How Relationships Can Reduce Risk in Small Business Lending

by Robert DeYoung[23]

Abstract

This essay summarizes the results from three recent research studies on small business lending in the U.S. Each of these studies provides evidence for considering the question "Who takes the risks for funding SMEs?" The risks associated with funding small businesses are borne by numerous factions in our societies, including but not limited to entrepreneurs, bank lenders, and taxpayers. The incidence of risk-bearing across these factions varies with the business cycle, with innovations in lending technologies, and with differences in social infrastructure. Overall, the level of risk is lower when bank-borrow relationships are stronger.

1. Introduction

New businesses and small businesses are relatively risky endeavours. For example, about 17% of new business start-ups in the U.S. exit the market within one year; as young firms gain experience they become more resilient, but even for five-year old firms the exit rate still averages 8% per year (Haltiwanger 2014). About 50% of private firms born in the U.S. in 2009, and about 30% of U.S. firms that were already five-years old in 2009, had exited the market by

23. University of Kansas

2014 (U.S. Bureau of Labour and Statistics 2015). Small business activity is risky for the entrepreneurs who invest their own capital, risky for banks and other creditors that lend money to these firms, risky for households and businesses that provide labour and materials to these firms, and in some cases risky for taxpayers who foot the bill for government programs that subsidize small businesses. These risks know no boundaries: They present themselves in all western economies.

Why do all these constituents willingly provide financial and material support for such risky projects? Explaining why entrepreneurs put their own time and capital at risk—rather than invest their time and capital in firms run by others—is an almost metaphysical question; the mystery of why entrepreneurs act as they do lies outside the purposes of this essay. It is easier to understand why banks offer credit to entrepreneurs and small businesses: in the short-run, banks seek to earn a rate of interest commensurate with the credit risk of the small business in question, while in the long-run banks seek to establish lucrative ongoing relationships with successful, expanding small businesses. In both short-run and long-run, the credit risk is shared: if the loan defaults then the bank absorbs the losses; if the loan does not default then the borrower absorbs the probable losses (i.e., the loan interest rate it pays includes a risk premium). Similarly, households and suppliers hope that their short-term associations with risky start-up firms turn into permanent long-term relationships with successful small businesses.

In contrast, taxpayers do not receive any direct financial return when a new business start-up succeeds. Taxpayer funded, government-run small business lending programs are designed to produce a public good—and the public good produced by a vibrant small business sector can be substantial. According to the U.S. Small Business Administration (2014), small businesses have historically employed about one-half of the U.S. labour force and have created nearly two-thirds of net new private sector jobs in the U.S. annually. Haltiwanger (2014) estimates that start-up firms plus fast-growing young firms historically have accounted for about 70 percent of gross U.S. job creation annually.

In recent years the pace of new business formation has slowed in the U.S. According to data from the U.S. Bureau of Labour and Statistics, private businesses younger than one-year old employed 4.7 million Americans in 1999, the all-time high for employment at start-up firms. But new business start-ups began

to decline during the 2000s, and plunged steeply in the aftermath of the global financial crisis. By 2010, businesses less than one-year old were employing only 2.5 million U.S. workers; after five years of post-crisis economic recovery, this figure had improved to just 2.9 million workers in 2014. This decline in new business formation is indicative not just of the multiple challenges facing new business start-ups in the U.S., but of the multiple challenges that now face all small businesses in all western economies.

Three challenges dominate the landscape. First, western economies in general are experiencing what some economists have called a "secular stagnation" in which slow macroeconomic growth is the new normal. Even in the U.S., which has enjoyed faster and more consistent post-crisis growth than most western economies, annualized real GDP growth has averaged only about 2.2% during the 2009-2015 expansion. This is substantially slower than the GDP growth experienced during the three previous U.S. recoveries (2.7% during 2001-2007, 3.8% during 1991-2000, and 4.3% during 1983-1990). Second, increased business regulations have imposed compliance costs on businesses of all sizes; the substantial expansion in federal regulation in the U.S. during the Obama Administration provides a clear example. When even a portion of new regulatory compliance costs are fixed costs, the incidence of these new regulations falls most heavily on smaller firms. Increased expenditures necessary to comply with expanded healthcare rules, environmental rules, and labour rules—and the uncertainty associated with the likelihood of future new regulations—make entrepreneurs less likely to start new firms and less likely to expand existing firms. Third, the uncertain economic and business climate—coupled with increasingly stringent bank regulation and supervision—has reduced banks' willingness to make loans. Without credit, small businesses cannot grow. And in most western economies, job creation slows to a halt without small business growth.

2. The credit crunch and small business lenders

My research with Anne Gron, Gokhan Torna and Andrew Winton documents the reduction in small business loan supply in the U.S. during the financial crisis (DeYoung, et al. 2015). Importantly, we show that a small and special set of U.S. small business lenders did not participate in this credit crunch, but instead increased their supply of credit to small businesses during the crisis years. What was so special about this small set of banks? These banks had established a long,

pre-financial crisis history of investing large portions of their loan portfolios in small business loans. They made credit available to small businesses on a year-in and year-out basis; in other words, these banks had a history of relationship lending. And as our empirical tests reveal, this small set of lenders passed the relationship-lending acid test by making new credit available during a severe economic downturn, that is, when their clients were not only most in need of that credit, but also when their clients were most likely to default.

Studying small business loan supply in the U.S. is difficult because, unlike in many European countries, loan-level credit registries do not exist. To test whether U.S. banks reduced their supply of small business credit during the financial crisis, we focused on business lending at banks with assets less than $2 billion—banks that are so small that all of their business loans have to be small business loans. We tracked over 3,200 small commercial banks each quarter from 1991 through 2010, which provided us with a long baseline period to investigate pre-crisis small business loan supply (1991-2007), and also a shorter crisis period (2007-2010) within which to test for credit crunch-like behaviour by these banks.

We used these data to estimate the parameters of a theoretical loan supply function similar in spirit to the models of Froot, Sharfstein and Stein (1993), Froot and Stein (1998) and Gron and Winton (2001). The underlying assumptions are consistent with conditions that face small banks. First, we assume that capital markets are imperfect so that raising external capital is expensive; in the real world, this matches up well with thousands of small U.S. banks whose equity shares do not trade in public markets. Second, we assume that loan markets are imperfect so that banks cannot sell their business loans at their actual value; in the real world, this matches up well with the general absence of liquid secondary markets for small business loans. In equilibrium, these two initial conditions result in "loan overhang" effects that can preclude banks from taking advantage of otherwise profitable new lending opportunities. Imperfect capital markets increase the cost of raising external capital to fund the new loans, and imperfect loan markets increase the cost of selling existing loans and using the proceeds to fund the new loans; either of these costly imperfections can make new lending opportunities unprofitable.

It is natural to use this theoretical framework to test for the existence and depth of a small business lending credit crunch. Capital markets should become

more imperfect during a financial crisis, because the decline in stock markets increases the cost of raising external capital. And secondary loan markets should become more imperfect during a financial crisis, because the credit-risk driven decline in the value of loans (or securities backed by loans) will increase the cost of raising capital through this channel. Indeed, we know that bank stock prices fell during the financial crisis, and the price of residential and commercial mortgage-backed securities also fell during the financial crisis. Thus, our theoretical model predicts greater loan overhang effects and hence less loan supply during the financial crisis.

This prediction is consistent with what we find for the vast majority of the banks in our data. Business loan supply declined on average by about 2% per quarter during the financial crisis, and the negative effects of loan overhang increased by 56% compared to the pre-crisis period. Moreover, the expected positive relationship between small business loan supply and the risk-adjusted return on loans—which was economically and statistically significant in the pre-crisis data—disappeared during the crisis years. This result is consistent with quantity credit rationing by banks during the financial crisis, that is, a credit crunch.

We find very different results for the small cadre of lenders—about 17% of the banks in our data—with strong pre-crisis histories of making small business loans. To be included in this group, banks had to be among the top quartile of banks in commercial loans-to-assets, and also be among the bottom quartile of banks in retail loans-to-assets, for at least 10 consecutive quarters.[24] We make the reasonable presumption that the typical bank in this group was strategically dedicated to making and holding illiquid small business loans. The data bears this presumption out: for these banks, we find that business loan supply increased on average by about 8% per quarter during the financial crisis.

So who bears the risk of small business lending? Our findings indicate that small, relationship-based commercial banks bear disproportionate amounts of risk, because they provide increased credit supply to their small business clients during portions of the business cycle when credit risk is highest. Our findings

24. For these banks, we define "commercial" loans to include business loans and commercial real estate loans, and "retail" loans to include consumer loans and residential real estate loans. Using a Kaplan-Meier hazard estimator, we show that the random chance of being in this group of "commercial focus" banks for 10 consecutive quarters is less than 1%.

also indicate that small business clients of commercial banks that are less dedicated to relationship lending bear the risk of being credit rationed during economic downturns.

3. Credit scoring and small business lenders

Large banks also make loans to small businesses. In the U.S., large banks collectively extend far more credit to the small business sector than do small banks. This should not be surprising, given the tremendous size disparity among U.S. commercial banks: the largest U.S. banks hold over $1 trillion in assets, so their loan portfolios can be literally thousands of times larger than the loan portfolio of a so-called "community bank" with well less than $1 billion in assets. But the nature of the small business loans made by very large and very small banks is very different. Large and small banks employ vastly different loan production techniques and execute fundamentally different business strategies; as a result, the lending relationships that develop (or do not develop, as the case may be) between these banks and their small business borrowers are fundamentally different. The credit risks associated with these loans, and the manner in which these risks are shared between the bank and the borrower, are also fundamentally different.

Because small business borrowers are not publicly traded firms, publicly available information about the credit worthiness of these firms is not generated in securities markets or by the financial analysts that follow these markets. Traditionally, the main reason that a bank lender could gather either soft information (e.g., about the personal character of the entrepreneur) or hard information (e.g., about the value of loan collateral) about a small business' creditworthiness was to be located geographically close to that business. If an initial loan to this business performed, then a second and perhaps larger loan would be made and other financial services might be provided as well. In the process of repeated bank-borrower interactions, the bank's store of private information about the firm would naturally grow larger and more valuable. A borrower-lender relationship is nothing more than the sum of this private information: the bank is willing to extend more credit at perhaps more favourable rates as its information advantage over competing lenders grows, and the small businesses is more

likely to stay with this bank because other lenders without this store of private information (either because they are located further away from the small business borrower and/or they have not had any financial dealings with the small business borrower) suffer adverse selection problems that prevent them from offering similarly favourable loan terms.[25]

It can be difficult for large banks to profitably apply this traditional approach to gathering and exploiting information about small business creditworthiness. At large banks, retail banking units—which in the typical large U.S. bank include both consumer lending and small business lending—gain competitive advantage (e.g., reduced operating costs) via high-volume production processes and decision-making practices. These processes require the separation of marketing, risk analysis and customer service functions into silos that operate at various different organizational and geographic locations. This large-scale lending approach is antithetical to the way that smaller banks have traditionally acquired and analysed the private information central to building small business relationships.

Small business credit scoring provides a good illustration of this difference. In the 1990s, large U.S. commercial banks began to use the personal credit scores of entrepreneurs to assess the creditworthiness of the small businesses run by these entrepreneurs. This information-collection strategy is consistent with the high volume-based approach to retail banking: the bank makes a small fixed payment to acquire the credit score for each small business loan applicant and rejects the loan application if the credit score falls below a pre-determined threshold. This loan production function eliminates costly bank-borrower interactions and as a result allows banks to lend to small businesses that are located far away from the bank. If these loans are made in large enough volumes, the resulting diversification effects can greatly reduce idiosyncratic credit risk.

Over time, it has become abundantly clear that credit scoring adds value to the small business lending production functions at most banks; today, even small banks use personal credit scores to augment their traditional information collection and credit risk management processes. But the impact of credit

25. Whether or not interest rates decline over the course of a maturing bank-borrower relationship depends on the net effect of two phenomena: A rate-reducing effect as lender uncertainty about the borrower's credit risk declines, and a rate-increasing "hold-up" effect (Peterson and Rajan 1995) as lender private information creates switching costs for the borrower.

scoring on the incidence of credit risk—that is, who bears the risk—is not at all straightforward. My research with Dennis Glennon and Peter Nigro sheds light on both the subtle and not-so-subtle ways that credit scoring influences small business lending credit risk (DeYoung, Glennon and Nigro 2008).

We examined loans made to small businesses by U.S. commercial banks under the Small Business Administration (SBA) flagship 7(a) loan program. In this program, banks make loans to especially credit-constrained small businesses and, in the event of default, the SBA guarantees a portion of the unpaid loan principal. Our data included 29,577 loans to small businesses between 1984 and 2001, made by commercial banks of all sizes. We observed the calendar quarters in which each of these loans was originated, the calendar quarters in which any of these loans defaulted, whether the lending bank used small business credit scoring techniques, the geographic distance between the lending bank and the borrowing small business, and a large number of other control variables including bank size. With these data in hand, we used a discrete-time hazard model (Shumway 2001) to estimate the probability of SBA loan default. The model revealed three core associations in the data.

First, and not surprising, we found that greater borrower-lender distance was associated with a higher probability of loan default. On average, a doubling of borrower-lender distance increased the probability of loan default by 2.4% per quarter. This complies strongly with the traditional notion that collecting accurate information about creditworthiness becomes more difficult and more costly without close physical proximity between the bank and the potential small business borrower.

Second, holding borrower-lender distance constant, we found that loans made by credit scoring banks were substantially more likely to default than loans made by banks that did not use credit scores. On average, loans written by credit scoring banks were 22.7 percent more likely to default each quarter. This is consistent with the common sense notion that the traditional in-person lending approach generates better information about credit risk than arms-length credit scoring approaches. It is also consistent with the logical conclusion that, because credit scoring is a less expensive way to underwrite a small business loan, a credit scoring lender is able to make loans to riskier small businesses (with higher default probabilities and hence lower expected gross returns, all else equal) and remain profitable.

Third, by adding a right-hand side variable to capture the interaction of these two effects, we found that the default-increasing effect of borrower-lender distance diminishes for credit scoring banks. For small businesses that were located relatively close to the bank, credit scored loans defaulted substantially more often than non-credit scored loans. But when borrower-lender distance was considerably greater than average, credit scored loans defaulted less often than non-credit scored loans. There are two ways to interpret this result. On-the-one-hand, a hard-information-only lending approach like credit scoring might outperform traditional small business lending approaches in extreme low-information circumstances in which making and maintaining person-to-person contact is costly. On-the-other-hand, traditional small business lending techniques are poorly suited for making loans to small businesses located far away, and it seems far more likely that this result merely reflects the foolishness of the poorly run banks that attempt to do so.

So who bears the risk of small business lending? Our findings indicate that the incidence of credit risk is distributed across banks, at least at the margin, depending on the lending technology they choose. But these marginal effects are dwarfed by the increase in overall credit risk at for loans that carry taxpayer-backed guarantees: about one-in-seven of the loans in our sample of SBA 7(a) loans ended up defaulting, and the SBA had provided the lending banks with 80% loan guarantees on average. Whether or not this taxpayer subsidy is socially beneficial ultimately depends on the number of new, permanent jobs created by the small businesses that receive these subsidized loans.

4. Social capital and small business lenders

By letting credit bureaus like Equifax, TransUnion, or Experian do their information gathering for them, a bank is making the following explicit trade-off: it accepts high loan default rates caused by making loans based on incomplete information on borrower creditworthiness, but it incurs low operating costs by slashing the expenses associated with information gathering, credit analysis, and relationship building. Casual empiricism suggests that this trade-off is profitable for many large U.S. banks, which adopted this approach several decades ago and have continued to use it.

Is it possible for a bank to reduce its small business lending information costs and also reduce the rate at which its small business loans default? This seems like a free lunch—and as every economist knows, there is no such thing as a free lunch. I am investigating this question in ongoing research with Dennis Glennon, Peter Nigro and Kenneth Spong (DeYoung, et al. 2015). Indeed, we do not find evidence of a free lunch; we merely find that the price of lunch is substantially lower in some places than in others.

Anyone who has lived in both a big city and also in a small town knows that the following is true: in a big city you know very little about the lives of your neighbours and they know very little about yours. But in a small town it is easy to learn about the lives of your neighbours and (perhaps unfortunately) your neighbours seem to quickly learn a lot about you. Arguably then, small town bankers should have a natural information advantage over bankers in large cities: because small town bankers are essentially making loans to their neighbours, it should cost them relatively less to gather and analyse the information necessary to accept or reject a small business loan application. Moreover, in these high-information towns, lending efficiencies may also arise on the demand side of the market: when everyone in town knows you, a small town borrower is likely to default less often in order to avoid public shame.

These informational advantages may or may not result in lower small business default rates. For instance, a small town bank might choose to expand its portfolio of small business loans to include local businesses with relatively high defaults risk. The low cost of gathering information in these towns, coupled with the greater efforts potentially expended by locals to avoid business failure, may allow the bank to absorb additional credit risk without sacrificing profits.

To test these conjectures, we first need to identify geographic places where information on the creditworthiness of small businesses is either relatively expensive, or relatively inexpensive, to collect and analyse. We turn to the concept of "social capital," recently made popular by sociologist Robert Putnam in his book *Bowling Alone* (Putnam 2000). Social capital can be loosely described as shared experience, interaction, empathy or cooperation among individuals and groups that result in better actual or expected societal outcomes. The concept emphasizes the value of social networks.

For empirical purposes, researchers have constructed social capital indices by combining information on local voter turnout, local response rates to govern-

ment census questionnaires, and local participation in civic, religious, political, professional and labour organizations. For our study, we use the Social Capital Index posted by Rupasingha and Goetz (2008), which is based on a principal components analysis of 18 different indicators of social capital for all U.S. counties in 1990, 1997 and 2005. We merge these data with observations on 33,948 Small Business Administration 7(a) loans originated by small U.S. commercial banks (assets less than $1 billion) between 1984 and 2012.[26] We limit our focus to small banks, because these banks are highly likely to be using the traditional in-person data collection techniques for which the cost of information matters most. With these data in hand, we estimate a discrete-time hazard model (Shumway 2001) of SBA loan default probability.

Our main conjecture is that small business loans should be less likely to default in counties where social capital is high—that is, where bankers' costs of gathering and analysing information on small business creditworthiness is likely to be low and/or where borrowers' personal and social shame from defaulting on a small business loan is likely to be high. We find strong evidence consistent with this conjecture in our controlled econometric tests. A one-standard deviation increase in the Social Capital Index in the borrower's local market is associated with an estimated 9.5% lower probability of loan default. A one-standard deviation increase in social capital averaged across the borrower's and the lender's local markets is associated with an estimated 9.8% lower probability of loan default. Loans for which both the borrower and the lender are located in high social capital counties (those in the upper quartile of the Social Capital Index) defaulted an estimated 13.3% less often than other loans. Loans for which both the borrower and the lender are located in low social capital counties (those in the lower quartile of the Social Capital Index) defaulted an estimated 11.5% more often than other loans.

So who bears the risk of small business lending? Given that successful small businesses tend to create a disproportionate number of jobs in the U.S., cities and towns with low levels of social infrastructure—where small business loans default at higher than average rates—are likely to bear the risk through lower rates of job creation and slower economic growth.

26. We make the assumption that social capital is relatively persistent across time in most cities and towns.

5. Conclusions

In this essay, I have summarized the results from three relatively recent or ongoing research projects on small business lending in the U.S. Each of these studies illustrate that stronger relationships—either between the small business borrower and her bank lender, or between the small business borrower and other local persons and institutions—reduce the risk of small business lending. The three studies also offer some empirical estimates of incidence of small business credit risk across banks, borrowers, taxpayers and other members of society. Although none of these projects was conducted with the question of "Who takes the risks for funding SMEs?" in mind, each generates results and implications that may be useful for considering this question. Moreover, although each of these projects was conducted using data from U.S. banks, U.S. borrowers, and U.S. lending programs, the conclusions drawn from these projects are very likely germane for European finance and society. In both the U.S. and in Europe, bank credit is the lifeblood of small business success, and small businesses are crucially important for new job creation and the macroeconomic growth.

References

DeYoung, R., Glennon, D., and Nigro, P., 2008. Borrower-Lender Distance, Credit Scoring, and Loan Performance: Evidence from Informationally Opaque Small Business Borrowers, Journal of Financial Intermediation 17: 113-143.

DeYoung, R., Glennon, D., Nigro, P., and Spong, K., 2015. Small Business Lending and Social Capital: Are Rural Relationships Different?, CBE Research Paper 2012-1 updated version, University of Kansas.

DeYoung, R., Gron, A., Torna, G., and Winton, A., 2015 (forthcoming). Risk Overhang and Loan Portfolio Decisions: Small Business Lending Before and During the Financial Crisis, Journal of Finance.

Haltiwanger, J., 2014. The Decline in Business Dynamism in the U.S. University of Maryland lecture, http://econweb.umd.edu/~haltiwan/Cato_Haltiwanger_December_4_2014_revised.pdf

Peterson, M. A., and Rajan, R. G., 1995. The Effect of Credit Market Competition on Lending Relationships, Quarterly Journal of Economics 110: 407-443.

Putnam, R., 2000. Bowling alone: The collapse and revival of American community, Paperback edition. Simon & Schuster.

Rupasingha, A. and Goetz, S. J., 2008. US County-Level Social Capital Data, 1990-2005. The Northeast Regional Center for Rural Development, Penn State University, University Park, PA.

http://aese.psu.edu/nercrd/economic-development/for-researchers/poverty-issues/big-boxes/wal-mart-and-social-capital/social-capital

Shumway, T., 2001. Forecasting Bankruptcy More Accurately: A Simple Hazard Approach, Journal of Business 74: 101-124.

U.S. Bureau of Labor and Statistics, 2015. Business Employment Dynamics, Establishment Age and Survival Data, Tables 1 and 5, http://www.bls.gov/bdm/bdmage.htm

U.S. Small Business Administration, 2014. Frequently Asked Questions, Office of Advocacy and Small Business Data, Washington, DC. https://www.sba.gov/sites/default/files/FAQ_Sept_2012.pdf