

Do Credit Supply Shocks Constrain Employment Growth of Small and Medium-Sized Enterprises?

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Summary:

Small and medium-sized enterprises (SMEs) made outsized contributions to net employment growth during the pandemic recession and recovery. However, credit conditions have tightened significantly during the past year and might hinder growth for small firms going forward. Using data on bank lending to small businesses and employment growth, we estimate that a tightening in bank credit supply of 1 percentage point is associated with an 11 percent decline in SMEs' net job creation rate. This estimate indicates that a bank credit tightening about one-third the size of the tightening observed during the Great Recession would reduce overall net job creation by approximately 285,000 jobs between March 2023 and March 2024.

Key findings:

1. SMEs made outsized contributions to net employment growth during the pandemic recession and recovery (March 2020–March 2022).
2. Much of this contribution came from small firms with fewer than 50 employees.
3. During the period 2007–12, we estimate that a tightening in bank credit supply of 1 percentage point leads to an 11 percent decline in the net job creation rate of SMEs.
4. Our estimates indicate that if current bank credit tightening were a third of what was observed during the Great Recession, then 285,000 jobs in SMEs would be at risk between March 2023 and March 2024.

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Keywords: small and medium-sized enterprises, employment, credit supply, bank lending

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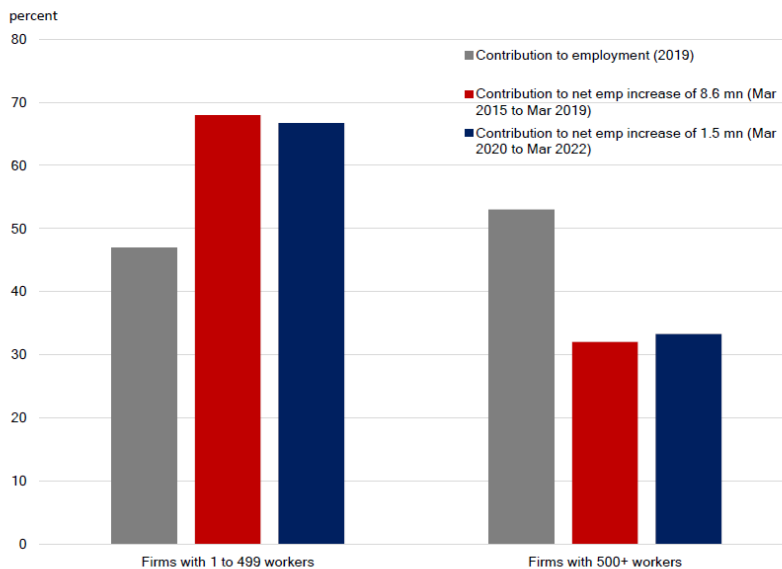
1 Introduction

Small and medium-sized enterprises (SMEs) made significant contributions to the employment recovery following the pandemic recession. However, credit conditions have tightened significantly during the past year and might hinder growth for small firms going forward. Historically, tighter credit conditions have been associated with slower employment growth for small firms as these firms are relatively more reliant on bank credit as a source of external finance. This article describes the contribution of small firms to employment growth during the recent recovery and estimates the potential impact of tighter credit conditions on employment growth for these firms.

2 The contribution of small firms to employment growth during and after the pandemic

SMEs, which we define as firms with fewer than 500 workers, made an outsized contribution to net employment growth during the pandemic recession and recovery. Between March 2020 and March 2022, employment grew by 1.5 million workers, on net. SMEs were responsible for 67 percent of this employment growth, whereas their share of total employment was 47 percent (figure 1). This contribution from SMEs was similar to that from the economic expansion from March 2015 to March 2019, when SMEs contributed 68 percent of employment growth.

Figure 1: Contribution to Employment Growth by Firm Size

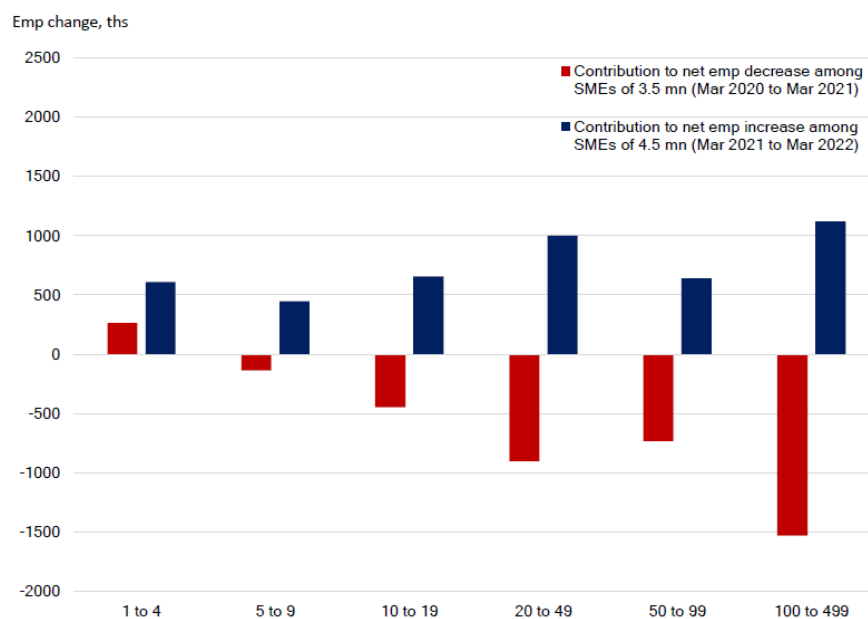


Source: Business Employment Dynamics (US Bureau of Labor Statistics) and Business Dynamic Statistics (US Census Bureau)

The contribution of SMEs to net job creation during the pandemic recession and recovery differed by firm size. Overall, SMEs offset their loss of more than 3.5 million workers

during the pandemic recession by their gain of 4.5 million jobs in the subsequent year of recovery. The sizeable contribution of SMEs to net job creation during these two years is largely thanks to the resilience of small firms. Small firms—those with fewer than 50 employees—gained nearly 1.5 million workers, on net, between 2020 and 2022. In fact, the smallest firms, with between one and four workers, even experienced a slight increase in employment, while firms with between five and nine workers contracted only modestly during the recession. Meanwhile, medium-size firms, with 50 to 499 workers, lost about 500,000 jobs, on net, in the recession and recovery (figure 2). Some of these differences in net employment growth between 2020 and 2022 might be due to the impact of fiscal support provided during the pandemic, such as the Paycheck Protection Program (Autor et al. 2022).

Figure 2: Employment Growth of SMEs by Firm Size



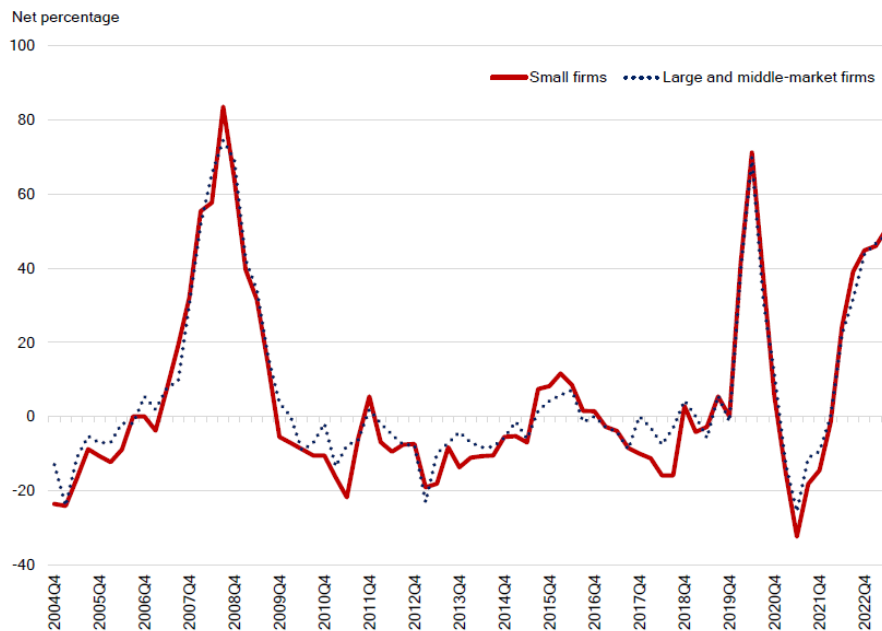
Source: Business Employment Dynamics (US Bureau of Labor Statistics) and Business Dynamic Statistics (US Census Bureau)

3 A tightening of credit conditions in recent quarters

While SMEs supported overall employment growth after the pandemic recession, a tightening in credit conditions might constrain the ability of small firms to continue to grow. Starting in March 2022, the Federal Open Market Committee (FOMC) of the Federal Reserve began a sequence of interest rate increases that have led to tightened financial conditions. According to the Senior Loan Officer Opinion Survey (SLOOS) conducted by the Federal Reserve, banks began tightening lending standards in the third quarter of 2022 and continued to tighten standards in the subsequent quarters (figure 3). Similarly, according to the [August 2023 Banking Conditions Survey from the Federal Reserve Bank of Dallas](#), banks in the Eleventh District reported tightening credit standards and expected business activity to deteriorate over the coming six months. Tighter lending standards imply that firms are more likely to be denied

loan applications and that any new loans they receive are likely smaller and more expensive. In fact, the [National Federation of Independent Businesses \(NFIB\) survey](#) reported that the net percent of firms reporting that it was harder to get a loan (compared to the percent of firms reporting that it was easier to get a loan) was 6 percent in July 2023, and a net 23 percent of business owners reported paying a higher interest rate on their most recent loan.

Figure 3: Net Percentage of Domestic Banks Tightening Standards for Commercial and Industrial Loans



Note: Small firms are defined as firms with less than \$50 million revenue in yearly sales. The net percentage of banks tightening lending standards on commercial and industrial loans is the difference between the percentage of banks that report tightening lending standards and the percentage of banks that report easing lending standards in any given quarter.

Source: Federal Reserve Board Senior Loan Officer Opinion Survey

This tightening in credit conditions represents a challenge for smaller firms because they rely heavily on banks for external financing. According to the [2023 Small Business Credit Survey](#)—an annual survey of firms with fewer than 500 employees—firms reported that banks constituted their main sources of financial services.

4 What are the real effects of a credit contraction on small businesses?

To gauge the potential implications of the recent credit tightening for employment growth, we explore the historical relationship between credit supply shocks and the net job creation rate for SMEs and extrapolate this relationship to current times. Our work builds on studies that explore the relation between the availability of bank loans during the Great Recession and employment at SMEs. Chodorow-Reich (2014) shows that the credit contraction induced by the bankruptcy of Lehman Brothers lowered employment at firms with fewer than 1,000

workers in the following year. Siemer (2019) finds that external financing constraints, which impair a firm’s ability to invest and grow, have a much more sizeable effect on employment growth in small firms (with fewer than 50 employees) relative to large firms (with more than 500 employees). Greenstone et al. (2020) and Davis and Haltiwanger (2021) show that credit supply shocks are associated with declines in employment of firms with fewer than 20 employees and the employment share of young firms, respectively. Our article draws on these studies to estimate bank credit supply shocks and relate them to the net job creation rate at SMEs and large firms.

We start by measuring credit supply shocks during the period between 2007 and 2012 following the methodology of Greenstone et al. (2020) and Davis and Haltiwanger (2021). Specifically, using annual data on bank lending to small firms at the bank by county level from the Community Reinvestment Act (CRA), we estimate a statistical model for each year that accounts for both supply- and demand-side forces influencing growth in lending. This model allows us to extract the “exogenous” component of loan volume growth that arises from the supply side of banks’ lending decisions.^{1,2} The resulting bank-by-county credit supply shocks are then aggregated to the state level by using the information on the share of lending accounted for by each active bank in the county and the share of the population accounted for by each county in the state. Annual net employment growth between 2007 and 2012, also at the state level, is obtained from the Census Bureau’s Business Dynamic Statistics (BDS) for both SMEs and large firms (with 500 or more employees).

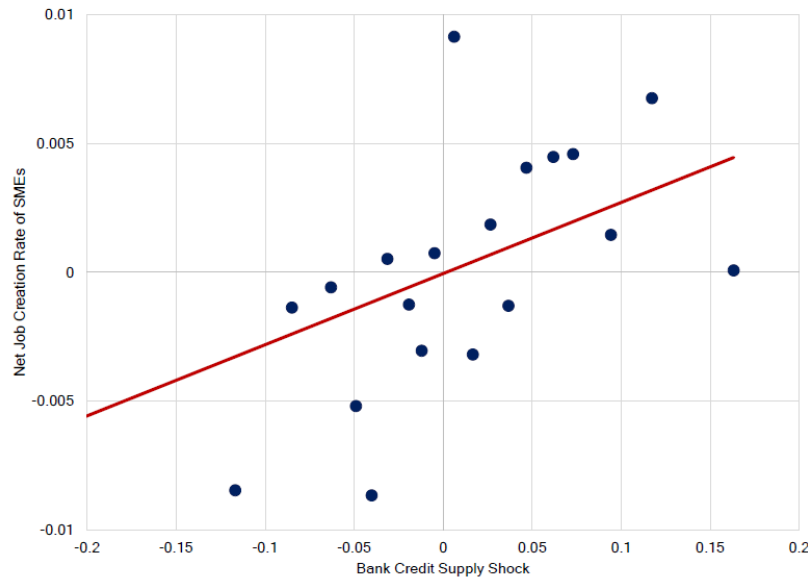
Across states and over time, we find that negative credit supply shocks to small business lending are associated with negative job creation rates for SMEs. We estimate a statistical model using state-by-year data that tests the relationship between bank credit supply shocks and the net employment growth of SMEs. Figure 4 summarizes the relationship in a binned scatter plot, with the red line in the graph representing the estimated slope of the relationship between credit supply shocks and the net job creation rate. The positive slope

¹ The CRA requires banks that have assets greater than \$1 billion to report annually on their small business lending at the county level. According to Greenstone et al. (2020), CRA banks accounted for more than 80 percent of small business lending in 2007.

² The credit supply shock is constructed annually by interacting banks’ county market shares with the change in their national lending that arises from supply factors rather than those stemming from demand. First, we estimate a model where bank by county by year changes in small business lending are regressed on county by year and bank by year fixed effects. The estimated county by year fixed effects account for time-varying changes in credit demand, while the estimated bank by year fixed effects account for time-varying changes (shocks) in bank-specific credit supply. Second, we obtained annual county-level bank credit supply shocks by aggregating the bank-specific credit supply shocks to the county level using each bank’s market share of small business lending in the county as weights. Finally, county by year bank credit supply shocks are further aggregated to the state by year level using county population as weights.

indicates that negative small business lending credit supply shocks are associated with a lower net job creation rate by SMEs.

Figure 4: SME Net Job Creation Rate versus Credit Supply Shock (2007–12)



Source: Business Dynamics Statistics (US Census Bureau), Community Reinvestment Act data, and authors' calculations

In table 1, we show that the relationship between bank credit supply shocks and the net job creation rate is statistically significant only for SMEs. The results of our statistical model indicate that a 1 percentage point tightening of credit supply is associated with an 11 percent decline in the net job creation rate of SMEs. Meanwhile, the effect is smaller and statistically insignificant when we consider the net job creation rate of large firms. This result is not surprising given that large firms are less bank-dependent and better able to grow their businesses by issuing bonds and equity in public debt markets. This result echoes that of Chodorow-Reich (2014), who finds no effects of the bank credit contraction following Lehman on employment at larger firms (more than 1,000 workers) or at firms with access to the bond market.

Table 1: Impact of Bank Credit Supply Shocks on Net Job Creation Rates

	Net Job Creation Rate	
	(1) SMEs	(2) Large Enterprises
Bank credit supply shock	0.0249** (0.0115)	0.0136 (0.0115)
Fixed effects	state + year	state + year
Obs.	306	206
R-squared	0.81	0.63

Source: Business Dynamics Statistics (US Census Bureau), Community Reinvestment Act data, and authors' calculations

To extrapolate these estimates to current times, we conduct the following thought experiment. Our analysis suggests that the estimated credit supply declined by 3 percentage points between 2008 and 2010. Relative to the Great Recession, banks are now in better financial positions, with higher levels of liquidity and capital and less credit risk on their balance sheets. We, therefore, assume that the magnitude of the credit supply shock today is about one-third of what it was during the Great Recession, or 1 percentage point. Arguably, our assumption is conservative given that figure 3 shows a tightening of credit standards today that is more than one-third that of the Great Recession. If employment responds to the current credit tightening with the same elasticity that we estimated above, we can infer that the current tightening would reduce the SMEs' net job creation rate by 11 percent in the following year. Moreover, given that the SMEs' net job creation rate was 3.7 percent from March 2022 to March 2023, our thought experiment implies that a credit contraction of the magnitude considered could reduce job creation by 285,000 jobs between March 2023 and March 2024.³ In terms of magnitude, such a contraction would represent an 11 percent reduction in the monthly pace of job growth, assuming that net job growth had been reduced by 24,000 jobs per month between March 2023 and August 2023.⁴ It is worth noting that if the credit tightening lasted longer than it did during the Great Recession, job losses would be more substantial.

5 Conclusion

Given the reliance of smaller firms on banks, these firms might experience slower growth during periods of tighter credit conditions. Thus, the tightening of bank credit conditions during the past year might hinder the ability of smaller firms to support employment growth as they did during the recovery from the pandemic. Using statistical models to estimate bank credit supply shocks and to assess their historical relationship to the net job creation rates for SMEs, we estimate that the recent credit contraction could induce an economically meaningful decline in overall net job creation.

What are the broader implications of our findings? A slowdown in SME employment growth might have important consequences in the long run, as innovation and competition are key for continued technological progress and economic growth. Studies show that new firms and existing small firms have made outsized contributions to innovation (Audretsch 2002, Akcigit and Kerr 2018) and push larger firms to innovate by increasing competitive pressures. Such firms often rely on bank financing. In recent decades, the development of secondary

³ In this exercise, we compare what employment would be if SMEs were to maintain a 3.7 percent net job creation rate as in the previous year to what it would be if SMEs had a $3.7 \times (1 - 0.11)$ percent net job creation rate as a result of tightening (that is, a net job creation rate lower by 11 percent as shown in the calculation).

⁴ Net employment growth has averaged 189,000 per month between March and August 2023. Assuming that the credit supply shock reduced employment growth by 24,000 per month during this period, net employment growth was reduced from 213,000 ($189 + 24$) to 189,000, which is an 11 percent reduction.

markets for certain types of intangible assets such as patents has enabled innovating firms to increase their share of debt financing, including bank loans (Loumioti 2012 and Mann 2018). Furthermore, the removal of bank branching restrictions in the 1980s and 1990s has prompted banks to enter new markets, boosted loan supply, and spurred innovation, particularly among small and private firms (Chava et al. 2013 and Cornaggia et al. 2015).

Thus, if the current credit contraction were to worsen the availability of external financing to young and small innovative firms (Kerr and Nanda 2015), including through banks, this contraction would reduce their growth and possibly exacerbate the recent trend of declining business dynamism (Decker et al. 2016, Akcigit and Ates 2023), with negative consequences for productivity growth. Indeed, a recent study, presented at the Jackson Hole Symposium (Ma and Zimmermann 2023), provides empirical evidence on the persistent decline in innovation in response to tighter monetary policy. How much of this persistent decline is the result of the negative effects of bank credit supply shocks on entrants and SMEs is yet to be understood.

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