

## Are firms credit constrained? Answers from a Swedish credit registry\*



By Niklas Amberg (Sveriges Riksbank), Tor Jacobson (Sveriges Riksbank),  
Vincenzo Quadrini (USC Marshall School of Business), and Anna Rogantini Picco (Sveriges Riksbank)

*Keywords: Credit constraints; uncertainty; credit lines; precautionary behavior.*

*JEL codes: D22, E44, G21, G32.*

*Are credit constraints an important and widespread phenomenon in the corporate sector? In a recent working paper (Amberg et al., 2023), we use an administrative Swedish credit register to document that firms throughout the size distribution—from micro-sized enterprises to the largest firms in the economy—have access to fairly large amounts of unused and reasonably priced borrowing capacity via credit lines. This implies that they are unconstrained according to conventional definitions of credit constraints. We argue, however, that the conventional view that credit constraints are widespread and important can be reconciled with the empirical facts outlined in the paper if we adopt a dynamic conception of credit constraints. In this policy brief, we summarize the main empirical facts from our paper and explain how they can be reconciled with the view that credit constraints matter.*

---

\*The opinions expressed in this article are the sole responsibility of the authors and should not be interpreted as reflecting the views of Sveriges Riksbank.

Credit constraints are a widespread impediment to firms' ability to develop and grow, according to a large literature in economics and finance (see, for example, Campello et al., 2010, and Banerjee and Duflo, 2014). The view is, broadly speaking, that firms have access to profitable investment opportunities, but cannot take advantage of them because they are unable to raise sufficient amounts of external finance or because the cost of doing so is excessively high. Small firms are typically thought to have a harder time obtaining external finance and therefore to be particularly hampered by credit constraints (see, for example, Gertler and Gilchrist, 1994, and Chodorow-Reich, 2014). A large literature argues, moreover, that credit constraints are important not only for understanding the behavior and development of firms at the microeconomic level, but also for understanding macroeconomic dynamics, such as the transmission of monetary policy to the real economy.

How well does the conventional view about credit constraints fit basic empirical facts about firms' access to credit? In a recent working paper, we use an administrative Swedish credit register—comprising nearly every corporate loan extended by Swedish banks at monthly frequency—to take a closer look at this question (Amberg et al., 2023). Our focus is on credit lines, a type of bank loan in which the bank sets a credit limit for the firm and then allows the firm to borrow as much as it wants as long as it stays below the limit. When obtaining a credit line, the firm pays a fixed fee for the maintenance of the facility as a whole, but interests only on the amount that it is actually using. We focus on credit lines partly because they account for the majority of banks' commercial lending in most developed economies, and partly because their structure—where one directly observes the limit and the used amount separately—is quite informative when studying credit constraints.

### Five stylized facts about firms' access to and use of credit lines

In the paper, we document five stylized facts about firms' access to and use of credit lines, summarized below and illustrated in Figures 1 and 2.

1. *Credit lines are widespread and sizable.* Almost half of all non-financial firms in Sweden have at least one credit line from a bank. Hence, a substantial share of the non-financial firms in the economy are able to draw bank credit on demand and without notifying the bank in advance. Conditional on having a credit line, the committed amount on average equals 16 percent of the firm's net assets, or more than five times its monthly labor costs. Credit lines are thus not only common, but also provide firms with an economically significant amount of borrowing capacity.
2. *Credit lines are not heavily used.* The average utilization rate on credit lines—defined as the ratio of drawn to committed amount—is only 26 percent, and the undrawn amount on average equals more than 10 percent of the firm's assets, or almost three times its monthly labor costs. The average firm could thus significantly expand its operations by increasing the utilization of the credit it has already been granted.
3. *Credit lines are not prohibitively expensive.* The average interest rate paid on the drawn amount of credit lines is three percent during our sample period (2019 and onwards). The rate decreases over the size distribution, going from 4.5 percent in the bottom decile to 2.2 percent in the top percentile. Credit-line interest rates are thus much lower than the return on equity for most firms, which means that firms with access to credit lines face low marginal costs of borrowing.
4. *The prevalence and size of credit lines do not vary greatly over the size distribution.* The share of firms having at least one credit line hovers between 40 and 50 percent throughout the size distribution. The average size of credit lines—measured by the ratio of committed amount to net assets among firms that have at least one credit line—declines mildly over most of the size distribution, going from 17 percent in the bottom decile to 14 percent in the second largest size bin. The exception is the top percentile, where it is markedly lower at nine percent. Firms throughout the size distribution thus have access to economically meaningful amounts of borrowing capacity via credit lines.

5. *Credit-line utilization rates increase with firm size.* The utilization rate on credit lines is strongly increasing over the size distribution, going from 20 percent in the bottom to over 40 percent in the top. Conversely, the average ratio of undrawn amounts to assets decreases strongly over the distribution, going from 13 percent in the bottom to four percent in the top. The smallest firms thus have almost twice as much unused credit-line borrowing capacity as large firms (measured relative to assets and conditional on having a credit line).

Figure 1: Firms' access to and use of credit lines

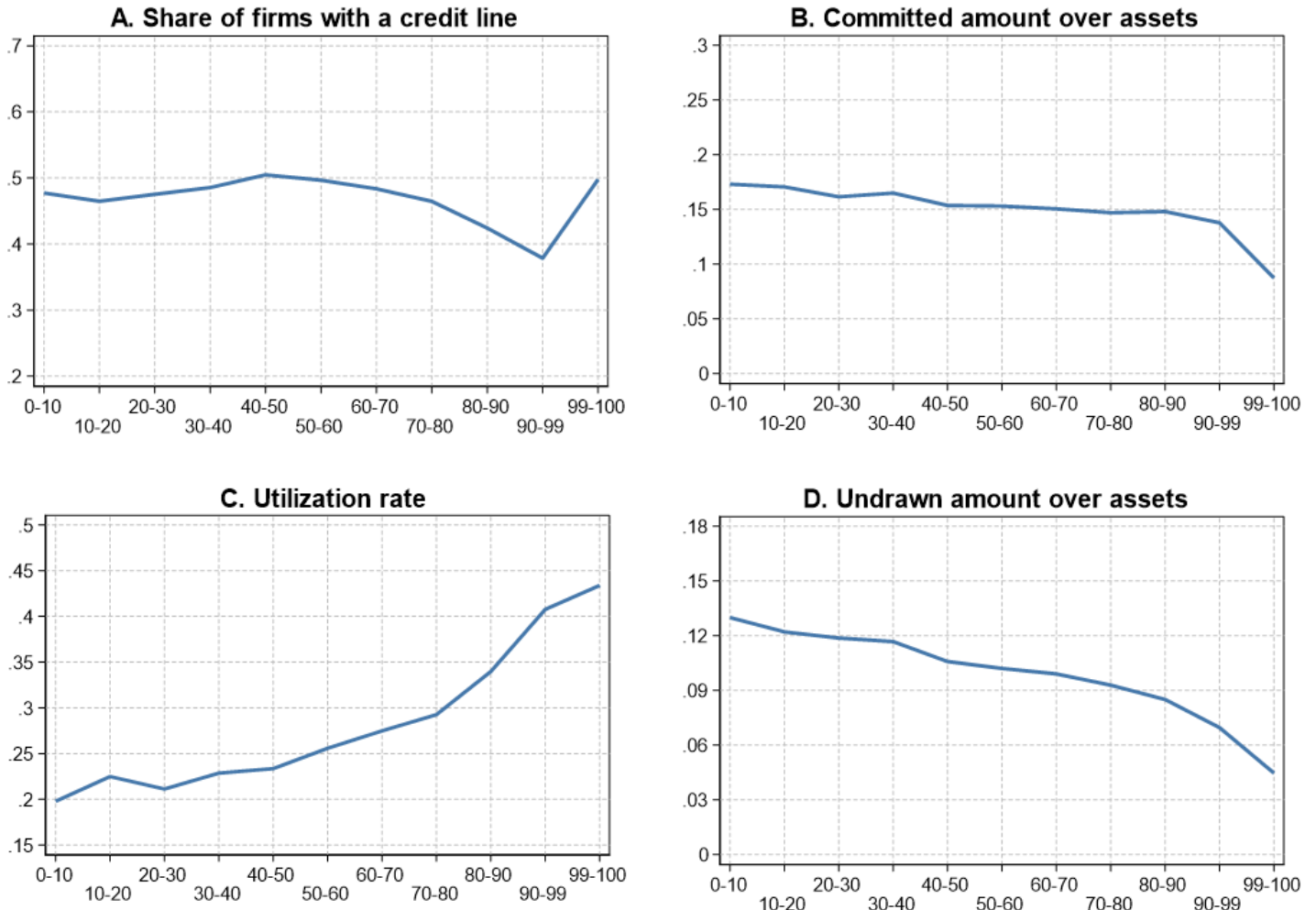
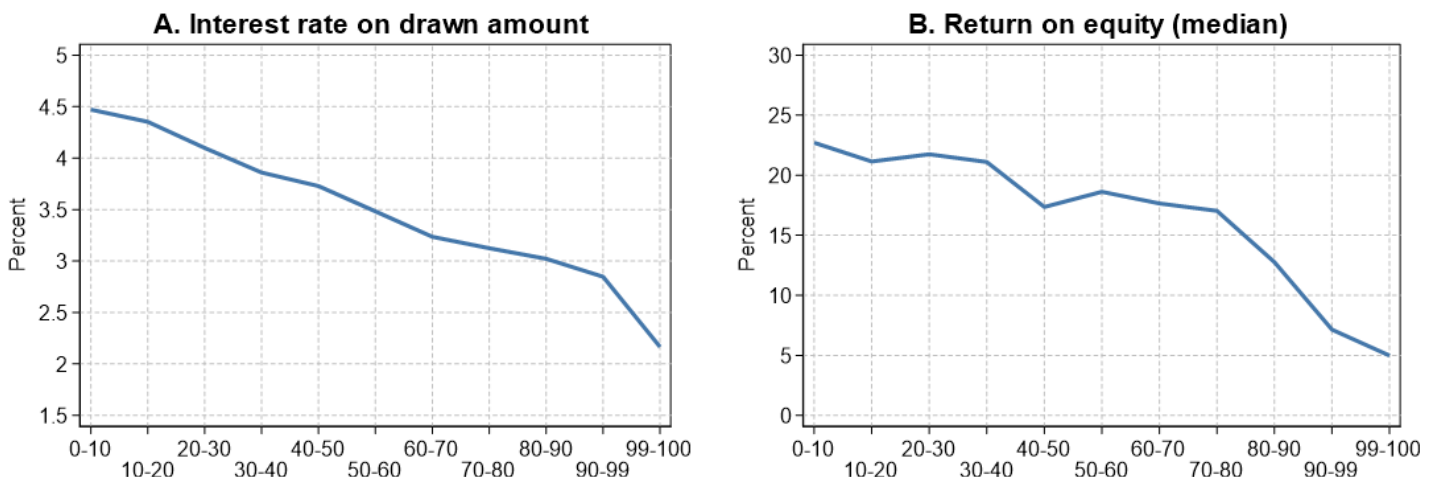


Figure 2: The cost of credit lines



## Are credit constraints really that widespread, then? Yes, they are!

Firms with access to meaningful amounts of unused borrowing capacity via credit lines—and they are numerous, as we have just seen—are thus not constrained in the traditional sense of the term, because they can increase borrowing at will, and the interest they pay when doing so is typically way below their return on equity. Should we then conclude that credit constraints are actually not widespread? Should we discard the conventional view, according to which credit constraints are an important factor shaping the economy at the microeconomic as well as the macroeconomic level? - No, we shouldn't! We argue- that the low levels of credit-line utilization we observe in the data in fact can be a sign of *tight* credit constraints. To reach this conclusion, though, we must adopt a *dynamic* concept of credit constraints that extends the *static* concept implicit in the conventional view. We call this concept *dynamic credit constraints*.

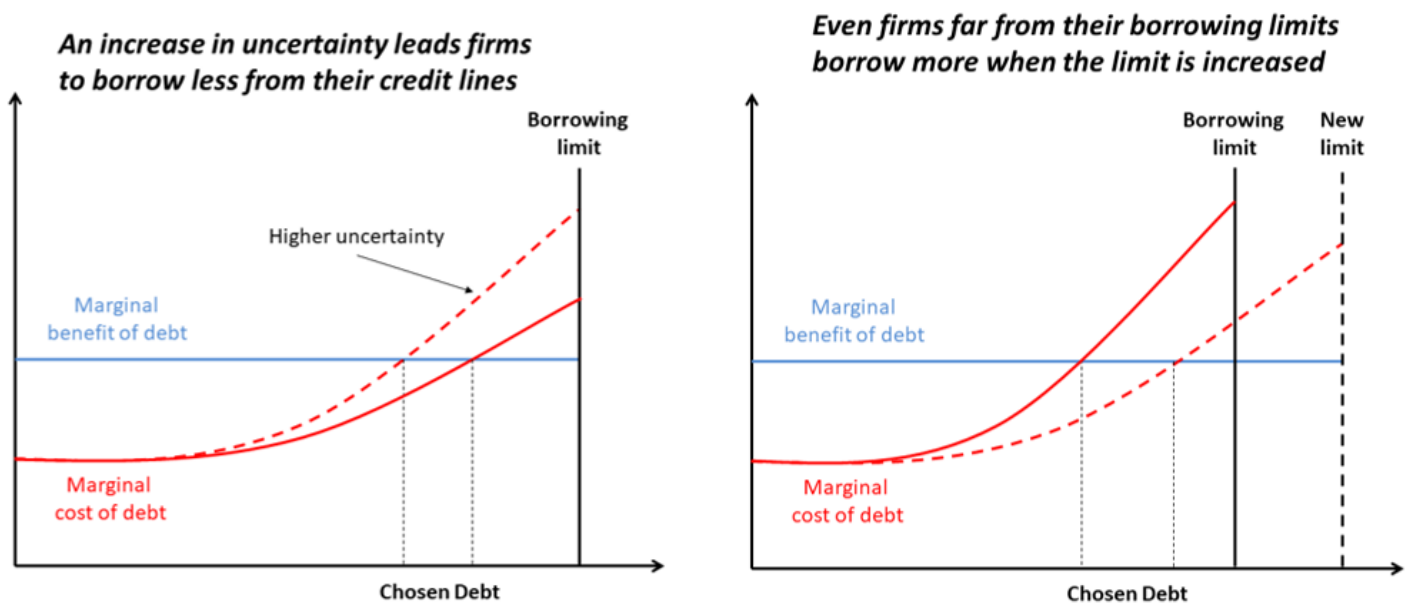
We illustrate the idea of dynamic credit constraints in the context of a simple yet fully dynamic model of a firm's borrowing decision under limited commitment. In the model, a firm faces uncertainty about future productivity as well as future access to external finance. Therefore, it is exposed to the risk of becoming illiquid, which is costly due to financial frictions. This creates a trade-off in which the firm weighs the benefit of borrowing more today against the higher expected cost of illiquidity tomorrow. Since the expected distress cost increases with uncertainty, firms that face higher uncertainty optimally choose to borrow less (and utilize less their credit capacity). Lower borrowing impacts hiring and production.

An indicator of credit constraints in our model is the *expected* marginal cost of borrowing, which is equal to the interest rate plus the marginal expected distress cost. This is a dynamic concept because it incorporates the expected cost of binding credit constraints in the future. Importantly, our concept implies that a firm may be unconstrained in a traditional static sense but at the same time constrained in a dynamic sense—this is the case for firms that are able to borrow more at reasonable interest rates today, but choose not to because the possibility of distress costs incurred in the future would rise. Large unused borrowing capacity is for such firms, therefore, a consequence of *tight* dynamic credit constraints rather than a sign that they are financially unconstrained.

How do we know if a firm is credit constrained? To determine whether a firm is *statically* constrained is not too difficult: if the firm has access to reasonably priced unused borrowing capacity via credit lines—after taking into account covenants and other restrictions on the firm's ability to actually use it—the firm is not statically constrained. Assessing whether a firm is dynamically constrained, however, is more challenging. This is because we do not observe the expected marginal cost of borrowing in the data. Fortunately, our model has several testable implications that help us circumvent this problem: while we cannot directly observe if a firm is *dynamically* constrained, we can observe whether it *behaves* as a dynamically constrained firm according to the model.

More specifically, our model has two main predictions about the behavior of a dynamically constrained firm. First, the firm chooses to borrow less and to reduce real activity when its future access to external finance and productivity (and thereby cash flow) is more uncertain. The reason is that higher uncertainty generates higher risk of illiquidity in the future. Second, a dynamically constrained firm increases borrowing in response to an increase in its credit limit, *even if the firm is far from the limit at the time of the increase*. The reason is that, with a higher and persistent credit limit, any given level of borrowing becomes less risky. We illustrate these testable implications in Figure 3.

Figure 3: The behavior of a dynamically constrained firm



We find strong support for both predictions in our credit-registry data. First, we show that firms borrow less from their credit lines when their cash flows are more uncertain and when their credit lines approach maturity (and therefore are riskier to use). Second, we find that credit-line borrowing increases in response to limit increases, and while the response is stronger for firms nearer the limit, firms respond even when their utilization is low at the time of the increase. More specifically, following a one-dollar increase in the committed amount on a firm's credit lines, borrowing increases by 71 cents for the firms nearest the limit, by 25 cents in the middle of the distribution, and by 14 cents for the firms furthest from the limit. That borrowing responds to limit changes for firms far from their limits is puzzling from the viewpoint of static conceptions of credit constraints, but follows naturally from our dynamic conception.

## Conclusion

The main message of our paper is that credit constraints are likely to be an important and widespread phenomenon in the corporate sector, despite the apparent contradiction between the basic empirical facts about firms' access to credit and conventional conceptions of credit constraints. In demonstrating the importance of the interaction between uncertainty and financial frictions for firms' borrowing decisions (see also Favara et al., 2021, and Alfaro et al., 2023), our paper highlights a key channel through which the real economy is likely to be affected by the uncertainty generated by events such as the COVID-19 pandemic, the Russian assault on Ukraine, the collapse of the Silicon Valley Bank, and the debt ceiling standoff in the U.S. ■

## References

- Alfaro, Ivan, Nicholas Bloom, and Xiaoji Lin. 2022. "The Finance Uncertainty Multiplier." NBER Working Paper No. 24571.
- Amberg Niklas, Tor Jacobson, Vincenzo Quadrini, and Anna Rogantini Picco. 2023. "Dynamic Credit Constraints: Theory and Evidence from Credit Lines," Sveriges Riksbank Working Paper No. 422.
- Banerjee, Abhijit V., and Esther Duflo. 2014. "Do Firms Want to Borrow More? Testing Credit Constraints Using a Directed Lending Program." *Review of Economic Studies*, 81(2): 572–607.
- Campello, Murillo, John R. Graham, and Campbell R. Harvey. 2010. "The real effects of financial constraints: Evidence from a financial crisis." *Journal of Financial Economics*, 97(3): 470–487.
- Chodorow-Reich, Gabriel. 2014. "The Employment Effects of Credit Market Disruptions: Firm-level Evidence from the 2008–9 Financial Crisis." *Quarterly Journal of Economics*, 129(1): 1–59.
- Favara, Giovanni, Janet Gao, and Mariassunta Giannetti. 2021. "Uncertainty, access to debt, and firm precautionary behavior." *Journal of Financial Economics*, 141(2): 436–453.
- Gertler, Mark, and Simon Gilchrist. 1994. "Monetary Policy, Business Cycles, and the Behavior of Small Manufacturing Firms." *Quarterly Journal of Economics*, 109(2): 309–340.

## About the authors

**Niklas Amberg** is a senior research economist at Sveriges Riksbank. He holds a B.Sc. and a Ph.D. in economics from the Stockholm School of Economics and has previously been a visiting researcher at the University of California at Berkeley. Most of Niklas' research uses large-scale registry data on individuals, firms, and banks to address questions in applied microeconomics and financial economics. His research has been published in leading economics journals like the *Journal of Political Economy*, *American Economic Review: Insights*, and the *Journal of the European Economic Association*.

**Tor Jacobson** is a senior economist at Sveriges Riksbank. He holds a Ph.D. in statistics from Uppsala University and received an MPhil in economics from the University of Cambridge. Some of his research has been published in the *Journal of Political Economy*, *Econometrica*, the *Journal of Economic and Business Statistics*, and the *Journal of the European Economic Association*.

**Vincenzo Quadrini** is James McN. Stancill Chair in Business Administration and Professor of Finance and Business Economics at USC Marshall School of Business. He received his M.A. in economics from Coriipe-Piemonte in Turin, Italy, and his Ph.D. in economics from the University of Pennsylvania. Prior to his current position, he was an assistant professor at New York University's Stern School of Business, Duke University, and Pompeu Fabra University. His research is on Macroeconomics, International Economics, Financial Contracts and Entrepreneurship. He is a Research Associate at the National Bureau of Economic Research and a Research fellow at the Center for Economic Policy Research. He has published articles in several leading economic journals, including *American Economic Review*, *Journal of Political Economy*, *Review of Economic Studies*, *Journal of Monetary Economics* and *Journal of Economic Theory*.

**Anna Rogantini Picco** is an Economist at Sveriges Riksbank. She holds a Ph.D in economics from the European University Institute and an MPhil in economic research from the University of Cambridge. She has held visiting positions at the Federal Reserve Bank of Chicago and the London School of Economics. She is broadly interested in macroeconomics, with a specific focus on fiscal and monetary policy and their heterogeneous effects.

## SUERF Publications

Find more **SUERF Policy Briefs** and **Policy Notes** at [www.suerf.org/policynotes](http://www.suerf.org/policynotes)



**SUERF** is a network association of central bankers and regulators, academics, and practitioners in the financial sector. The focus of the association is on the analysis, discussion and understanding of financial markets and institutions, the monetary economy, the conduct of regulation, supervision and monetary policy.

SUERF's events and publications provide a unique European network for the analysis and discussion of these and related issues.

**SUERF Policy Briefs (SPBs)** serve to promote SUERF Members' economic views and research findings as well as economic policy-oriented analyses. They address topical issues and propose solutions to current economic and financial challenges. SPBs serve to increase the international visibility of SUERF Members' analyses and research.

The views expressed are those of the author(s) and not necessarily those of the institution(s) the author(s) is/are affiliated with.

All rights reserved.

### **Editorial Board**

Ernest Gnan  
Frank Lierman  
David T. Llewellyn  
Donato Masciandaro  
Natacha Valla

SUERF Secretariat  
c/o OeNB  
Otto-Wagner-Platz 3  
A-1090 Vienna, Austria  
Phone: +43-1-40420-7206  
[www.suerf.org](http://www.suerf.org) • [suerf@oenb.at](mailto:suerf@oenb.at)