encourages risk-taking.

A straightforward model extension would likely reinforce this prediction: If A can choose among projects with different risk after raising finance, he would be more risk-taking with formal funding.

A second commonality between the theories is that formal finance, when feasible, takes precedence over family finance. And the better a risky project is, the more likely is formal finance feasible. This yields a simple prediction.

P2. (SRSD) Under II, more profitable risky borrowers use less family finance.

In the social risk theory, we have made explicit that family finance is used to make formal finance feasible. The same is true in the social debt theory: If A cannot use just formal finance, he needs family finance to create commitment. However, once the proper incentives are in place, he prefers to turn to formal finance for the remaining funds; the less he owes F, the less likely are social debt overhang or social bankruptcy.

P3. (SRSD) Under II, the availability of family finance increases borrowers' access to formal finance.

This implies, for example, that entrepreneurs, their own wealth aside, from more affluent family networks have more access to formal finance.

In light of **P1**, one would think that riskier borrowers unambiguously use more formal finance. This is not necessarily the case in the social risk theory. More risk makes it, on one hand, more attractive for A to use formal finance. Indeed, this is the sole effect under PI. Under II, on the other hand, more risk—if private benefits are riskless—aggravates the agency problem, *forcing* A to take on more risk for incentive purposes. This makes the impact of risk, and also of risk-aversion, ambiguous under II.

P4. (SR) Under PI, riskier borrowers use less family finance. Under II, the impact of more risk (aversion) on the choice of finance is ambiguous.

One of the social frictions in the social debt theory is a distortion of A's future decisions. As noted earlier, while we focused on a debt overhang problem, we could also have modeled a risk-shifting problem. Applied to entrepreneurial decisions, the general claim is hence that social debt overhang discourages efficient, but encourages inefficient, entrepreneurial risk-taking *after failures*. Interpreted this way, social debt theory predicts that family finance distorts entrepreneurship in the "long run."

P5. (SD) Family finance discourages efficient (serial) entrepreneurship after a failure.

The other social friction in the social debt theory is social bankruptcy, which leads to our final, rather simple but important, prediction.

P6. (SD) Formal finance and formal contracting protect social relations.

Or put negatively, financial transactions based on social relations can destroy the very relations they rely on, with consequences beyond that transaction.

4.2 Robustness

4.2.1 Social risk theory

The principal assumptions of the social risk theory are $A's$ risk aversion and the altruism between A and F. The particular specifications we have selected for these assumptions in Section 2, however, are not crucial.

Instead of assuming that A and F internalize each other's *realized payoff*, we could assume that they internalize each other's *realized utility*. A would, if risk-averse, still experience disutility from volatility in $F's$ utility, and hence prefer to sell any risk to O. We could also assume that A and F internalize each other's *expected utility* (at time 0), though we find that less plausible. In this case, the main conclusions go through so long as F is also risk-averse and A therefore internalizes F's (but not O's) disutility from bearing risk.

This brings us to the other assumption: risk aversion. In Section 2, only A is risk-averse. We could alternatively assume either that F, too, is risk-averse or that everyone including O is risk-averse. In the former case, family finance would be superior to formal finance from the perspective of risk allocation, even in the absence of social risk. Our specification rules this out to isolate the impact of social risk. In the latter case, very little changes except that F, too, would have a preference for A transferring risk to O, because she would be averse to risk borne by A.

Thus, the conclusions we draw are rather robust. It is worthwhile noting that the advantage of formal finance does not rely on any difference in risk aversion between F and O (unlike, e.g., in Stiglitz, 1990).

4.2.2 Social debt theory

The key assumption of the social debt theory is that the altruism between A and F decreases, independent of formal contractual agreements, if A refuses to recompense F for a past shortfall even though he is able to. This is how we specify the fragility of friendship in Section 3.

Alternatively, we could assume that the altruism is sensitive also to other decisions and outcomes. For instance, the friendship might suffer if A distorts

his career decision, or simply as a result of project failure. In the first case, social debt overhang may no longer be a concern; however, social pressure may in that case urge A to decisions that increase payout to F but are not ex post efficient. The point that social obligations can distort behavior would thus remain. Moreover, in any case, social bankruptcy remains a concern.

We could also assume that F sees $A's$ project decisions, and renounces her friendship if A consumes private benefits. If sufficient, this threat amounts to a commitment against private benefit consumption. But this is orthogonal to the subsequent possibility of social debt overhang and social bankruptcy, which remains so long as the friendship remains vulnerable to the repayment decision in time 3. That being said, if we were to let friendship be vulnerable *only* to private benefit consumption, and let private benefit consumption be seen only by F, then we would merely assume that family finance has a technological monitoring advantage over formal finance—without any downside. This would, however, amount to paying no heed to the casual wisdom, cited in the introduction, that family finance comes with significant social risks.

Last but not least, we could introduce actions on the part of F that relate to the financial transcation, such as seizing collateral or proactively exerting pressure, and assume that the friendship is vulnerable to such actions as well. This would only add to the social frictions that make family finance costly, and hence reinforce our conclusions.

Again, the conclusions we draw seem robust to alternative specifications. The essential premise of this theory is but that the vulnerability of friendship ex post cannot be contractually fine-tuned ex ante. If this were possible, there would be no difference between a formal contract and a social relation. We believe that so much, at least, is not true in reality.

4.3 Extensions

4.3.1 Adverse selection

Our model uses moral hazard as the particular friction that impedes external financing. Similar insights, however, can be obtained in a model with adverse selection. For example, suppose A needs external funding for a risky project but has private information about the expected return from the project. A can signal favorable information by retaining a larger stake in the project. The greater the temptation to lie about the expected return, the more must A retain.

It is straightforward to see that A has less incentive to lie to F than to O: Since A internalizes part of F's payoff, his gain from lying to her is smaller. As a result, A must retain less in order to credibly signal information to F. At the same time, funding the project through F, as opposed to O, forces A to internalize more social risk, or exposes him to social frictions. Thus, as in the model with moral hazard, family finance is a costly commitment device, and the strength of formal finance is that it reduces social risk and sidesteps social frictions.

4.3.2 Monitored lending

Most existing models of informal finance presume that informal lenders have superior access to information. It is simple to see that giving F an advantage in screening or monitoring A would, if anything, reinforce our conclusions. The strength of family finance would remain that it mitigates information or incentive problems, whereas the strength of formal finance is not affected by the additional assumption.

In circumstances where screening or monitoring requires expertise, it may be more plausible to attribute such capacities to formal finance. Even in this case, the trade-off is generally the same, only that now the social frictions, or the social risk, associated with family finance are not weighed against a loss of incentives but rather the monitoring costs associated with formal finance. The strength of formal finance remains that it avoids social ramifications.

5 Conclusion

We have presented two theories of formal and informal finance in which an informal investor differs from a formal investor *only* in that it has an altruistic relationship to the entrepreneur who seeks funding, and not in its information or enforcement technology. In both theories, the benefits of informal finance arise endogenously along with costs that render the choice—or better, the interaction—between the two types of finance more nuanced. Family finance breeds trust, but it also provokes social frictions that discourage risk-taking. In contrast, by circumventing social frictions, formal finance encourages risk-taking. This creates a symbiosis between the two types of finance. Optimal contracts draw, when needed, on the strength of both: They harness social relations for information and incentives, but weave in formal intermediation

to minimize the repercussions of failures on social relations.

The theories can be useful for studying financing patterns of entrepreneurs and for designing policies targeted at alleviating financing constraints that frustrate entrepreneurship. From a conceptual point of view, they emphasize that it is important to examine not only how social relations impact economic transactions but also how such transactions shape social relations. While we have focused on the negative effects of "failures," the positive effects of "successes" are just as significant. Given the import of social ties, and more broadly, of social capital, such feedback effects deserve more attention than they have so far received in the economics literature.

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