# Bank Lending and Worker Reallocation in the Great Recession*

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**Abstract**

We examine the impact of credit constraints on firm-level borrowing and worker flows during the Great Recession. Our data includes all Danish workers, firms, and banks. We find that small firms with less healthy banks experienced a larger credit reduction. However, only for small-young firms, did credit constraints have an impact on employment growth. Credit constraints explain at least 30% of the total employment reduction for small-young firms in the Great Recession. We also show that early in the crisis, credit-constrained low productive firms primarily separated low-skilled workers. In contrast, credit constraints affected high-skilled workers during the recovery period.

*Keywords:* Labor market flows, poaching, financial constraints, firm dynamic
*JEL:* E24, E32, E44, J63

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## 1. Introduction

The Great Recession of 2008-09 was one of the most severe economic downturns in modern history, with far-reaching consequences for individuals and businesses alike. Among the key factors that contributed to this crisis was the tightening of credit markets, which in part made it difficult for firms to access the financing they needed to maintain operations and invest in growth. But what was the impact of these credit constraints on worker reallocation, and which firms bore the brunt of the fallout?

In this paper, we examine the role of credit constraints on aggregate worker flows in the Great Recession. Using Danish data on firm-bank connections, we exploit that some banks were less healthy at the onset of the crisis. Less healthy banks reduced their total lending more than healthy banks and this differential loan reduction mainly hit loan growth in small and young firms. Combining firm-level borrowing with firm data and monthly worker flows, we then show that the direct effect of tightened credit supply explains a considerable amount of the employment losses for the small-young firms, and that this effect was persistent for several years.

Focusing on the small-young firms, our matched firm-bank-worker data enables us to address questions that have not been fully addressed in the literature. For example, are the effects of tightened credit cleansing, such that primarily less productive firms reduce employment? Do credit-constrained firms excessively separate workers to nonemployment? Do tightened credit constraints at the firm level affect skilled and unskilled workers equally?

Our contribution to the literature is three-fold. First, we analyze whether tightened credit constraints are cleansing. We find a short-run cleansing effect of credit constraints in the sense that it was primarily low productive firms that reduced employment in the first year of the crisis. Second, we separate employment flows into flows to and from nonemployment and job-to-job transitions and show that credit restrictions initially in the Great Recession increased separations to nonemployment, but later on also caused a slow recovery in employment growth due to lower hiring of workers from other firms. Third, we consider how credit constraints at the firm level affected workers with different skills. We show that early in the crisis, the credit-constrained low productive firms primarily separated low-skilled workers. In contrast, credit constraints affected high-skilled workers during the recovery period.

We are not the first to analyze the effect of tightened bank credit on employment. There is a growing literature exploiting cross-sectional differences in bank health at the onset of the Great

Recession to estimate the effect of credit on employment.[1] Most studies find significant employment effects for small and medium-sized firms. Notably, Siemer (2019) finds – in addition to small firms being more affected by credit constraints than large firms – that the differential effect of credit constraints is even larger between young and mature firms. Unlike most of the previous literature, Greenstone *et al.* (2020) study the aggregate employment effect of the tightened lending in the US during the Great Recession and find no effect on small business lending on employment growth. However, expanding on Greenstone *et al.* (2020), Davis and Haltiwanger (2021) find that there are aggregate employment effects for small-young firms in the US. The larger employment effects among small-young firms are consistent with them facing larger credit constraints.

We observe the population of firm-bank relationships and classify banks as healthy or less healthy based on their loan-to-deposit ratio (LTD) being above or below the median at the onset of the crisis. This is similar to the approach in Jensen and Johannesen (2017), who study the effect on household consumption. We argue that it is plausibly exogenous whether firms had a bank with high or low LTD in 2007. We find similar pre-trends in both loan growth and employment growth for firms with high and low LTD banks. Furthermore, we cannot reject that the means of key firm variables across firms with high and low LTD are the same for large firms (more than 50 employees in 2007) and small-young firms (5-50 employees and 0-3 years old in 2007). For small firms (5-50 employees in 2007), we do find significant differences in means, but the differences are numerically small.

For large firms, having a bank with a high LTD did not result in a significant larger decrease in firm loans during the Great Recession. On the other hand, for small and small-young firms, the credit reduction is greater when their primary bank has a high LTD. Similar to evidence from Germany and Spain (see Bentolila *et al.* (2018) and Huber (2018)), we observe only a temporary credit effect for small firms as a whole. In contrast, we find that the reduction in credit for small-young firms with a high LTD bank lasts for several years.

Having established that banks with high LTD reduce lending to small and in particular small-young firms, we turn to the direct effect of tightened credit supply on employment growth during the

[1]The references include Chodorow-Reich (2014); Iyer *et al.* (2014); Duygan-Bump *et al.* (2015); Cingano *et al.* (2016); Gilchrist *et al.* (2017); Bentolila *et al.* (2018); Popov and Rocholl (2018); Berton *et al.* (2018); Huber (2018); Siemer (2019); Greenstone *et al.* (2020); Bonin (2020); Adamopoulou *et al.* (2020); Davis and Haltiwanger (2021); Chodorow-Reich and Falato (2022).

Great Recession. For this exercise, we compare the aggregate net employment flows for firms with high and low LTD banks. Our primary focus is on this *reduced-form* relationship. Like Greenstone *et al.* (2020), we find no significant aggregate effect on net employment growth for small firms or large firms. However, as with the reduction in loan growth, we do find economically and statistically significant effects of credit constraints on employment growth for small-young firms – similar to Davis and Haltiwanger (2021). We estimate that the additional employment reductions made by small-young firms with high LTD banks correspond to 30% of the total reduction in employment growth for small-young firms over the period of 2008-2013. In particular, credit constraints played an important role in the first year of the crisis, 2008, where this reduced-form effect corresponds to 40% of the total reduction in employment growth in 2008. Our estimated shares are similar to the short-term results in Chodorow-Reich (2014) for small and medium-sized firms in the US (30-50%), and the short-term results in Siemer (2019) for small firms and young firms in the US (30-35%).[2]

We also estimate the direct effect of loans on employment at the firm level by instrumenting the firm-level loan reductions with the interaction between having a high LTD bank and being in the Great Recession or its aftermath. For small-young firms, we estimate employment growth elasticities with respect to loan growth of in the range of 0.07-0.11. However, there are three reasons why our main focus is on the reduced-form relationship rather than on the IV estimates. First, we can most easily graphically illustrate the reduced-form effects over time just by depicting the development for firms with high and low LTD banks. Second, the caveat of using growth rates in firm-level regressions, rather than county-level regressions, is that we need to recode zero loans. In our basic specification, all zeros are coded as ones, but the results are sensitive to recoding zeros as described in Chen and Roth (2022).[3] Third, as argued by Chodorow-Reich (2014), when using the IV regression, we implicitly assume that the restricted credit effect only runs through loan reductions. In reality, however, other channels, such as interest rates, length of loans, and increased uncertainty about future access to credit, may also affect employment.

Recessions typically involve a cleansing effect because less productive firms exit the market, close product lines, or destroy low-productive matches (Davis and Haltiwanger, 1990; Caballero and

[2]Siemer (2019) compares firms according to their banks' external financial dependence, while Chodorow-Reich (2014) as instruments uses exposure to Lehman Brothers, exposure to mortgage-backed securities, and banks' balance-sheet information, including the deposits-to-assets ratio.

[3]When recoding zero loans as 0.001 DKK, the elasticities are in the range of 0.05-0.08, while in the range of 0.13-0.17 when recoding zero loans as 1,000 DKK.

Hammour, 1994; Mortensen and Pissarides, 1994). However, it is not clear whether tightened credit constraints mitigate or exacerbate the cleansing effect. This depends on whether more productive firms face tighter credit constraints or not. Barlevy (2003) and Osotimehin and Pappadà (2017) offer models with opposing views.

We find that high LTD banks were more decisive in reducing lending to less productive small-young firms at the onset of the crisis, but that lending was also reduced for the high-productive firms during the recovery period.[4] Among the small-young firms, this translated into lower net employment flows for both high and low-productive firms, but at different times during the Great Recession. In the first year of the crisis, the reduced-form effect, which is only due to tightened credit constraints, explains almost half of the total employment reduction for low-productive firms, while less than a quarter of the total employment reduction for high-productive firms. However, for all of the post-periods we consider, i.e. 2008-2013, the share of the employment reduction explained by the reduced-form effect is larger for high-productive firms. Thus, it is only at the beginning of the crisis that credit constraints seem to have had a cleansing effect. Our results are in line with the findings of Foster *et al.* (2016) for the US. They find that recessions before the Great Recession showed an increase in reallocation as job destruction increased while job creation only declined slightly. However, for the Great Recession they find that reallocation fell as job creation declined more than job destruction increased. Furthermore, Foster *et al.* (2016) find that job creation decreased especially for young firms.

In order to gain a deeper understanding of what causes job losses, we analyze the movement of workers between employment and nonemployment, as well as transitions between different firms. Theoretically, when credit restrictions are tightened, it can lead to job losses through both nonemployment flows and job-to-job flows. On the one hand, when credit constraints have a cleansing effect, this will usually lead to separations to nonemployment. In this scenario, banks will primarily reduce lending to less productive firms, which can eliminate less productive jobs or ultimately lead to firm closure. On the other hand, when credit constraints make it more difficult for firms to obtain financing for new investments, it can reduce the overall demand for labor, as new hires often involve costs, such as training, that can be difficult to finance in a tight credit environment (Oi, 1962; Hamermesh, 1989). We would expect that quasi-fixed hiring costs matter

[4]We measure firm productivity by value-added per worker.

more for high-skilled workers.

We find that in the very short-run, the cleansing effect for small-young firms with high LTD banks primarily increased separations to nonemployment. This development was almost entirely driven by low skilled workers. This result is in line with the US evidence in Haltiwanger *et al.* (2018a) who show that during downturns less educated workers in low productive firms are more likely to flow into nonemployment. Further, Berton *et al.* (2018) find that for Italy, the initial impact of financial shocks affect low educated workers.

We add to this literature by showing that, as the crisis progressed, the effect of the tightened credit supply reduced firms' job-to-job hires such that this became the margin dictating the observed slow recovery in net employment growth among the credit-constrained small-young firms. This result is in line with firms having a harder time obtaining financing for new investments and hires. In particular, we show that firms reduced hiring of primarily high skilled workers during the recovery period. This result supports the evidence in Adamopoulou *et al.* (2020), who find that it is mainly high type workers who are affected by credit constraints in the long run.

The layout of the rest of this paper is as follows. Section 2 describes the data sources used. Section 3 presents evidence of worker flows across firms, in particular at different stages of the business cycle. In Section 4, we show that banks with a high LTD tightened their credit supply relatively more. Section 5 zooms in on small and young firms and studies how labor market flows respond to financial conditions in these firms. We conclude in section 6.

## 2. Data

For our analysis, we draw on several Danish population data sets, which can be combined using unique worker and firm identifiers. We use monthly employer-employee data to construct a quarterly firm level data set, including worker transitions to and from each firm. This data is linked to annual firm accounting data to construct a measure of value added per worker. Finally, we combine this with data on firms' bank loans and bank connections.

### *2.1. Spell data*

We construct a monthly spell data set covering all persons (employed or non-employed) aged 18-60 years for 2003-2013. This data set has been constructed using five data sets of which four (MIA, CON, RAS, BFL) are maintained by Statistics Denmark, and the fifth (DREAM) is maintained by the Danish Labor Market Board and contains weekly information on each person's public transfers.

We use monthly data to record worker transitions and distinguish between hires and separations and by whether these transitions happen between two firms or between a firm and nonemployment. Our focus is on firms in the private sector of the economy since public sector employment is less affected by business cycle fluctuations. The public sector in Denmark is relatively large, and about 40% of the monthly observations are public employment. In the analysis, we do not consider public sector employment flows. However, we record a job-to-job hire when a private sector firm hires a worker from the public sector and a job-to-job separation when a worker leaves the private sector to work in the public sector.

Finally, we aggregate the spell data into a quarterly firm data set. We measure the quarterly employment in a firm as the average monthly employment in the quarter. For measuring transitions, e.g. hires, at the firm level in a quarter, we sum over all monthly hires. This means that a worker can contribute with more than one hire in a quarter by changing jobs more than once in a quarter. In Appendix A1, we describe the spell data construction in more detail.

### *2.2. Firm data*

We extract the basic information about the population of firms, such as industry and sector, from the annual FIRM register, maintained by Statistics Denmark. We supplement this data with the firm accounting data set, KOB, which the private data provider, Experian, maintains. The KOB data includes information on all limited liability firms and stock companies and has a higher coverage of variables such as value added compared to the accounting data from Statistics Denmark. Value added is recorded for 96% of firms in KOB, and the KOB data also includes the unique firm identifier.

### *2.3. Bank data*

We use the URTEVIRK register, provided by Statistics Denmark and maintained by the Danish Tax Authorities, to link limited liability firms and stock companies to their banks and other lenders.[5] In this register, we observe each firm's loans from each of its lenders by the end of the year. Almost all loans are unsecured bank loans.[6] To this, we merge balance-sheet information for the individual

[5]Other lenders are foreign banks, other firms, public debt, and other financial institutions (such as holding companies, financial leasing).

[6]Less than 0.5% of firms in 2007 have a collateralized loan.

banks using data from the Danish Financial Supervisory Authority. We then characterize banks according to their loan-to-deposit ratio, $LTD$

$$LTD_j = \frac{Loans_j}{Deposits_j} \tag{1}$$

where $j$ indexes the bank. We have information on LTD for 131 banks in 2007, which correspond to 93.6% of the firms' total bank loans in 2007.

Jensen and Johannesen (2017) find that Danish banks with higher LTD in 2007 tightened their credit supply to Danish households more in response to the financial crisis. We use a similar strategy to identify bank credit supply shocks to firms. We divide banks into high LTD and low LTD banks according to whether their LTD in 2007 is above or below the loan-weighted median in 2007. Next, we define a firm's primary bank as the bank with the highest loan amount in 2007 and group the firms by their primary bank's LTD. We refer to these two types of firms as high and low LTD firms. We only group firms by their LTD if they have loan amounts of at least 7,000 DKK (approximately 1,000 USD) per worker in 2007.[7] Otherwise, we categorize them as having no (or very limited) bank credit in 2007.[8]

### *2.4. Selection*

We exclude firms with fewer than five employees in the third quarter of 2007. We furthermore exclude firms that have loans in foreign banks up to 2007 because we cannot track foreign banks. This deletes two percent of the observations. Lastly, we exclude firms in the financial sector. The final data set is a quarterly firm data set, which we use to graphically examine the worker flows over the business cycle. However, as bank loans only are available on an annual frequency, we also aggregate the firm data to an annual level to use in regressions.

### *2.5. Descriptive statistics*

Because our analysis focuses on how credit constraints affect employment across different firms in terms of size and age, we provide summary statistics for 2007 for large, small, and small-young firms, respectively, in Table 1. We define small firms as having between 5 and 50 employees in the third quarter of 2007 and large firms as having more than 50 employees. Young firms are 0-3 years

[7] In the appendix, we show that we obtain similar results using cut-offs at 3,500 DKK and 14,000 DKK.

[8] The sample of limited liability firms and stock companies covers 1.1 million workers in 2007 which corresponds to 77% of the total private sector employment.

| **Large firms** | Low LTD | | High LTD | | | $t$-test |
|---|---|---|---|---|---|---|
| | Average | Std.error | Average | Std.error | | low vs. high |
| Number of employed | 194.88 | 25.68 | 217.21 | 23.51 | | -0.64 |
| Manufacturing | 0.41 | 0.02 | 0.42 | 0.02 | | -0.47 |
| Construction | 0.09 | 0.01 | 0.08 | 0.01 | | 1.01 |
| Large city | 0.21 | 0.01 | 0.25 | 0.02 | | -2.11 |
| Firm age | 21.52 | 0.60 | 23.19 | 0.64 | | -1.92 |
| Value-added per worker | 546 | 25 | 545 | 22 | | 0.05 |
| Average salary per firm | 27.9 | 0.25 | 28.6 | 0.26 | | -1.69 |
| Total loans per worker | 592 | 128 | 400 | 60 | | 1.35 |
| Total loan / total asset | 0.24 | 0.01 | 0.23 | 0.01 | | 1.14 |
| Total debt / total asset | 0.69 | 0.01 | 0.68 | 0.01 | | 1.18 |
| Equity per worker | 788 | 110 | 1,045 | 259 | | -0.91 |
| Firms | 808 | | 776 | | | |

| **Small firms** | Low LTD | | High LTD | | No bank credit | | $t$-test |
|---|---|---|---|---|---|---|---|
| | Average | Std.error | Average | Std.error | Average | Std.error | low vs. high |
| Number of employed | 15.15 | 0.13 | 15.51 | 0.14 | 14.71 | 0.24 | -1.88 |
| Manufacturing | 0.18 | 0.00 | 0.21 | 0.01 | 0.15 | 0.01 | -4.03 |
| Construction | 0.20 | 0.00 | 0.18 | 0.01 | 0.25 | 0.01 | 2.47 |
| Large city | 0.21 | 0.01 | 0.21 | 0.01 | 0.19 | 0.01 | -0.48 |
| Firm age | 12.29 | 0.13 | 13.51 | 0.16 | 13.64 | 0.27 | -5.83 |
| Value-added per worker | 514 | 12 | 539 | 10 | 663 | 42 | -1.64 |
| Average salary per firm | 25.5 | 0.10 | 26.5 | 0.13 | 28.2 | 0.25 | -6.34 |
| Total loans per worker | 473 | 28 | 542 | 48 | 81 | 17 | -1.23 |
| Total loan / total asset | 0.30 | 0.01 | 0.29 | 0.01 | 0.06 | 0.00 | 0.95 |
| Total debt / total asset | 0.74 | 0.00 | 0.72 | 0.00 | 0.59 | 0.01 | 4.62 |
| Equity per worker | 817 | 110 | 1,016 | 156 | 1,230 | 581 | -1.04 |
| Firms | 6,308 | | 5,050 | | 1,641 | | |

| **Small-young firms** | Low LTD | | High LTD | | No bank credit | | $t$-test |
|---|---|---|---|---|---|---|---|
| | Average | Std.error | Average | Std.error | Average | Std.error | low vs. high |
| Number of employed | 12.42 | 0.22 | 13.04 | 0.28 | 12.56 | 0.54 | -1.73 |
| Manufacturing | 0.13 | 0.01 | 0.14 | 0.01 | 0.09 | 0.02 | -0.93 |
| Construction | 0.25 | 0.01 | 0.24 | 0.01 | 0.26 | 0.03 | 0.25 |
| Large city | 0.24 | 0.01 | 0.22 | 0.01 | 0.16 | 0.02 | 1.26 |
| Firm age | 2.10 | 0.02 | 2.09 | 0.03 | 2.09 | 0.05 | 0.37 |
| Value-added per worker | 437 | 20 | 461 | 15 | 491 | 19 | -0.97 |
| Average salary per firm | 24.4 | 0.22 | 24.8 | 0.26 | 28.9 | 0.78 | -1.21 |
| Total loans per worker | 306 | 35 | 414 | 70 | 87 | 21 | -1.37 |
| Total loans / total assets | 0.37 | 0.02 | 0.37 | 0.02 | 0.12 | 0.02 | 0.06 |
| Total debt / total assets | 0.78 | 0.01 | 0.78 | 0.01 | 0.65 | 0.01 | 0.22 |
| Equity per worker | 430 | 160 | 378 | 102 | 256 | 33 | 0.27 |
| Firms | 1,323 | | 895 | | 243 | | |

Table 1: Summary statistics for firms in 2007. Large firms have more than 50 employees, small firms have between 5 and 50 employees, and young firms are between 0 and 3 years old in 2007. Firms are split by their banks' LTD at the median. Firms with no bank credit either have no bank connection in 2007, or have 0 credit. Firms with high and low LTD banks have at least 7000 DKK in loans in 2007. Value-added per worker, average salary per firm, loan amount per worker, and Equity per worker are measured in 1,000 DKK in 2007, all annual except for average salary per firm, which is monthly. We have omitted sample statistics for large firms with no bank credit due to too few observations.

old in 2007. For each firm category, we consider sample means for firms whose primary bank has a high or low LTD, as well as for firms with no bank credit.

A first takeaway from Table 1 is that the firms with no bank credit seem very different from the low and high LTD firms. The firms with no bank credit are smaller, less likely to be manufacturing, and more likely to be construction. However, firms with low and high LTD banks tend to be more similar. To examine this formally, the final column of Table 1 shows t-tests for equality of means for firms with low and high LTD banks.

While about half of the sample means are significantly different for small firms, we note that the magnitudes of the differences are quite small. On average, high LTD small firms have 0.42 more employees, pay about 1000 DKK (roughly 140 USD) more in monthly salary per worker, and are about a year older. For large firms, only the dummy for firm location in a large city (21% vs. 25%) is significantly different, and for small-young firms, none of the sample means are significantly different from each other. Regressing the high LTD dummy on the 11 variables in Table 1, we find that these 11 variables are jointly insignificant in explaining the selection into high LTD banks for both large and small-young firms. These results suggest that the samples of large and small-young firms are quite balanced across banks with low and high LTDs.

## 3. Worker flows across Firms and the Great Recession

Before investigating the employment effects of bank credit, we first explore aggregate worker flows over the Great Recession. We compare worker flows across firms divided into categories of average wage, value added per worker, size, and age. As in Haltiwanger *et al.* (2018b), we define net job flows, $NJF$, at a firm $i$ at time $t$ as:

$$NJF_{it} = H_{it} - S_{it} = H^{ee}_{it} - S^{ee}_{it} + H^{ne}_{it} - S^{ne}_{it} \tag{2}$$

where $H$ is hires and $S$ is separations. Each firm $i$ can hire workers through job-to-job, $H^{ee}$, or from nonemployment, $H^{ne}$ and likewise separate workers through job-to-job, $S^{ee}$, or to nonemployment $S^{ne}$. The total net flow is made up of the net flows from job-to-job ($H^{ee}_{it} - S^{ee}_{it}$) and the net flows from nonemployment ($H^{ne}_{it} - S^{ne}_{it}$).

When presenting the results, we aggregate flows by firm categories and calculate rates in terms of the stock of employed in the previous quarter. For example, the job-to-job separation rate for high wage firms is calculated as the number of employees who separate from a high wage (private

sector) firm and transition to any other firm, divided by the total number of employees working for high wage (private sector) firms in the previous quarter. In the main figures, we consider the total employment flows, including firm entry and exit.[9] [10]

*3.1. Descriptive Evidence on Worker Flows*

Using workers flows for the entire Danish private sector, we show results similar to what (Haltiwanger *et al.*, 2018b) find for the U.S. Our results are also in line with Bertheau and Vejlin (2022), who consider reallocation in Denmark for 1992-2013. Figure 1 shows the net employment flows across the different firm categories. The top panel presents net employment flows across firm size and across age for small firms, and the bottom panel presents flows across firms with high and low wages and high and low productivity measured by value-added per worker. Large firms have more than 50 employees in the previous year, and small firms have fewer than 50 employees in the previous year. High productive firms have value added per worker above the median in the year before, and low productive firms have below median. High wage firms have average salary above the median in the year before, and low wage firms have below the median in the year before. Three results are immediately clear from Figure 1. First, the types of firms with the highest employment growth in each subplot are the small firms, small-young firms as well as the firms with high wage and high productivity. In particular, the employment growth of small-young firms is considerably higher than small mature firms.

Second, in each subplot in Figure 1, the firm type with the highest growth rates (i.e. small firms, small-young firms, high productive firms, and high wage firms) are also the firms that are the most affected during the Great Recession. For example, the lower left panel shows that the distance from peak to trough is larger for high productive firms than for low productive firms. Furthermore, the net employment growth rates of the firms with high pre-crisis growth do not return to their pre-crisis level before the panel ends in 2013, while the firms with low pre-crisis growth recover earlier. For example, firms with low productivity return to the pre-crisis net growth rate already

[9] In the Appendix, we show figures excluding firm entry and exit. In each figure note in the main text, we reference the relevant Appendix figure, which excludes firm entry and exit.

[10] In the figures, we mark the Great Recession by a grey bar, which is determined as the period where the change in the unemployment rate is positive for each quarter in more than one year. We follow Haltiwanger *et al.* (2018b) and use both the HP-filtered unemployment rate as the *level of unemployment* and the first difference of the quarterly unemployment rate as the *change in unemployment*. Figure A-1 in the Appendix presents the two time series of unemployment rates and defines the recession period.

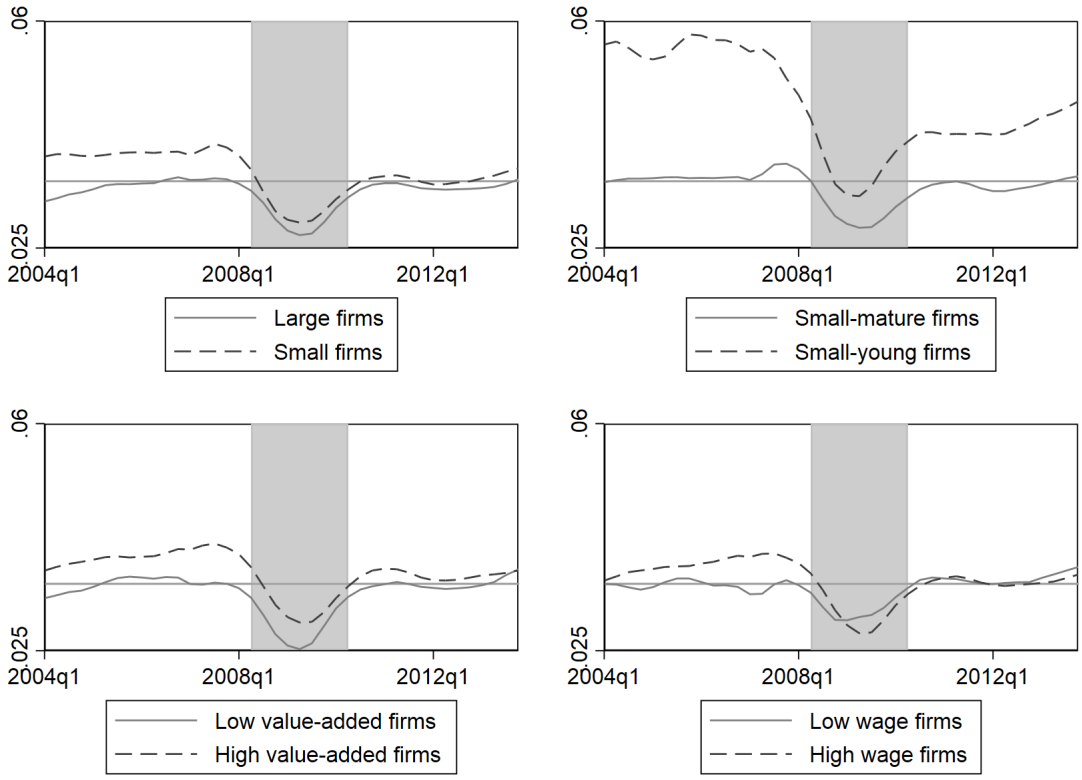


Figure 1: Quarterly net employment flows by firm size, firm age for the small firms, firm value added per worker, and average firm wage. Large firms have more than 50 employees in the previous year, while small firms have fewer than 50 employees in the previous year. Young firms are 3 years old or younger and mature firms are 4 years old and above in previous year. High value-added firms have above median value-added per worker in the year before. Low value-added firms have below median. High wage firms have average salaries above the median in the year before. Low wage firms have below median average salary. The plotted series are centered moving averages. The flows include flows due to firm entry and firm exit. In the Appendix Figure A-2 the flows without firm entry and exit are depicted.

in 2010, which implies that the difference in net flows between low and high productive firms is smaller after the crisis than before the crisis.

Third, Figure 1 shows that the small-young firms experienced the largest decline in net employment growth during the Great Recession. The small-young firms have a decline in employment growth from peak-to-trough of around 6 percentage points, whereas the high wage and high productive firms experience less than half the reduction at around 2 percentage points from peak-to-trough.

Figure 2 decomposes the net employment flows into flows from nonemployment and job-to-job

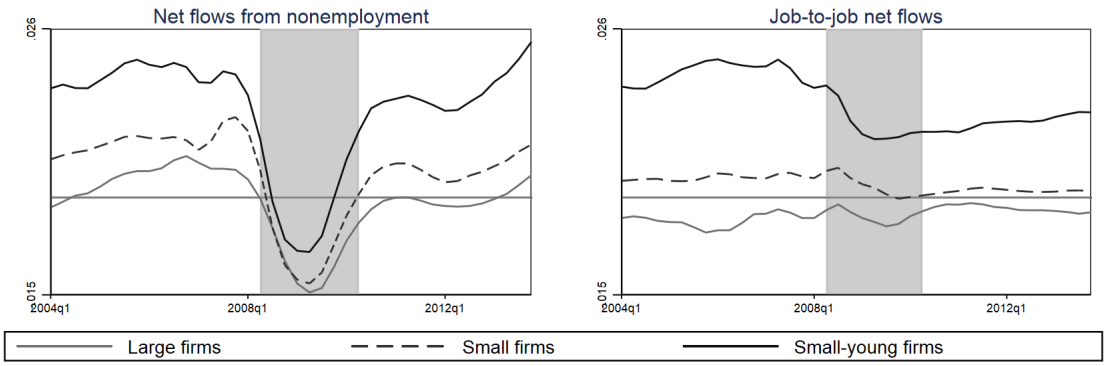


Figure 2: Quarterly net nonemployment and job-to-job flows. Large firms have more than 50 employees in the previous year, while small firms have 50 or fewer employees in the previous year. Young firms are between 0 and 3 years old in previous year. The plotted series are centered moving averages. The flows include flows due to firm entry and firm exit. In Appendix Figure A-3 the flows without firm entry and exit are depicted.

flows across size and age. This figure shows that net flows from nonemployment primarily drive the total variation in net employment flows over the Great Recession. For small-young firms especially, this is mainly driven by an increase in separations to nonemployment, as shown in Appendix Figure A-6. In contrast to US evidence (Haltiwanger *et al.*, 2018b), Figure 2 also shows that the decrease in flows from nonemployment is only part of the total decline in net employment flows experienced by the small-young firms during the Great Recession. The other part of the reduction in net employment flows for the Danish small-young firms is driven by a decline in net job-to-job flows during the Great Recession.[11]

Together these results show that both the nonemployment channel and the job-to-job channel for worker flows were important for the small-young firms during the financial crisis and especially that the job-to-job margin played a role during the recovery period. A likely explanation for the disproportionate decline in employment flows among the small-young firms during the Great Recession is credit constraints, which is the focus throughout the rest of the paper. Since both

[11]Furthermore, Appendix Figures A-4 and A-5 show that high wage and high productive firms have higher net employment flows because they have higher net job-to-job flows. This is in line with Haltiwanger *et al.* (2018b), who show that workers, on average, move from low wage firms to high wage firms, which suggests a job ladder in wages. Similarly, using Danish data Bertheau and Vejlin (2022) find evidence of a job ladder in both wages and productivity (measured by revenue-based TFP). These results support canonical job ladder search models such as Burdett and Mortensen (1998), Postel-Vinay and Robin (2002), Moscarini and Postel-Vinay (2013), and Bagger and Lentz (2018).

nonemployment and job-to-job transitions contributed to the reduction in employment flows during the Great Recession, we pay attention to which employment margin is affected by credit constraints and how this differs throughout the crisis and recovery period.

## 4. The Credit Channel

This section examines how credit constraints among banks affected firm credit during the Great Recession. In the years before the financial crisis leading to the Great Recession, bank lending in Denmark was expanded substantially. The Danish banks had for this credit expansion relied on unsecured, short-term loans on the international interbank market. This was a change in the way Danish banks financed loans as they had traditionally relied on deposit financing. This change in lending channel naturally implied an increasing loan-to-deposit ratio (LTD) of Danish banks in the build-up to the crisis. Between 2000 and 2007, the LTD of the 131 banks we consider went from and average of 1.03 to an average of 1.44.

Danish banks had very little direct exposure to the US subprime mortgage crisis. However, their exposure to the international interbank market made them vulnerable as the international interbank market froze following the bankruptcy of Lehman Brothers in September 2008. The financial crisis in Denmark started with the collapse of the 10th largest bank, Roskilde Bank, in August 2008. From this point until the autumn of 2010, the Danish bank sector experienced a systemic financial crisis with liquidity dry-ups and large write-downs on bad loans.

The Danish Central Bank intervened several times to provide liquidity to the banks, and the Danish government provided an unlimited guarantee covering all the liabilities in the Danish banking sector. Despite these interventions, many banks were distressed, and the authorities closed 15 banks from 2008 to 2011, and several other banks agreed to take part in mergers to avoid failure (Rangvid, 2013).

### *4.1. Banks and Credit Constraints*

Banks with higher LTD were more vulnerable as the interbank market froze in September 2008. With a limited ability to attract liquidity, banks with higher LTD were in greater need of cutting lending to stay solvent. We compare banks with above-median LTD to banks with below-median LTD measured in 2007, and refer to these as high and low LTD banks, respectively. Figure A-7 plots aggregate bank lending to firms with lending in 2007 as index 1. Bank lending approximately

doubled from 2004 to 2007, and only slightly more for high LTD banks. Between 2007 and 2013, total lending from banks (existing in 2007) decreased by about 50% for high LTD banks, and about 20% for low LTD banks. Loans were primarily lowered in the years 2008-2010 during the period characterized as a systemic financial crisis. We will use the difference in loan reduction between high and low LTD banks to examine the employment effects of credit at the firm level.

Having established that high LTD banks reduced total lending to firms more than low LTD banks, we now consider the development in firm loans over time. We divide firms into two groups according to whether they had a primary bank in 2007 with a high or low LTD. We refer to firms whose primary bank had an LTD in 2007 above the median as high LTD firms, while firms whose primary bank had a below-median LTD are referred to as low LTD firms.[12] Figure 3 shows the development in aggregate loans for high and low LTD firms. We separately consider large firms (with more than 50 workers in 2007), small firms (with between 5 and 50 workers in 2007), and the group of small-young firms (small firms aged 0-3 years in 2007). This seems particularly relevant since Section 3 showed that employment flows in small-young firms were disproportionately affected in the Great Recession.

Figure 3 shows that after 2007, aggregate loans to all three firm types decreased and that they decreased more for small-young firms. When comparing high and low LTD firms, we see essentially no differences for large firms. However, for both small and small-young firms, there is a larger reduction in loans for high LTD firms in 2008. The differential loan reduction in 2008 is about twice the size for small-young firms compared to small firms. We also note that the pre-2008 development in aggregate loans is similar for high and low LTD firms, especially for small and small-young firms.

We cannot determine to which extent the overall reduction in bank lending was primarily supply- or demand-driven. While banks faced liquidity and solvency problems and needed to cut lending, some firms also reduced their bank loans as a result of investments being less profitable under the weaker economic conditions. However, we can examine the differential effect between firms whose primary bank had a high or low LTD, provided that the bank's LTD was unrelated to firm performance. Therefore, we will focus on the differential effect from having a high LTD bank in the

[12]Most Danish firms only have bank loans from their primary bank. As much as 96% of the firms' total loan amounts are loans from their primary bank. Furthermore, 89% of the firms have more than 90% of their total bank loan from their primary bank.

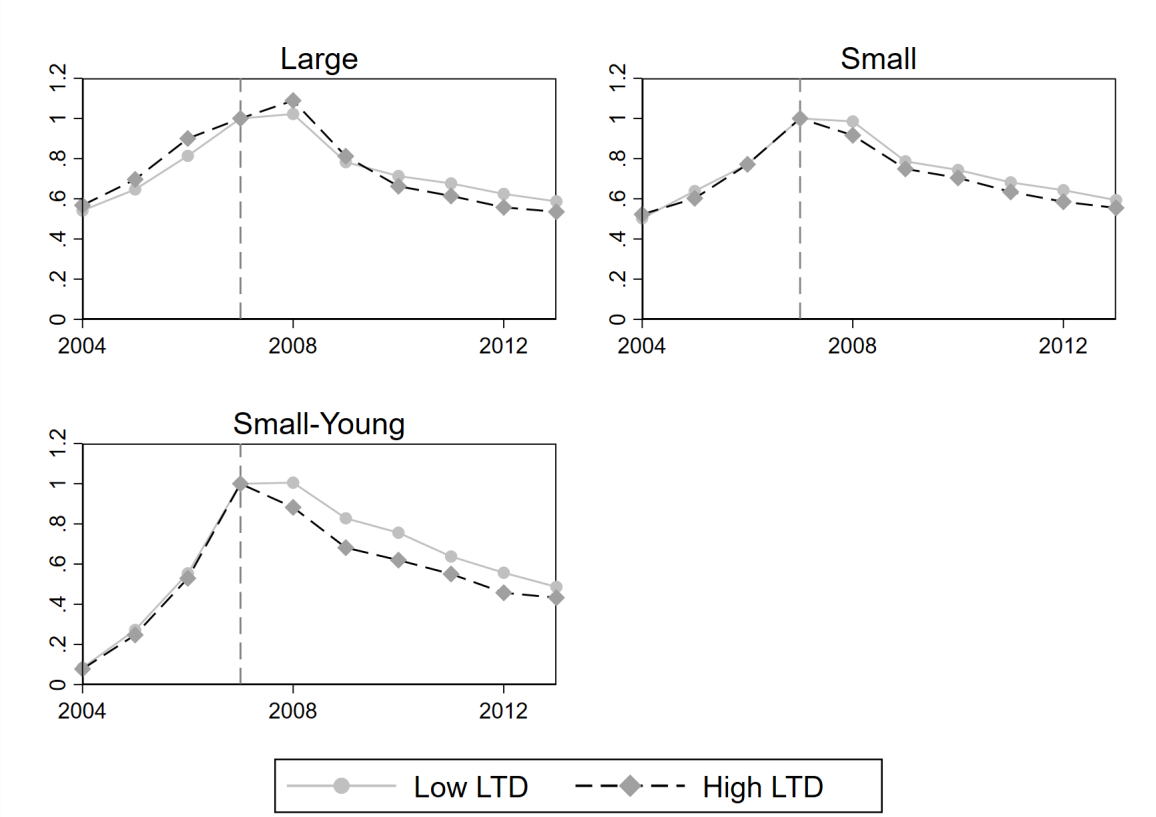


Figure 3: The aggregate loans (index=1 in 2007) for large firms (more than 50 employees in 2007), small firms (between 5 and 50 employees in 2007), and small-young firms (between 5 and 50 employees in 2007 and up to three years old in 2007). Firms are only included if their loan amount exceeds 7,000 DKK per worker in 2007. Only firms existing in 2007 are included. Loans are winsorized at the 99% level in 2007.

following analyses.

To make loans comparable across firms, we consider firm level loan growth. We use an event study around the Financial Crisis to investigate if the differential loan effect between high and low LTD firms observed in Figure 3 is significant at the firm-level as well as to examine whether the pre-2008 trends were parallel. We estimate the following model,

$$log(loan_{i,t}) - log(loan_{i,t-1}) = \psi_i + \beta_t highLTD_{j(i)} + \Omega_t + \delta X_{it} + u_{it} \tag{3}$$

where the outcome is the log change in total loans of firm $i$ from year $t-1$ to year $t$. $\psi_i$ is a firm fixed effect and $highLTD_{j(i)}$ is a dummy variable for firm $i$'s primary bank $j$ being a high LTD

bank. $\Omega_t$ is a vector of year fixed effects, and $X_{it}$ is a vector of industry-by-year and industry-by-municipality dummies. The parameter $\beta_t$ is the differential loan growth effect, and we impose $\beta_{2007} = 0$. Standard errors are clustered at the level of the firms' primary bank in 2007. We also estimate a variant of equation (3) where we set all pre-2008 $\beta_t$ to zero and estimate a common differential effect, $\beta$, for the post period:

$$log(loan_{i,t}) - log(loan_{i,t-1}) = \psi_i + \beta highLTD_{j(i)} \times post_t + \Omega_t + \delta X_{it} + u_{it} \quad (4)$$

where $post_t$ is a dummy variable indicating that the year is 2008 or later.[13] The parameter $\beta$ is the difference-in-differences effect which measures the average annual change in the log of loans for high LTD firms relative to low LTD firms.

Figure 4 shows the estimated differential loan growth effects captured by $\beta_t$ from equation (3) with 95% confidence bands. There was a significantly lower growth rate in 2008 for high LTD firms among small and small-young firms, but only a small and insignificant reduction among large firms. For small firms, the differential effect is insignificant and close to 0 from 2009 onward. In contrast, for small-young firms the differential growth effect is below zero for each of the years 2008-2013, albeit only significant for a third of the years using (conservative) point-wise confidence bands.[14]

The post-2007 differential loan effect can be interpreted as supply effects if the loan growth had been parallel in the absence of the credit crunch disproportionally affecting high LTD banks. Figure 4 suggests that loan growth prior to 2008 was parallel for high and low LTD firms, as none of the pre-2008 effects are significantly different from 0. Furthermore, Table 1 shows that, in particular, large and small-young firms had similar characteristics in 2007. Therefore, we argue that firms did not select banks based on the banks' LTD in 2007. Hence, we believe that we can exclude anticipation effects for the banks' credit supply and estimate the causal effect of a high LTD primary bank on firm credit.[15]

The differential loan growth effects only capture the partial equilibrium effect of the credit supply shock. This means that it does not capture that reduced loans, in general, imply a lower aggregate demand in the product market, which in turn creates a lower loan demand from firms.

[13] For the samples of large and small firms, we use a pre-period of 2004-2007, but because small-young firms are 0-3 years old in 2007, we can only use 2005-2007 as the pre-period.

[14] In Appendix Figure A-10, we verify that it is the firm's bank loans with its primary bank, and not other loans, which drive the development in total loans in Figure 4. Bank-switching has only a tiny impact on the total loans.

[15] Jensen and Johannesen (2017), studying the effect of the credit crunch for consumers with the same research strategy, also find no selection effect for consumers in Denmark.

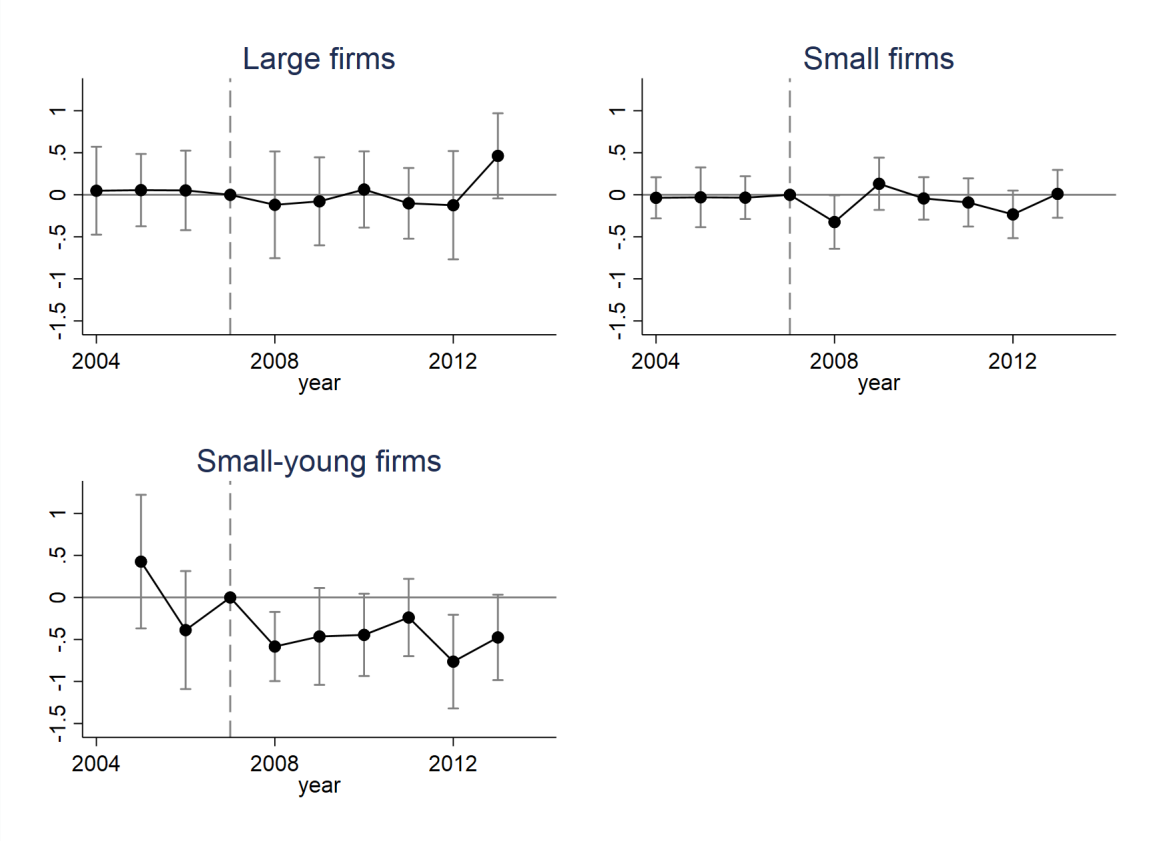


Figure 4: Estimated differential year effects between high and low LTD firms, i.e. $\beta_t$ from equation (3) where the dependent variable is the growth rate in total loans. Effects are estimated for large firms (more than 50 employees in 2007), small firms (between 5 and 50 employees in 2007) and small-young firms (between 5 and 50 employees in 2007 and up to three years old in 2007) separately. We include industry × year dummies, industry × municipality dummies, and firm fixed effects. The regression is unweigthed. Firms are only included if their loan amount exceeds 7,000 DKK per worker in 2007. In Appendix Figures A-8 and A-9 estimated coefficients are shown from regressions using cutoffs of 3,500 and 14,000 DKK per worker in 2007. The confidence 95% pointwise intervals are based on standard errors clustered at the firms' primary bank level.

Such general equilibrium effects are instead captured by the time dummies in equations (3) and (4).

Table 2 shows the results from estimating the effect of having a bank with a high LTD as one's primary bank in 2007 on the loan growth rate using the difference-in-differences design in equation (4). This serves as a way of testing the coefficients from Figure 4 jointly. As above, we consider different samples based on firm size and age. Furthermore, we also consider different post-treatment periods: 2008, 2008-2009, and up to 2008-2013. Each cell in Table 2 gives the

difference-in-differences estimate of $\beta$ from equation (4) for a different sample. For example, in the first row, we only include 2008 as the post-treatment period, and in the first column, the results are for large firms.[16]

In line with our results from Figure 4, we estimate substantially larger differential reductions in loan growth for small-young firms compared to large and small firms. Specifically, we estimate a differential effect of -0.56 log points for small-young firms with 2008 as the post period. The same effect is -0.14 log points for large firms and -0.34 for small firms, though it is not significant at a 5% level for large firms. Extending the post-period diminishes the estimates for small firms, and the loan reductions are all insignificant. In contrast, estimates for small-young firms remain high and significant for all considered post-periods. This implies that the post period effects from Figure 4 are jointly significant for small-young firms. Thus, small-young high LTD firms experienced persistently lower loan growth rates after 2007.

Our conclusions from Figure 4 and Table 2 regarding small and small-young firms is in line with the banking literature, which suggests that lending to small firms was adversely affected in the Great Recession (see e.g. Albertazzi and Marchetti (2010), Chodorow-Reich (2014), and Iyer *et al.* (2014) and the review in Udell (2020)). Small firms typically do not have access to the corporate bond market, limiting their ability to raise liquid capital. Furthermore, due to large information asymmetries in the capital market, credit is rationed. This rationing of credits especially affects small firms and particularly small-young firms since information on the small-young firms' future prospects tends to be less transparent for lenders. Furthermore, small-young firms, per definition, have shorter bank-firm relationships than older firms.

In Figure 5, we consider the differential loan growth for small firms aged 0-3 years, 4-9 years, 10-19 years, and 20+ years in 2007. The figure shows that it is primarily for firms aged 0-3 years that there is a considerable difference in loan growth between having a high LTD bank and having a low LTD bank. There seems to also be a lower loan growth for high LTD firms among the firms aged 4-9 years, with significantly lower loan growth rates in 2008 and 2011, but the picture is less clear than for firms aged 0-3 years. For small firms aged 10 years and above, there tend to be only minor differences in the loan growth between high and low LTD firms.

[16]Table 2 shows estimates that are firm weighted and with controls. We provide results without controls in Appendix Table A-1 and employment weighted estimates in Appendix Table A-2. The results are qualitatively similar.

| | Large firms | Small firms | Small-young firms |
|---|---|---|---|
| HighLTD X 2008 | -0.141 | -0.343*** | -0.560*** |
| | (0.268) | (0.0864) | (0.202) |
| HighLTD X 2008-2009 | -0.146 | -0.0992 | -0.452** |
| | (0.200) | (0.0784) | (0.216) |
| HighLTD X 2008-2010 | -0.0896 | -0.0881 | -0.483** |
| | (0.164) | (0.0689) | (0.200) |
| HighLTD X 2008-2011 | -0.0772 | -0.0851 | -0.427** |
| | (0.143) | (0.0769) | (0.176) |
| HighLTD X 2008-2012 | -0.0771 | -0.110 | -0.465*** |
| | (0.139) | (0.0730) | (0.177) |
| HighLTD X 2008-2013 | -0.0399 | -0.0787 | -0.422** |
| | (0.127) | (0.0705) | (0.170) |
| Observations | | | |
| 2008 | 7,436 | 48,883 | 5,711 |
| 2008-2009 | 8,998 | 60,594 | 8,943 |
| 2008-2010 | 10,407 | 70,306 | 11,071 |
| 2008-2011 | 11,755 | 79,258 | 12,985 |
| 2008-2012 | 13,038 | 87,526 | 14,678 |
| 2008-2013 | 14,291 | 95,169 | 16,223 |

Table 2: The effect on annual log changes in total loan amounts from having a primary bank with a high LTD as in equation (4). Each cell is the difference-in-differences estimate from a regression of the log changes in total loans on a dummy for high loan-to-deposit ratio interacted with different post periods, i.e. the estimated $\beta$ from equation (4). We include industry $\times$ year dummies, industry $\times$ municipality dummies, and firm fixed effects. Large firms have more than 50 employees in 2007, small firms have between 5 and 50 employees in 2007, and small-young firms have between 5 and 50 employees in 2007 and are up to three years old in 2007. All estimates are unweighted. Firms are only included if the firms' loan amounts per worker exceed 7,000 DKK in 2007. In Appendix Table A-1 results are shown without controls and with firm fixed effects. In Appendix Table A-2 employment weighted results are shown. Appendix Table A-3 shows results for firms with loan amounts exceeding 3,500 and 14,000 DKK per worker. In Appendix Table A-4 zero loans have been recoded to 0.001 and 1,000 DKK, respectively. In Appendix Table A-5 results for the intensive margin are shown. Standard errors are clustered on primary banks. *** $p < 0.01$, ** $p < 0.05$, *$p < 0.1$.

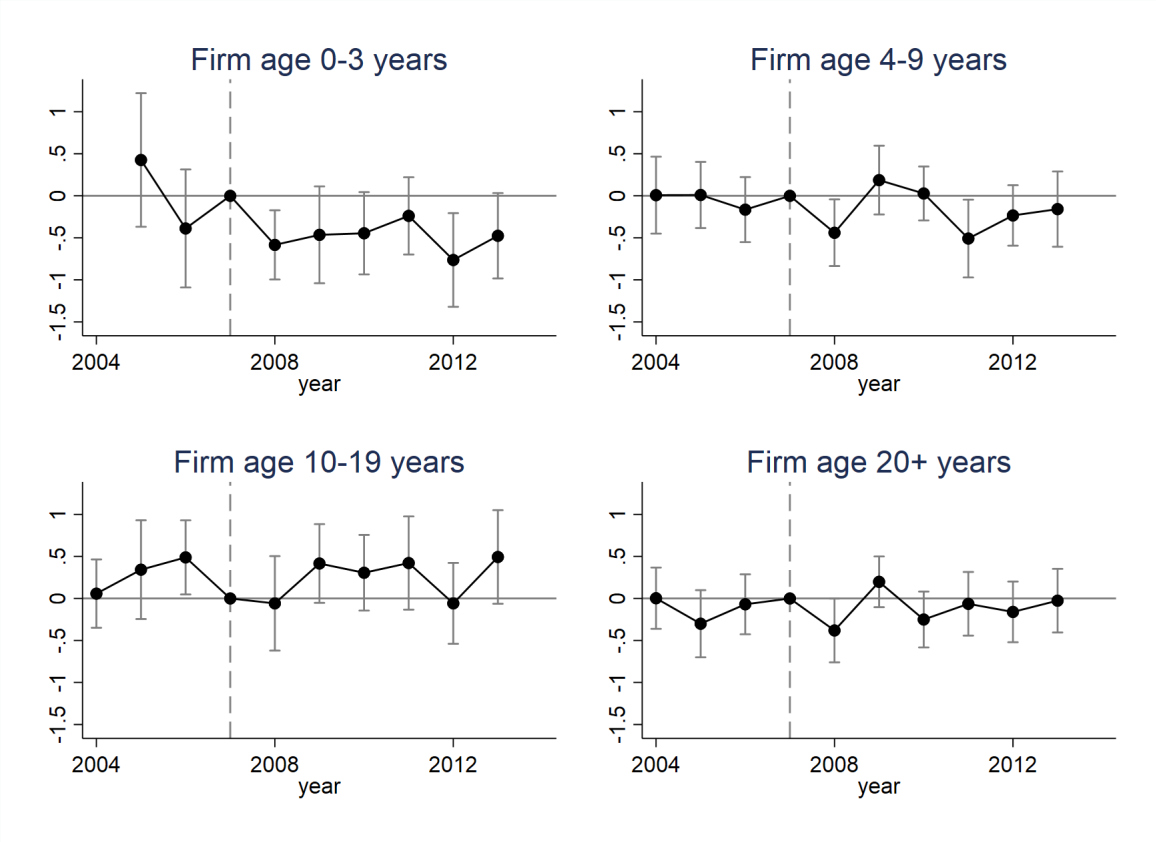


Figure 5: Estimated differential year effects between high and low LTD firms, i.e. $\beta_t$ from equation (3) for small firms (between 5 and 50 employees in 2007) by age in 2007 into categories of ages 0 to 3, ages 4 to 9, ages 10 to 19, and ages 20 and above. The dependent variable is the growth rate in total loans. We include industry $\times$ year dummies, industry $\times$ municipality dummies, and firm fixed effects. The regression is unweighted. Firms are only included if their loan amounts exceed 7,000 DKK per worker in 2007. The confidence 95% pointwise intervals are based on standard errors clustered at the firms' primary bank level.

## 5. Employment Flows and Credit Constraints

In Section 3, we saw that the small-young firms experienced especially large reductions in net employment flows during the Great Recession. Next, Section 4 established that it was the small firms and mainly the small-young firms with a high LTD bank that experienced a larger reduction in credit. In this section, we combine the aggregate net employment flows with the bank information of the firms to analyze the direct effect of bank credit on employment. We continue splitting the firms into high and low LTD defined by their primary bank's LTD in 2007.

The development in aggregate net employment flows for the different types of firms is shown in Figure 6. Two insights are clear from the figure. First, the small and the small-young firms, which had no bank credit in 2007, experienced the smallest decline in net employment flows during the recession.[17] The small firms without bank credit had a minimum quarterly employment growth of -1.8%. In contrast, the firms with high and low LTD banks both experienced their lowest quarterly employment growth at -2.8%. All three types of firms had around 2% employment growth before the crisis. We are cautious in interpreting the differences in employment growth for firms with no bank credit compared to firms with bank credit as causal since the choice of having bank credit is likely to be related to other firm characteristics, as illustrated in Table 1.[18] However, because the firms with no bank credit also experience a large decline in employment growth, we note that a large part of the decline in net employment flows during the Great Recession does not seem to be explained by the direct effect from firm loans.

Second, for large and small firms, there seem to be only negligible differences in employment growth between firms with high and low LTD banks during the Great Recession. Only for small-young firms can we see a clear differential development in employment growth between firms with high and low LTD banks. The small-young firms with high LTD banks have a larger initial decline in net employment flows and a persistently lower growth rate up until the first quarter of 2012 compared to firms with low LTD banks. This effect disappears for firms older than 4 years, as shown in Figure 7, which plots net employment flows for small firms aged 0-3 years, 4-9 years,

[17] We do not show the development in net employment growth for large firms with no bank credit since this series is too noisy due to too few observations.

[18] Consequently, we drop firms with zero or no bank credit in 2007 in all the subsequent figures and tables. In Table 3 with our main results, we actually drop all firms with bank loans of less than 7,000 DKK per worker in 2007, which corresponds to roughly 1,000 USD per worker. As a robustnest check, we drop firms with, respectively, 3,500 DKK and 14,000 DKK per worker in 2007 in Appendix Table A-3. Qualitatively, we obtain similar results.

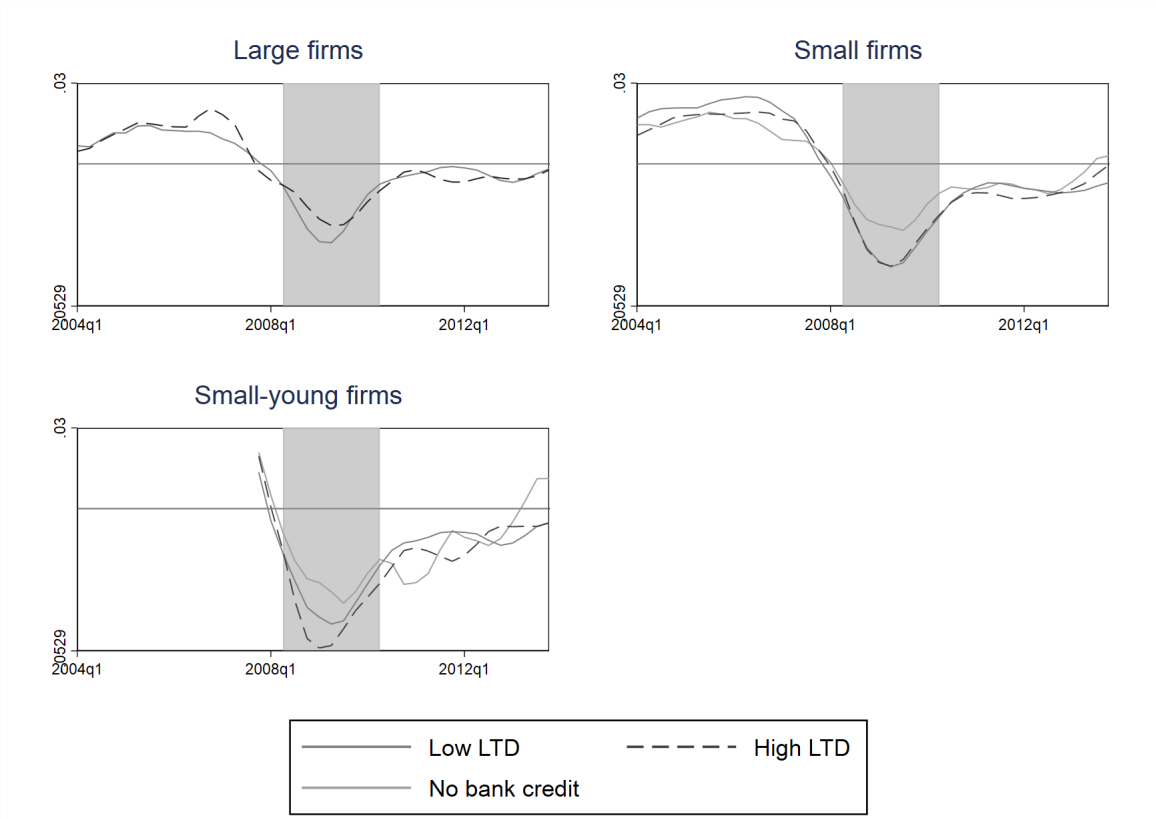


Figure 6: Quarterly net employment flows. We compare firms with no bank credit, low LTD banks, and high LTD banks. Small firms have between 5 and 50 employees in 2007, young firms are 0-3 years old in 2007, and large firms have more than 50 employees. Large firms with no bank credit are not depicted due to too few observations. The flows include firm exits. The corresponding figure without firm exits is Appendix Figure A-12. The plotted series are centered moving averages.

and 10-19 and 20+ years in 2007 respectively. This mirrors the results from Figure 5, where we primarily see a differential effect on loan growth for firms aged 0-3 years in 2007. The employment effect in Figure 6 is not visible for small firms in general because small-young firms are only a small fraction of the overall number of small firms and an even smaller fraction of the total number of employees.[19]

[19]There are 2.218 small-young firms and 11.358 small firms with bank credit in our sample. On average, the small-young firms with bank credit have 13 employees, whereas small firms with bank credit have 15 employees per firm. Together, this means that small-young firms employ approximately 17% of the overall sample of workers in small firms. If we alternatively consider firms with between 5 and 25 employees in 2007, we see a small employment

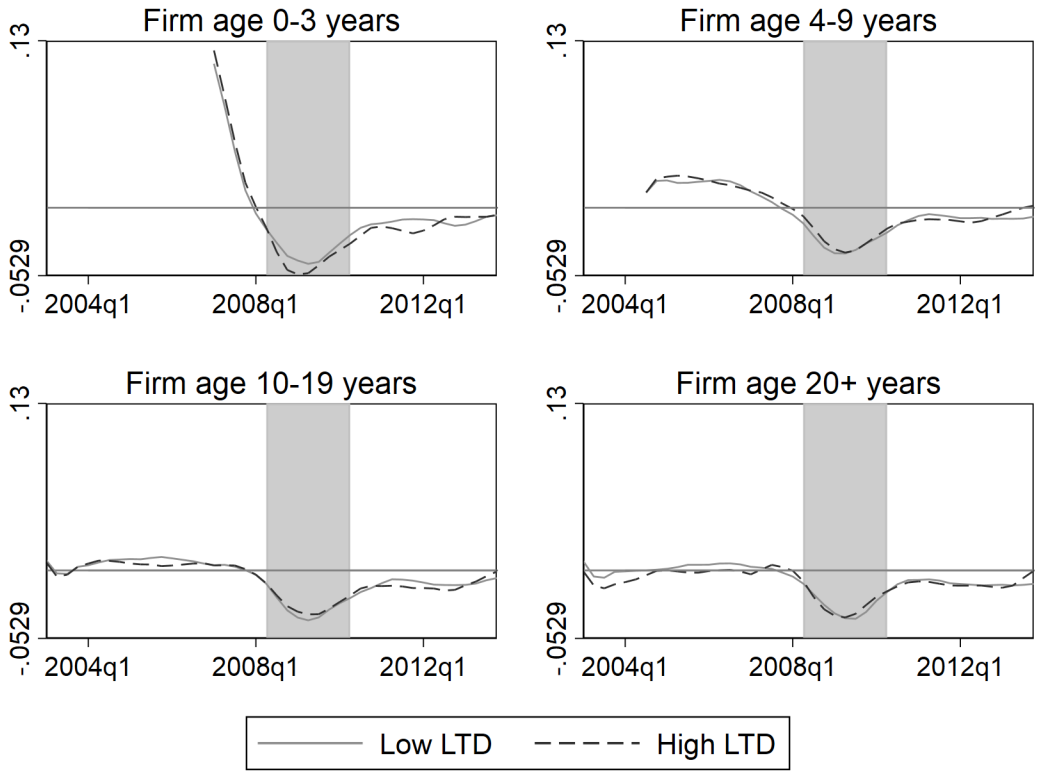


Figure 7: Quarterly net employment flows for small firms (between 5 and 50 employees in the third quarter of 2007) by age in 2007, divided into categories of ages 0 to 3, ages 4 to 9, ages 10 to 19, and ages 20 and above. We compare firms with low LTD banks and firms with high LTD banks. The flows include firm exits. The corresponding figure without firm exits is Appendix Figure A-15. In Appendix A-14, we extend the pre-period by one year for firms aged 0-3 years in 2007 to verify that the pre-trends indeed are parallel. The plotted series are centered moving averages.

Part of the reduction in employment could arise as a consequence of firm closures. Appendix Figure A-11 suggests that more small-young firms with a high LTD bank close, whereas there does not seem to be a differential effect for small firms as a whole. However, even among small-young firms it turns out that the firm exit rate is not statistically different between high and low LTD firms. In Appendix Figure A-12, we also consider employment effects without firm exits. The overall conclusions are the same as in Figure 6, but the size of the employment effect is smaller

effect, as shown in Appendix Figure A-13. However, the share of employment by small-young firms among firms with between 5 and 25 employees is higher at 20%.

| | Reduced-form | | | IV regression |
|---|---|---|---|---|
| | Large firms | Small firms | Small-young firms | Small-young firms |
| HighLTD X 2008 | -0.000119 | 0.00617 | -0.0642** | 0.0736 |
| | (0.0171) | (0.00840) | (0.0281) | (0.0650) |
| HighLTD X 2008-2009 | 0.00664 | 0.00711 | -0.0583*** | 0.0838 |
| | (0.0130) | (0.00734) | (0.0221) | (0.0522) |
| HighLTD X 2008-2010 | 0.00527 | 0.00706 | -0.0584*** | 0.0972* |
| | (0.0124) | (0.00740) | (0.0217) | (0.0500) |
| HighLTD X 2008-2011 | 0.00200 | 0.00639 | -0.0601*** | 0.116** |
| | (0.0121) | (0.00783) | (0.0223) | (0.0563) |
| HighLTD X 2008-2012 | 0.00228 | 0.00457 | -0.0600*** | 0.109** |
| | (0.0119) | (0.00755) | (0.0223) | (0.0514) |
| HighLTD X 2008-2013 | 0.00163 | 0.00624 | -0.0586*** | 0.114** |
| | (0.0118) | (0.00753) | (0.0223) | (0.0538) |
| Observations | | | | |
| 2008 | 8,930 | 58,589 | 6,020 | 5,711 |
| 2008-2009 | 10,501 | 70,488 | 9,298 | 8,943 |
| 2008-2010 | 11,941 | 80,586 | 11,543 | 11,071 |
| 2008-2011 | 13,314 | 89,928 | 13,559 | 12,985 |
| 2008-2012 | 14,620 | 98,609 | 15,366 | 14,678 |
| 2008-2013 | 15,893 | 106,738 | 17,041 | 16,223 |

Table 3: The effect on annual employment growth in the firm from having a primary bank with a high LTD. Employment growth is defined as the net job flow, $NJF_i$ at firm $i$ as in equation (2), divided by the firm's lagged employment level. Each cell in the Reduced-form columns is a difference-in-differences estimate from a regression of employment growth on a dummy for high LTD interacted with different post periods, i.e. $\beta$ from equation (4) when replacing the dependent variable with the employment growth. The last column contains IV-estimates using the dummy for high LTD interacted with the post period dummy as instrument for loan growth as in equation (5). We include industry × year dummies, industry × municipality dummies, and firm fixed effects. All estimates are weighted by the firm's number of employees in year t-1. Firms are only included if the firms' loan amounts per worker exceed 7,000 DKK in 2007. Appendix Table A-6 shows reduced-form results without controls and with firm fixed effect. Appendix Table A-7 shows results for firms with loan amounts exceeding 3,500 and 14,000 DKK per worker. Appendix Table A-8 shows reduced-form and IV results for small-young firms without controls and with firm fixed effect. In Appendix Table A-9, we show IV results for small-young firms where we have recoded zero loans to 0.001 DKK and 1,000 DKK. Standard errors are clustered on primary banks. *** $p < 0.01$, ** $p < 0.05$, *$p < 0.1$.

when excluding flows due to firm closures.

We can interpret the differential development in employment flows as causal under the assumption that the counterfactual loan and employment growth were uncorrelated with the choice of bank type. This would imply parallel trends in the absence of differential loan reductions. Since Figure 6 shows parallel pre-crisis trends across firms with high and low LTD banks for all three firm types (in size and age), we proceed with a causal interpretation of the difference-in-differences estimates.[20]

In Table 3, we present difference-in-differences estimates from reduced form regressions similar

[20]In addition to this, Table 1 showed that small-young and large firms seem balanced across high and low LTD. Furthermore the pre-trends for loan growth is parallel in Figures 3 and 4.

to equation (4), where we have exchanged the dependent variable from total loan growth to employment growth. We define annual firm-level employment growth as the net job flows from equation (2) divided by the employment level the year before. The regressions are weighted by the lagged employment level to obtain aggregate employment effects. The effects on employment growth for large and small firms are insignificant and small (columns 1-2). This is expected for large firms since the first stage estimates in Table 2 are insignificant. For small firms, the first stage is significant in 2008, but this does not translate into a significant employment effect.

In contrast, small-young firms with high LTD banks experienced a significant decline in net employment growth relative to small-young firms with low LTD banks. Specifically, column three, row one of Table 3 shows that small-young firms with a high LTD bank had 6.4 percentage points lower net employment growth from 2007 to 2008 than firms with low LTD banks. We note that the magnitude of the regression coefficients is larger than the employment effects in the figures because the regressions are performed on annual data. The differential employment effect remains significant when extending the post period, meaning that having a high LTD bank lowered the average annual net employment growth by about 5.9 percentage points up until 2013.

We can estimate the direct effect of loan growth on employment growth using the equation below:

$$\frac{NJF_{it}}{emp_{i,t-1}} = \phi_i + \alpha \left[ log(loan_{i,t}) - log(loan_{i,t-1}) \right] + \Theta_t + \pi X_{it} + v_{it} \tag{5}$$

where $NJF_{it}$ is defined in equation (2) and $emp_{i,t-1}$ is the employment level in the year before.[21] We estimate this equation by instrumenting $[log(loan_{i,t}) - log(loan_{i,t-1})]$ with the term $highLTD \times post_t$ by using equation (4) as the first stage. $\phi_i$ is a vector of firm fixed effects and $\Theta_t$ is a vector of year fixed effects. $X_{it}$ is a vector of industry-by-year and industry-by-municipality dummies. Our parameter of interest is $\alpha$, which measures the employment elasticity with respect to bank loans. The elasticity estimates for small-young firms are shown in the final column of Table 3.[22] The elasticity estimates range between 0.074 and 0.116, and the elasticities are significant at a 5% level for the post-periods 2008-2011 and up to 2008-2013, while only significant at the 10% level for 2008-2010.

[21] This is a convenient way to define the dependent variable because then we can decompose it into, for example, net flows from non-employment and net job-to-job flows.

[22] We have not reported the insignificant 2SLS estimates for large and small firms since the reduced-form estimates are insignificant.

Our results are similar to Greenstone *et al.* (2020) and Davis and Haltiwanger (2021), who find small and insignificant effects of shocks to bank loans on aggregate employment in small firms in the US. For example, in Greenstone *et al.* (2020), the estimated elasticities are below 0.025. However, we find that among the small-young firms, bank credit does have a statistically significant effect on employment growth during the Great Recession. This is similar to Davis and Haltiwanger (2021), although the elasticities are not directly comparable.[23] We also need to acknowledge that our IV estimates are sensitive to how zero-loans are treated in the first stage. When recoding zeros as 0.001 DKK instead of 1, we obtain elasticities in the range of 0.052 to 0.088 (see Appendix Table A-9).[24]

Are our elasticity estimates economically relevant for small-young firms? It would appear so, bearing in mind the large loan reductions for small-young firms observed in Section 4. However, we cannot precisely quantify the full direct effect of reduced bank credit in the Great Recession on firm employment since we cannot isolate the full loan supply effect from the loan demand effect. Still, the reduced form effect can be seen as the minimum employment effect of reduced credit. Assuming that the reduced form effect amounts to the total direct effect of credit on employment would be equivalent to assuming that there were no credit supply reductions by low LTD banks in the Great Recession. This would imply that the observed loan reductions in low LTD banks were only due to a lower credit demand from firms.

In Appendix Table A-10, we compare the differential employment effect from the reduced-form regression in Table 3 with the total employment effect for small-young firms. The total effect is estimated by regressing employment growth on a post-2007 dummy, year dummies for 2005 and 2006, as well as industry and municipality controls.[25] We interpret the coefficient to the post-2007 dummy as the aggregate employment effect. We find that at least 40% of the initial employment reduction for small-young firms in 2008 is due to the credit crunch, and when we include more post periods, the credit reduction explains at least 30% of the employment effect.

[23] The main focus of Davis and Haltiwanger (2021) is on the effect of housing prices on employment growth at the MSA level. For their estimation of the effect of small business loans, they use a Bartik-type variable where different banks' national small business loan growth rates are weighted by each bank's share of small business lending in the MSA. Our elasticity estimates are about 2-3 times larger than their small business loan elasticity estimates. This seems intuitive as the tightening of credit policies probably will not impact all firms in a MSA with the same intensity.

[24] When recoding zero loans to 1,000 DKK, we obtain elasticities in the range of 0.128 to 0.174.

[25] We include the same set of controls as in Table 3, except for year-dummies and industry-by-year dummies.

*5.1. Flows from Nonemployment and Job-to-job for Small-young Firms*

To understand how employment flows are affected by credit constraints, we separate the net employment flows for small-young firms into net flows from nonemployment and net job-to-job flows across firms with high and low LTD banks. Figure 8 shows that high LTD firms had lower net flows from both nonemployment and job-to-job flows early during the Great Recession. While the differential effect on net nonemployment flows quickly disappears, the differential effect on net job-to-job flows persists until 2012, implying that the lower job-to-job flows drive the longer-lasting effect on employment of having a high LTD bank. Specifically, the high LTD firms have around 0.5 percentage points lower job-to-job net flows from the second quarter of 2008 to the first quarter of 2012 compared to firms with low LTD banks.

In Table A-12, we again relate the differential effect to the total employment effect for small-young firms. This table shows that minimum 50% of the total nonemployment response in 2008 was due to credit constraints. For all the other post-periods we consider, e.g. 2008-2009, the differential nonemployment response only explains about 25% of the total decline in netflows from nonemployment. In contrast, the minimum share of job-to-job flows explained by credit constraints is remarkably constant, at about 35% for all our post-periods.[26]

The effect of credit restrictions on flows from nonemployment and job-to-job flows can be further split into hires and separations. Appendix Figure A-17 shows that the small-young firms, which were hit by the credit shock in the Great Recession, initially adjusted their employment disproportionally by separating workers to nonemployment but switched to hiring fewer workers from nonemployment and job-to-job. As discussed in Section 3, the slow recovery of small-young firms in the Great Recession was mainly driven by lower job-to-job flows, and part of this development is explained by credit constraints lowering the job-to-job hires. In summary, credit constraints made firms more reluctant to hire new workers, but apart from early in the crisis, they were still largely able to retain their existing workforce.

*5.2. Employment Flows across Small-young Firms by Productivity*

For society, credit constraints can be productivity-enhancing if less productive firms face tighter credit constraints than more productive firms. The conventional wisdom is that recessions tend to have a cleansing element, i.e., recessions are times of higher reallocation by which workers

[26] Appendix Table A-11 shows reduced form estimates split by nonemployment and job-to-job flows.

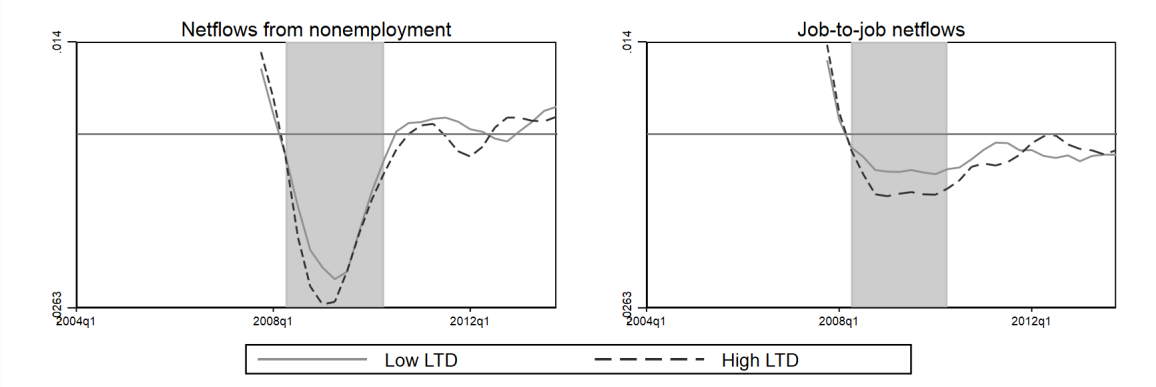


Figure 8: Quarterly net nonemployment and job-to-job flows for small-young firms. We compare firms with low LTD banks and firms with high LTD banks. Small-young firms have between 5 to 50 employees and are between 0 to 3 years old in 2007. The flows include firm exits. In Appendix Figure A-16, the flows without firm exits are depicted. The plotted series are centered moving averages.

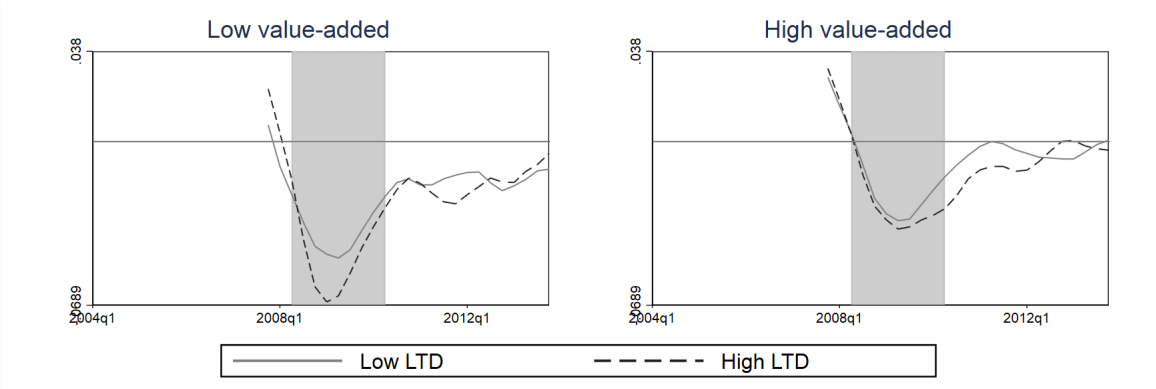


Figure 9: Quarterly net employment flows for small-young firms with high and low value-added per worker in 2007. We compare firms with low and high LTD banks. firms. We compare firms with low LTD banks and firms with high LTD banks. Small-young firms have between 5 and 50 employees and are 0-3 years in 2007. Firms with a lower value-added per worker in 2007 than the median are labeled as low value added firms, the rest are labelled as high value added firms. The flows include firm exits. The corresponding figure without firm exits is Appendix Figure A-18. The plotted series are centered moving averages.

are moved from less productive job matches to more productive job matches – often through an intervening spell of unemployment. However, it is less clear whether tightened credit constraints counteract the cleansing effect of recessions. We explore whether there was a cleansing effect of credit constraints during the Great Recession by separately considering employment flows for high and low-productivity firms. We measure productivity by value-added per worker.

In Figure 9, we consider net employment flows for small-young firms split by value-added per worker at the median in 2007. For the low productivity firms, credit constraints have an immediate and large effect on net employment flows. In Appendix Table A-14, we find that this differential effect corresponds to almost half of the total reduction in employment flows by low productive firms. In comparison, Figure 9 shows that credit constraints among the high productivity firms have a smaller, but longer-lasting effect. For high productive firms, only slightly more than a fifth of the total employment response in 2008 can be explained by the differential effect between high LTD and low LTD firms (see Appendix Table A-14). When extending the post-period, we find that this minimum share explained by credit constraints increases slightly for high productive firms. This means that among small-young firms, this minimum share is larger for high productive firms compared to low productive firms in 2008-2010 and all later post-periods.[27][28]

*5.3. Employment Flows across Small-young Firms by Skills*

In this subsection, we consider worker flows by skills to get a better understanding of the strategic decisions made by firms in response to a credit shock. We separately consider flows for high and low skilled workers across high and low productivity firms in Figure 10. High skilled workers are defined as managers, professionals, and technicians and associate professionals. Low skilled workers are the rest.

There are two main takeaways from combining worker type with firm productivity. First, the initial reduction in employment flows in low productivity firms is almost exclusively driven by low skilled workers. Low skilled workers in low productivity, low LTD firms fared about as well as high skilled workers in low productivity firms across LTD. This means that the initial cleansing effect of credit constraints only affected low skilled workers. This result is consistent with a theory where banks during financial crises primarily reduce lending to less productive firms, who in turn eliminate less productive jobs.

This result is in line with the US evidence in Haltiwanger *et al.* (2018a), who find that younger and less educated workers are more likely to flow into nonemployment during downturns and that

[27] Appendix Table A-13 shows reduced form estimates split by high and low productive firms. Appendix Figure A-19 shows that for both high and low productive firms, the effect of credit constraints goes through both net flows from nonemployment and net job-to-job flows.

[28] We have also looked into differential effects across leverage. We find larger reductions for small-young firms with leverage below the median compared to firms with leverage above the median. As Appendix Table A-15 shows, employment reductions tend to be similar for firms with high and low leverage.

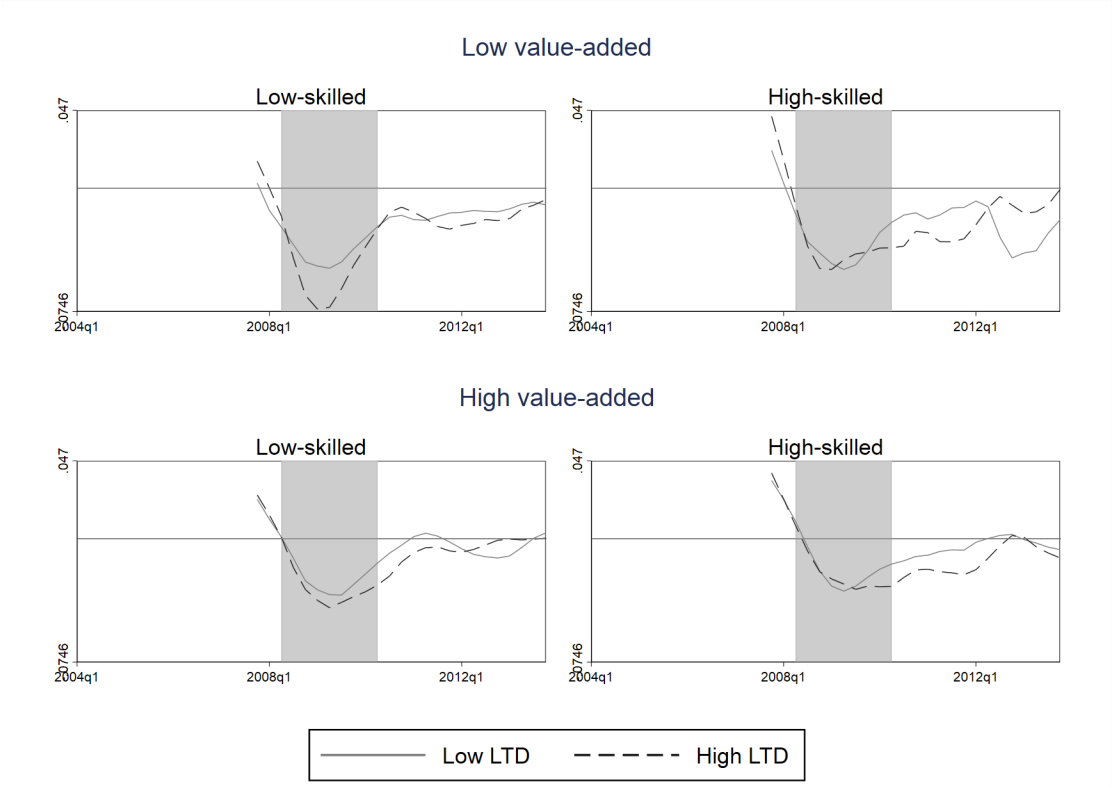


Figure 10: Quarterly net employment flows for small-young firms in 2007 across high and low productivity firms and high and low skilled workers. We compare firms with low LTD banks, firms with high LTD banks, and firms with no bank credit. High skilled workers are defined by the major categories 1-3 of ISCO. These are managers, professionals, and technicians and associate professionals. Low skilled workers are the rest. Small-young firms have between 5 and 50 employees and are 0-3 years in 2007. The flows include firm exits. The plotted series are centered moving averages. In Appendix Figure A-20, we show the development in quarterly net employment flows only for the overall groups of low- and high-skilled workers.

this is especially likely at low productivity firms. However, unlike Haltiwanger *et al.* (2018a), we find that credit constraints lead low productivity firms to reduce their employment of low skilled workers not only through nonemployment flows, but also through job-to-job flows as shown in the top panel of Appendix Figure A-21. Further, our results on worker skills complement the existing literature on the effect of credit on employment by worker type during the Great Recession. Berton *et al.* (2018) find that financial shocks primarily affect workers with low education and workers with temporary contracts, and Caggese *et al.* (2019) find that it is especially low tenured workers who separated due to financial constraints at the firm.

Second, while the initial effect of high LTD banks primarily affected low skilled workers, the subsequent wave of employment reductions also included high skilled workers.[29] This is in line with a theory that predicts that credit constraints make it more difficult for firms to finance new investments and hiring costs for new workers (Oi, 1962; Hamermesh, 1989). Our results suggest that such costs matter more for high skilled workers. Further, high skilled workers were not just affected through lower net job-to-job transitions, but also through lower net flows from nonemployment (see lower panels of Appendix Figures A-21 and A-22). Our results are in accordance with Adamopoulou *et al.* (2020), who find that it is primarily the high type workers who are affected by credit constraints in the long run.

## 6. Conclusion

This paper provides insight into the role of credit constraints on aggregate worker flows in the Great Recession. By using Danish data on firm-bank connections, we are able to exploit that some banks were less healthy at the onset of the crisis. We do not find evidence of firm selection into banks of different health. Therefore, we can investigate the causal effects of bank health on the tightening of credit supply across different types of firms. We find that the credit supply was mainly tightened for small-young firms. We use this to analyze the effect of credit supply on employment growth in small-young firms.

Our contribution to the literature is three-fold: Focusing on small-young firms, we analyze the cleansing effect of tightened credit, separate the credit effect on employment flows into flows to and from nonemployment and job-to-job transitions, and consider how credit constraints affect workers with different skills.

We find that the additional employment reductions made by small-young firms with high LTD banks correspond to around 30% of the total reduction in employment growth for small-young firms over the period of 2008-2013. At the beginning of the crisis, credit constraints had a cleansing effect, but during the recovery period, high productive firms reduced hiring.

Our results highlight that small-young firms are more vulnerable to credit constraints. In contrast, we see no employment effects for small-mature firms, whose credit is also reduced early in the crisis. These findings suggest that access to liquidity is of key importance for firm growth.

[29] Figure 10 shows that, during the recovery period, high skilled workers in high LTD firms had lower employment growth in both high and low productivity firms.

Access to credit enables businesses to take advantage of new opportunities, allowing them to expand and create new jobs.

Further, we find that credit constraints have an uneven impact on different types of workers, with low-skilled workers being affected early in the crisis and high-skilled workers being affected during the recovery period. This highlights the importance of policymakers considering not only the impact of credit constraints on aggregate employment but also the impact of credit constraints on workers with different skills.

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# APPENDICES

## A1. Data Appendix

The spell data set has been constructed using five data sets (MIA, CON, RAS, BFL, DREAM). For 2003-2007, we mainly use the MIA register, which contains monthly registrations of wage payments for the population of workers and firms. Unfortunately, this register does not hold any information on the origins of wage payments to workers. This implies that if the worker receives income from more than one firm in a given month, we cannot, based on MIA data alone, determine the primary employment for that month. Therefore, we also use the yearly wage income for each worker's employment relation to determine the worker's primary employment in a month. For this purpose, we draw on the registers CON (2003-2005) and RAS (2006-2007). In practice, we distribute the yearly income from a given firm evenly across the months with a wage payment according to the MIA data set. Next, we rank each worker's employer on a monthly basis by the average monthly wage payments. However, we want to avoid registering transitions between primary and secondary jobs. Therefore, we prioritize employment relations, which last more than a month over single-month employment relationships irrespective of the relative average monthly wage payments.

For 2008-2014, we use the BFL register, which has monthly wage payments between all employers and their employees. Therefore, it is easy to rank a worker's employers by wage income in a month. Again, we prioritize employment spells with durations of more than a month over single-month spells.

For the entire sample period 2003-2014, we use the data set DREAM, to determine periods of nonemployment. The DREAM data has weekly indicators for each person's primary public transfer (e.g., unemployment benefits) if the person receives any benefits. In a given month, it is not unlikely that a worker gets wage payments as well as public benefits. Throughout the sample period, we give the highest priority to information from the DREAM data. We determine whether a person is non-employed by taking into account the type(s) of public benefits received and the number of weeks these benefits are received. We want to use a time-consistent way to determine nonemployment before and after the data break in 2008. Therefore, we estimate the employment probability using BFL data for 2008-2014 separately for each type of public transfer in the DREAM data. For example, the likelihood of being employed in BFL is very low if the worker receives early

retirement benefits for at least three weeks of a month. Therefore, throughout the sample period, we classify a person as being primarily non-employed if he receives early retirement benefits even if we also observe wage payments for the given month.

Initially we construct worker transitions at the monthly level. We distinguish between hires and separations and by whether transitions happen between two firms and between a firm and nonemployment. Next, we remove recalls to the same job. This implies that we construct a continuous employment spell at an employer if the worker returns to the same employer within six months.

Reclassification and mergers imply that the rate of job-to-job transitions in the raw data is artificially high. We remove transitions if more than 50% of employees in a firm change to another firm, where this group of workers also constitutes more than 50% of the workforce in the destination firm. Furthermore, we remove transitions if more than 75% of employees in a firm change to another firm and if the origin firm ceases to exist within a year. Similarly, we remove transitions if job-movers constitute more than 75% of the employees in the destination firm and the destination firm has existed for less than a year.

The spells data set constructed above include 181,933,785 monthly observations for 2,676,105 workers and 137,047 firms. We aggregate the spells data to a quarterly firm-level dataset with 2,831,758 observations for the period 2003-2014. Of the 137,047 firms, 62,027 exist in 2007, 40,678 are limited liability firms or stock companies and 31,130 also have more than 5 employees. Lastly, 20,513 of those firms have either larger total loans than 7000 DKK per worker or have no bank connection at all. This constitutes the final sample for estimation.

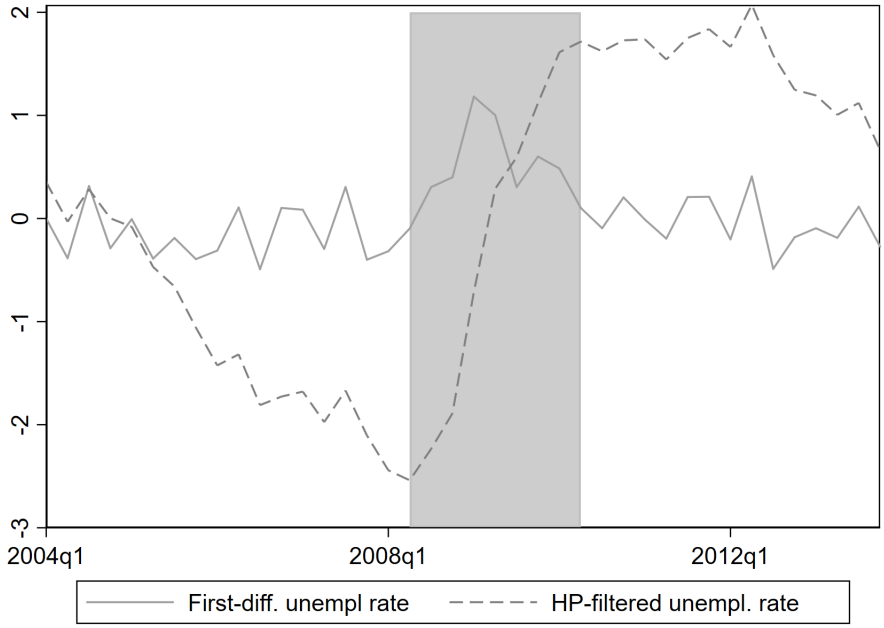


Figure A-1: First-differenced and HP-filtered Danish Labor Force Survey (AKU) unemployment rate. We follow Haltiwanger *et al.* (2018b) to measure cyclical indicators and use both the level of unemployment and the change in the unemployment rate. Level of unemployment is measured as the HP-filtered unemployment rate and the first difference as the increase in unemployment rate relative to previous quarter. We use aggregate quarterly unemployment data from Statistics Denmark and construct the exact periods of recession from quarters with positive growth in the unemployment rate.

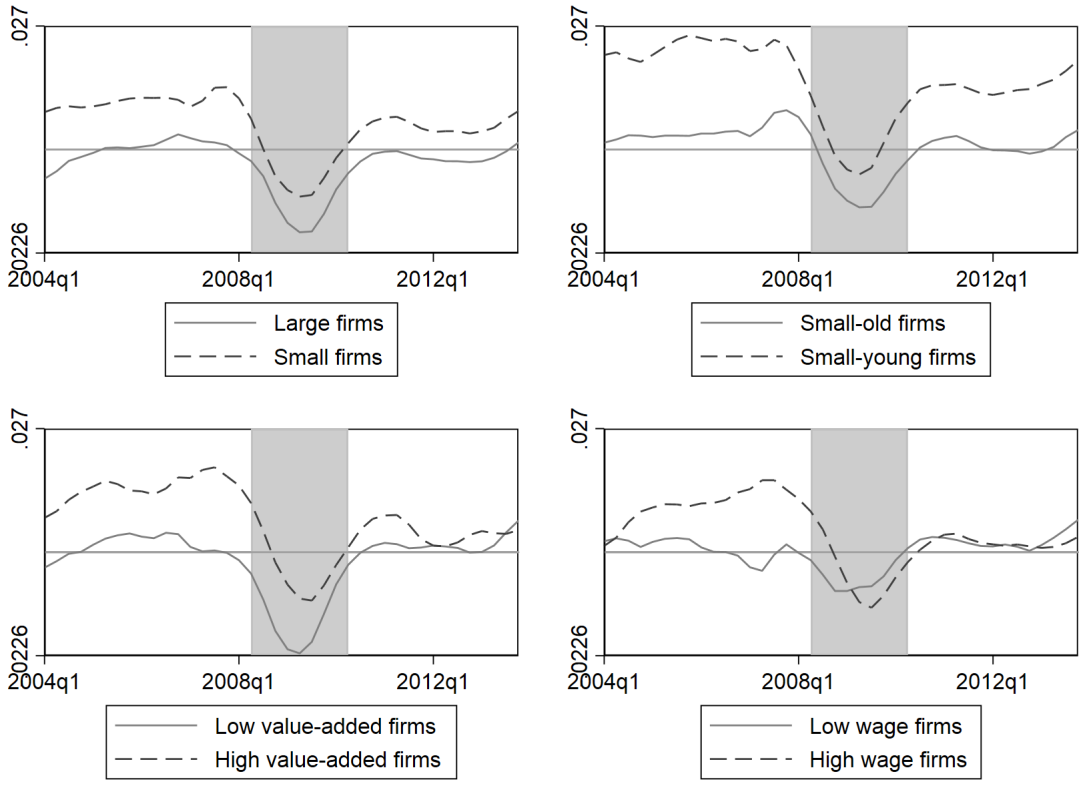


Figure A-2: Quarterly net employment flows by firm size, firm age for the small firms, firm value added per worker, and average firm wage. Large firms have more than 50 employees in the previous year, while small firms have fewer than 50 employees in the previous year. Young firms are 3 years old or younger and old firms are 4 years old and above in the given year. High value-added firms have above median value-added per worker in the year before. Low value-added firms have below median. High wage firms have average salaries above the median in the year before. Low wage firms have below median average salary. The plotted series are centered moving averages. The flows exclude flows due to firm entry and firm exit.

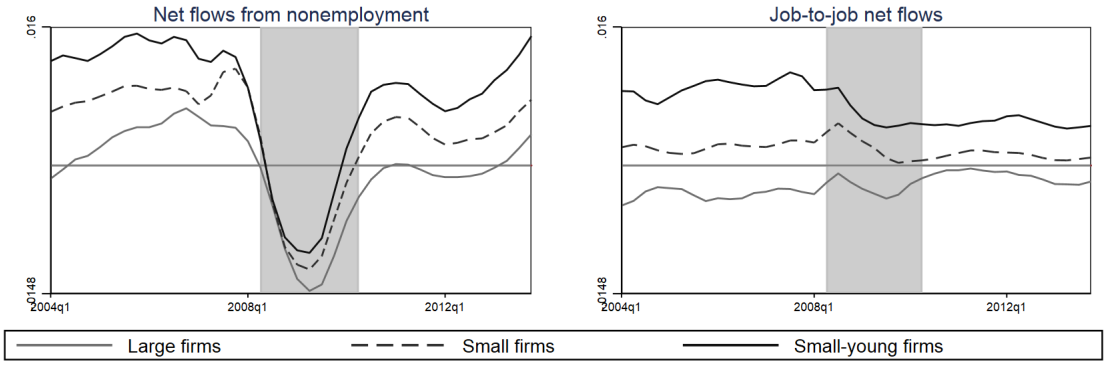


Figure A-3: Quarterly net nonemployment and job-to-job flows excluding firm entry and exit. Large firms have more than 50 employees in the previous year, while small firms have 50 or fewer employees in the previous year. Young firms are between 0 and 3 years old in 2007. The plotted series are centered moving averages. The flows exclude flows due to firm entry and firm exit.

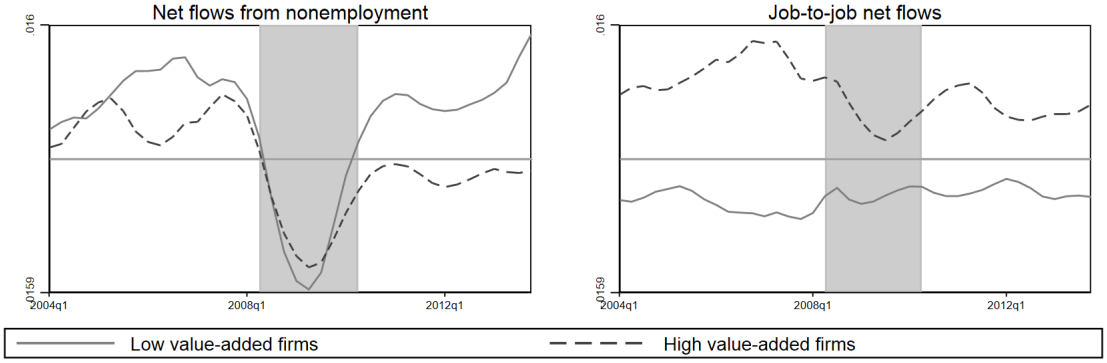


Figure A-4: Quarterly net flows from nonemployment and job-to-job flows by high and low value-added per worker firms. High value-added firms have above median value-added per worker in the year before. Low value-added firms have below median. The plotted series are centered moving averages. The flows include flows due to firm entry and firm exit.

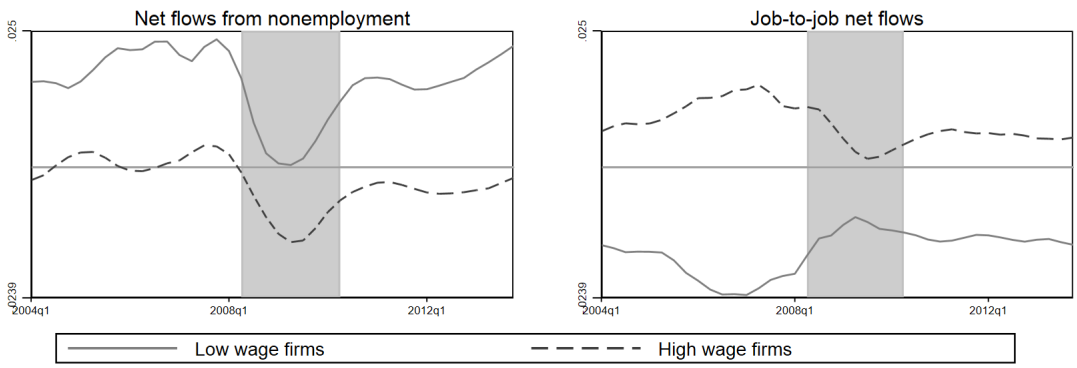


Figure A-5: Quarterly net flows from nonemployment and job-to-job flows by high and low wage firms. High wage firms have average salaries above the median in the year before. Low wage firms have below median average salary. The plotted series are centered moving averages. The flows include flows due to firm entry and firm exit.

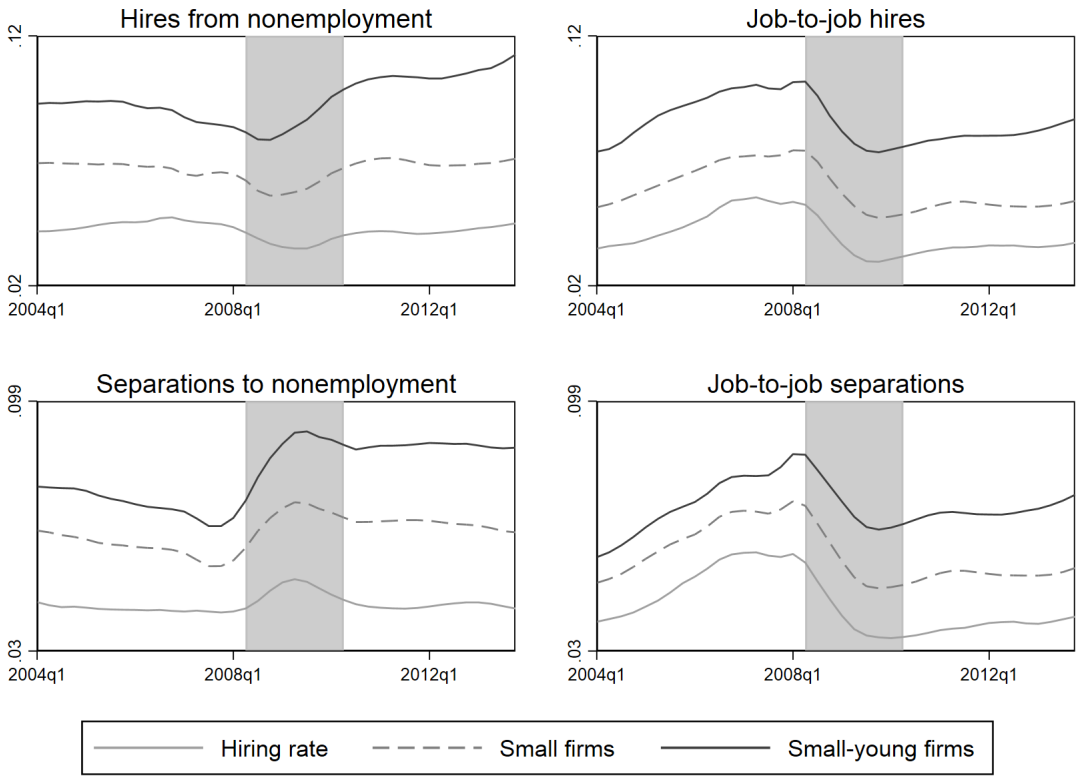


Figure A-6: Quarterly flows from hires and separations across job-to-job and nonemployment. Large firms have more than 50 employees in the previous year, while small firms have fewer than 50 employees in the previous year. Young firms are between 0 and 3 years old in 2007. The plotted series are centered moving averages. The flows include flows due to firm entry and firm exit.

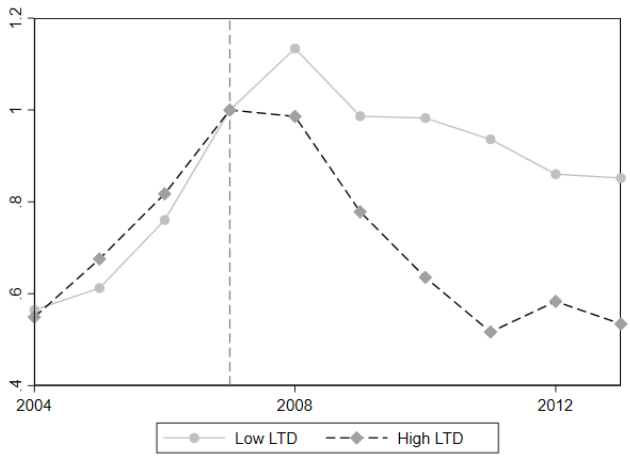


Figure A-7: Index of bank lending (2007=1) by high and low LTD banks. The banks' LTD in 2007 determines whether the bank is a high or low LTD bank. Firms' loans in their primary banks are aggregated by banks. We follow banks over time. Only banks existing in 2007 are included. This makes the figure sensitive to bank mergers unlike the rest of our analysis where we follow firms.

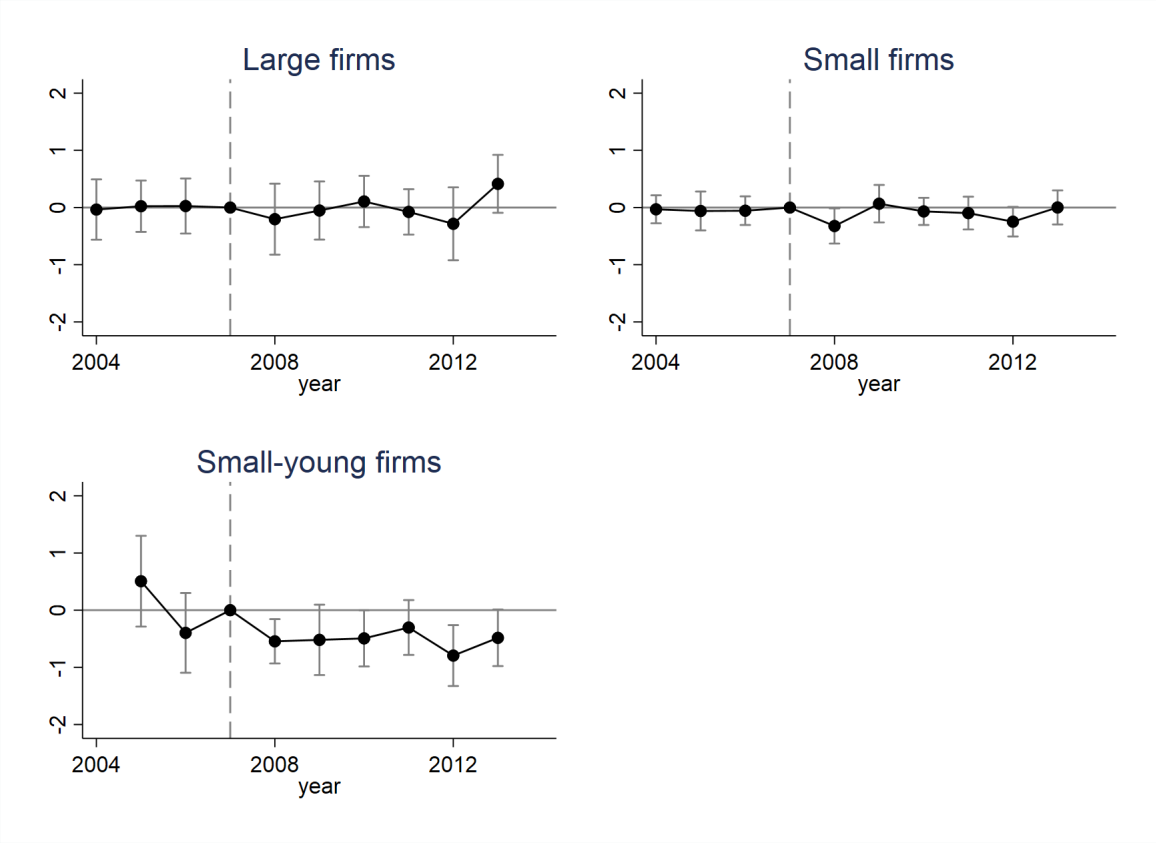


Figure A-8: Estimated differential year effects between high and low LTD firms, i.e. $\beta_t$ from equation (3) where the dependent variable is the growth rate in total loans. Effects are estimated for large firms (more than 50 employees in 2007), small firms (between 5 and 50 employees in 2007) and small-young firms (between 5 and 50 employees in 2007 and up to three years old in 2007) separately. We include industry $\times$ year dummies, industry $\times$ municipality dummies, and firm fixed effects. The regression is unweigthed. Firms are only included if their loan amount is greater than 3,500 DKK per worker in 2007. The confidence 95% pointwise intervals are based on standard errors clustered at the firms' primary bank level.

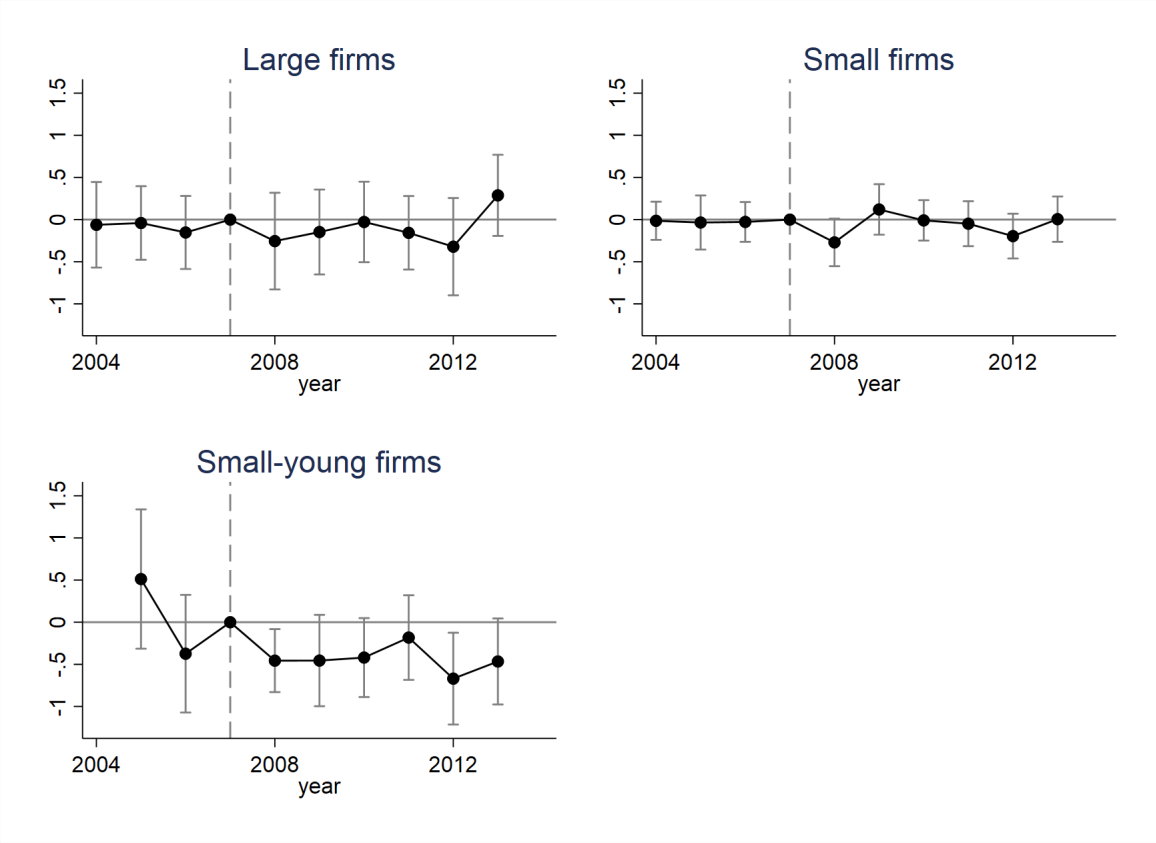


Figure A-9: Estimated differential year effects between high and low LTD firms, i.e. $\beta_t$ from equation (3) where the dependent variable is the growth rate in total loans. Effects are estimated for large firms (more than 50 employees in 2007), small firms (between 5 and 50 employees in 2007) and small-young firms (between 5 and 50 employees in 2007 and up to three years old in 2007) separately. We include industry $\times$ year dummies, industry $\times$ municipality dummies, and firm fixed effects. The regression is unweigthed. Firms are only included if their loan amount is greater than 14,000 DKK per worker in 2007. The confidence 95% pointwise intervals are based on standard errors clustered at the firms' primary bank level.

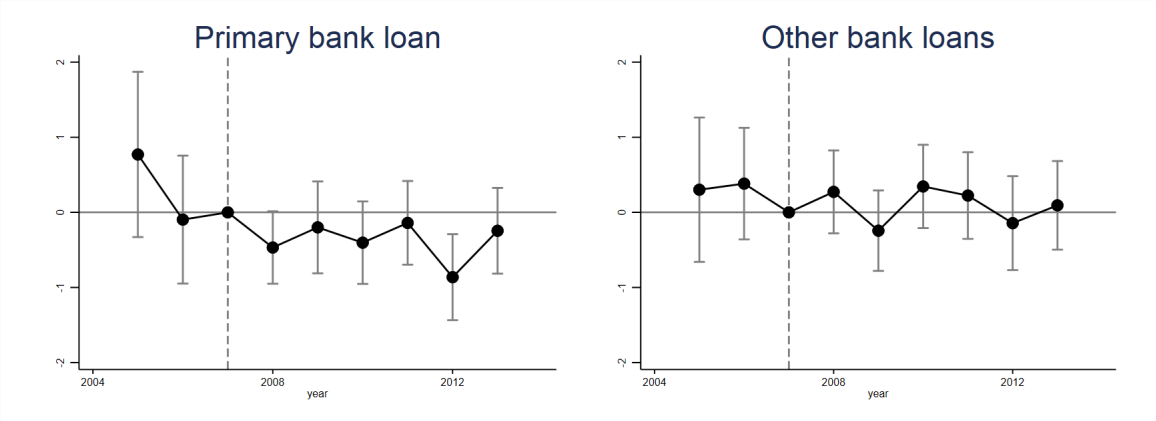


Figure A-10: Estimated differential year effects between high and low LTD firms, i.e. $\beta_t$ from equation (3) for small-young firms (between 5 and 50 employees in 2007 and up to three years old in 2007).. The dependent variable is the growth rate in, respectively, primary loans and other loans. We include industry $\times$ year dummies, industry $\times$ municipality dummies, and firm fixed effects. The regression is unweigthed. Firms are only included if their loan amount is greater than 7,000 DKK per worker in 2007. The confidence 95% pointwise intervals are based on standard errors clustered at the firms' primary bank level.

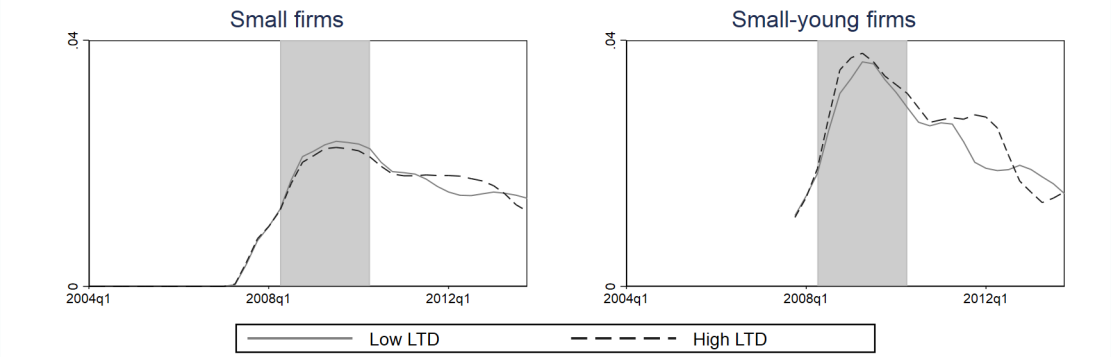


Figure A-11: Quarterly firm exit rates for small and small-young firms. We compare firms with high and low LTD banks. Small firms have between 5 and 50 employees in 2007, young firms are 0-3 years old in 2007. The plotted series are centered moving averages.

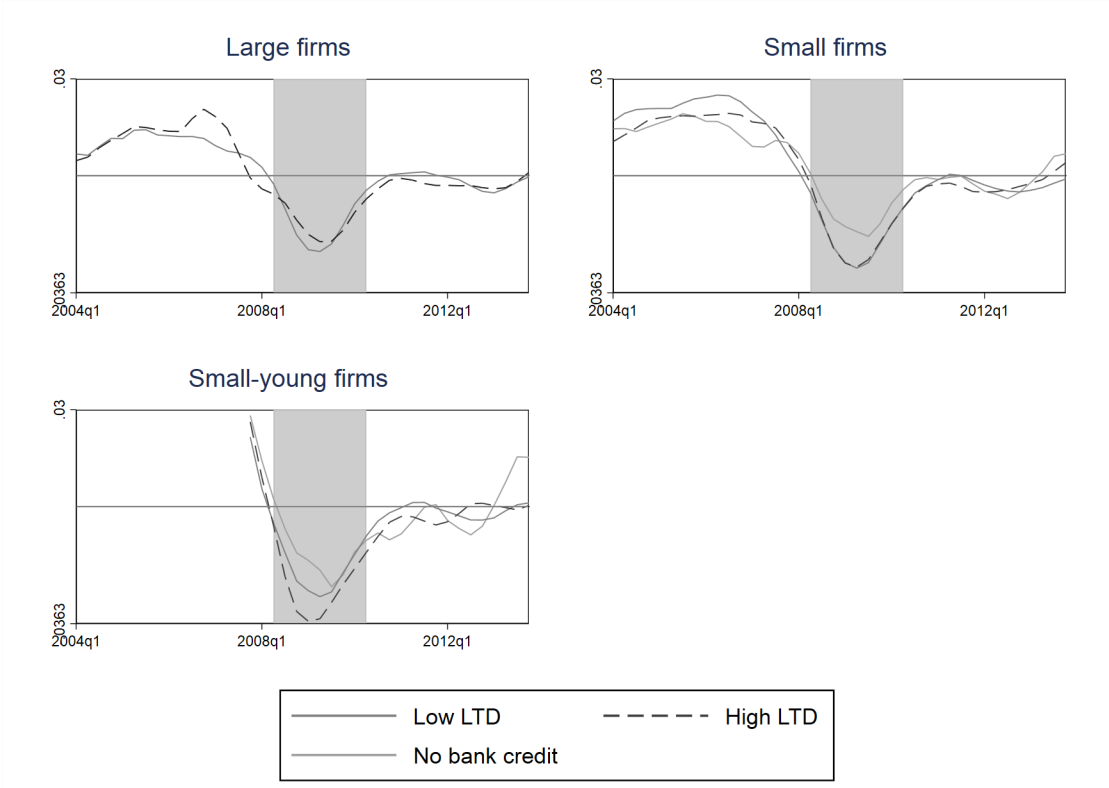


Figure A-12: Quarterly net employment flows. We compare firms with no bank credit, low LTD banks, and high LTD banks. Small firms have between 5 and 50 employees in 2007, young firms are 0-3 years old in 2007, and large firms have more than 50 employees. Large firms with no bank credit are not depicted due to too few observations. The plotted series are centered moving averages. The flows exclude firm exits.

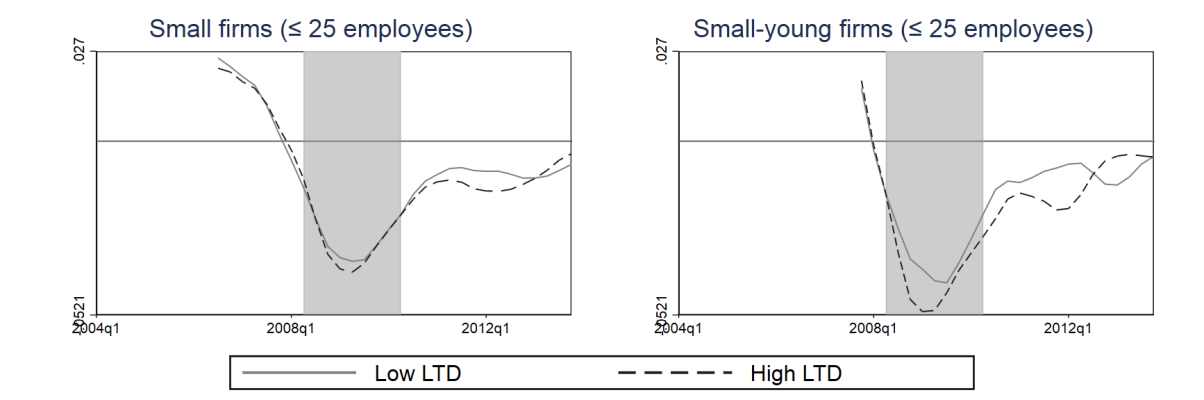


Figure A-13: Quarterly aggregate employment flows for small firms and small-young firms with 5-25 employees in 2007. Young firms are between 0 and 3 years old in 2007. The flows include firm exits. The plotted series are centered moving averages.

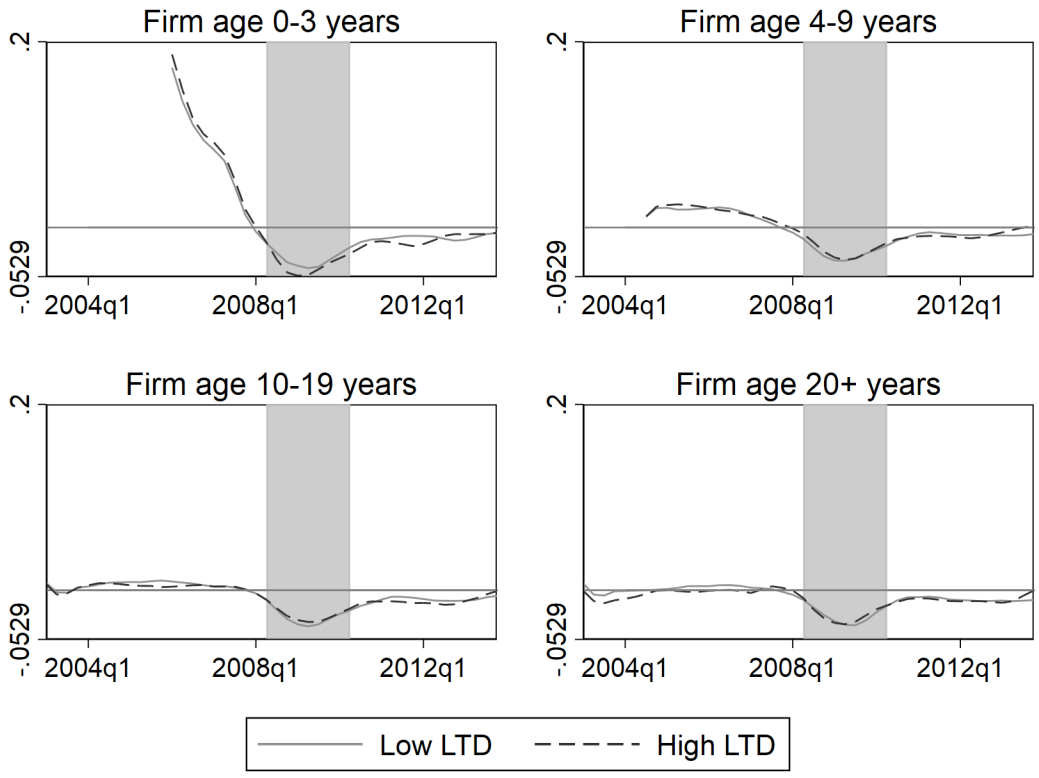


Figure A-14: Quarterly net employment flows for small firms (between 5 and 50 employees in the third quarter of 2007) by age in 2007, divided into categories of ages 0 to 3, ages 4 to 9, ages 10 to 19, and ages 20 and above. We compare firms with low LTD banks and firms with high LTD banks. The flows include firm exits. The plotted series are centered moving averages.

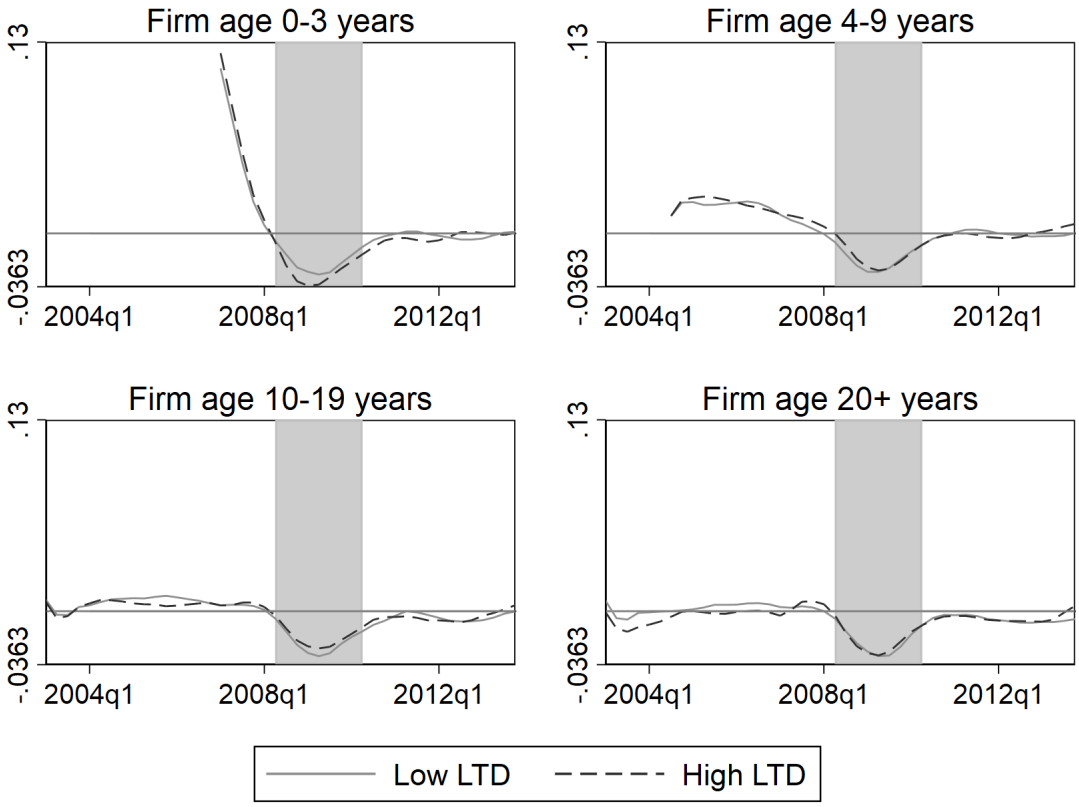


Figure A-15: Quarterly net employment flows for small firms (between 5 and 50 employees in 2007) by age in 2007, divided into categories of ages 0 to 3, ages 4 to 9, ages 10 to 19, and ages 20 and above. We compare firms with low LTD banks and firms with high LTD banks. The flows exclude firm exits. The plotted series are centered moving averages.

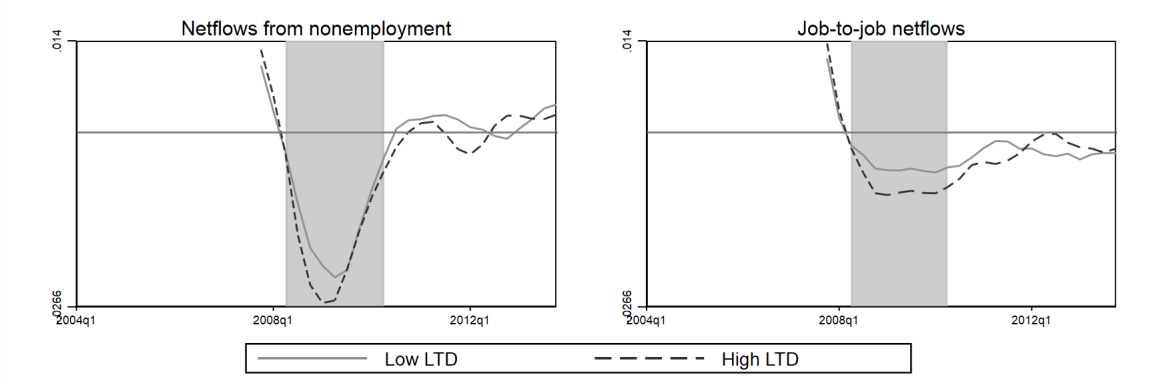


Figure A-16: Quarterly net nonemployment and job-to-job flows for small-young firms. We compare firms with low LTD banks and firms with high LTD banks. Small-young firms have between 5 and 50 employees in 2007 and are between 0 and 3 years old in 2007. The flows exclude firm exits. The plotted series are centered moving averages.

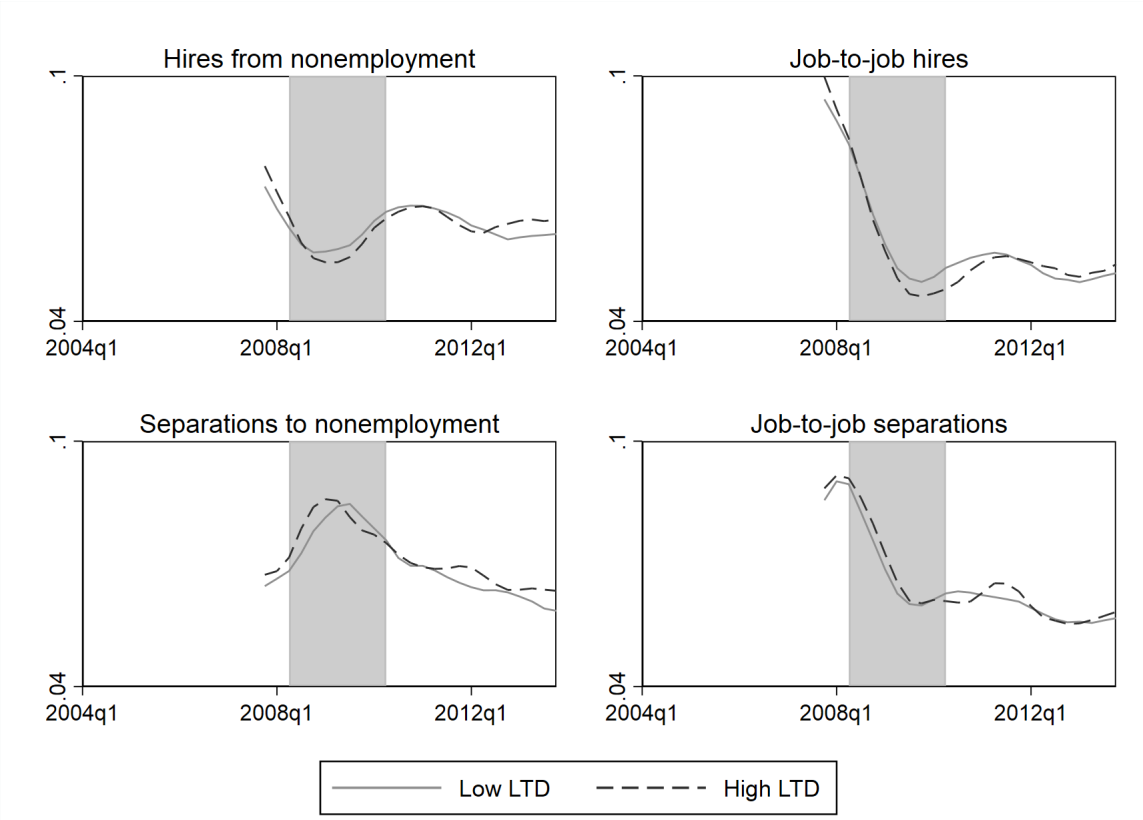


Figure A-17: Quarterly hiring and separation rates from nonemployment and job-to-job for small-young firms. We compare firms with low LTD banks and firms with high LTD banks. Small-young firms have between 5 and 50 employees in 2007 and are between 0 and 3 years old in 2007. The flows include firm exits. The plotted series are centered moving averages.

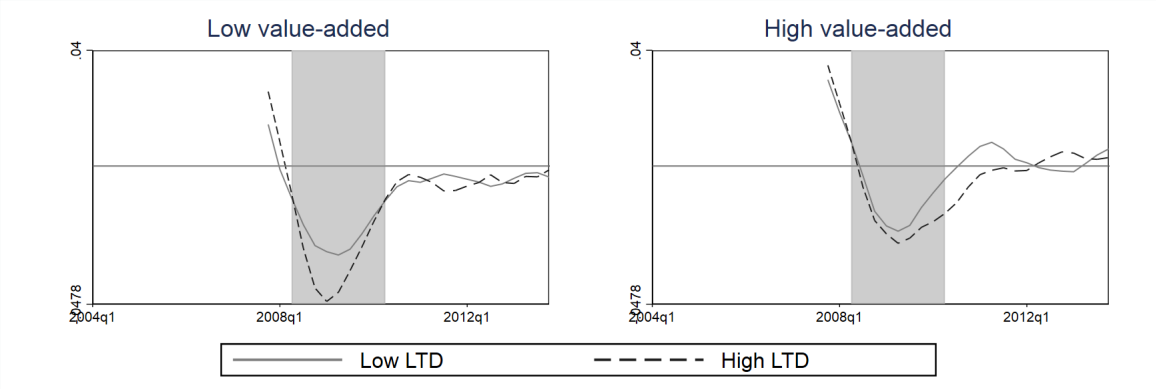


Figure A-18: Quarterly net employment flows for small-young firms with high and low value-added per worker in 2007. We compare firms with banks with low and high LTD. Small-young firms have between 5 and 50 employees in 2007 and are between 0 and 3 years old in 2007. Firms with a lower value-added per worker than the median are labeled as low value-added firms, the rest are labelled as high value added firms. The flows exclude firm exits. The plotted series are centered moving averages.

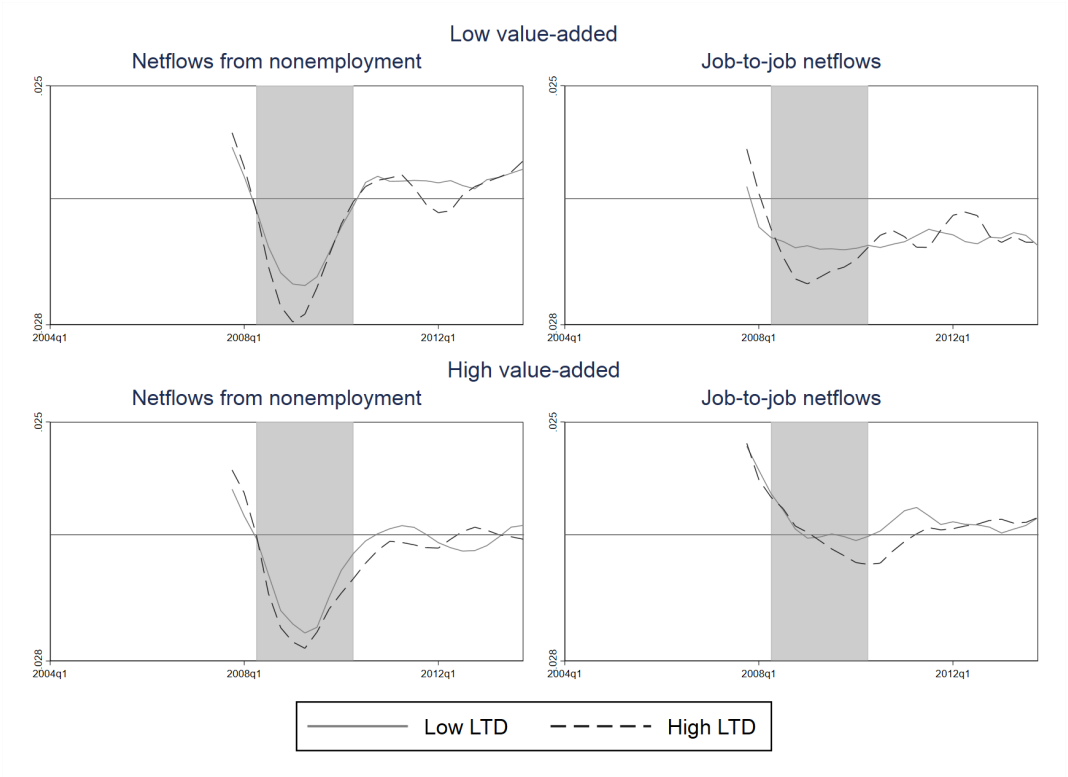


Figure A-19: Quarterly net flows from nonemployment and job-to-job for small-young firms with high and low value-added per worker in 2007. We compare firms with banks with low and high LTD. Small-young firms have between 5 and 50 employees in 2007 and are between 0 and 3 years old in 2007. Firms with a lower value-added per worker than the median are labeled as low value-added firms. The flows include firm exits. The plotted series are centered moving averages.

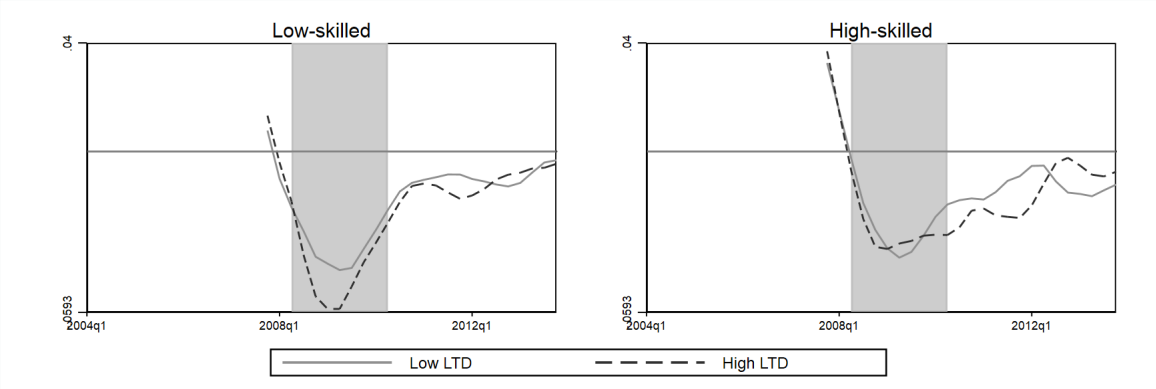


Figure A-20: Quarterly employment flows for small-young firms in 2007 across high and low skill. We compare firms with high and low LTD banks. High skilled workers are defined by the major categories 1-3 of ISCO, these are managers, professionals, and technicians and associate professionals. Low skilled workers are the rest. Small-young firms have between 5 and 50 employees in 2007 and are between 0 and 3 years old in 2007. The flows include firm exits. The plotted series are centered moving averages.

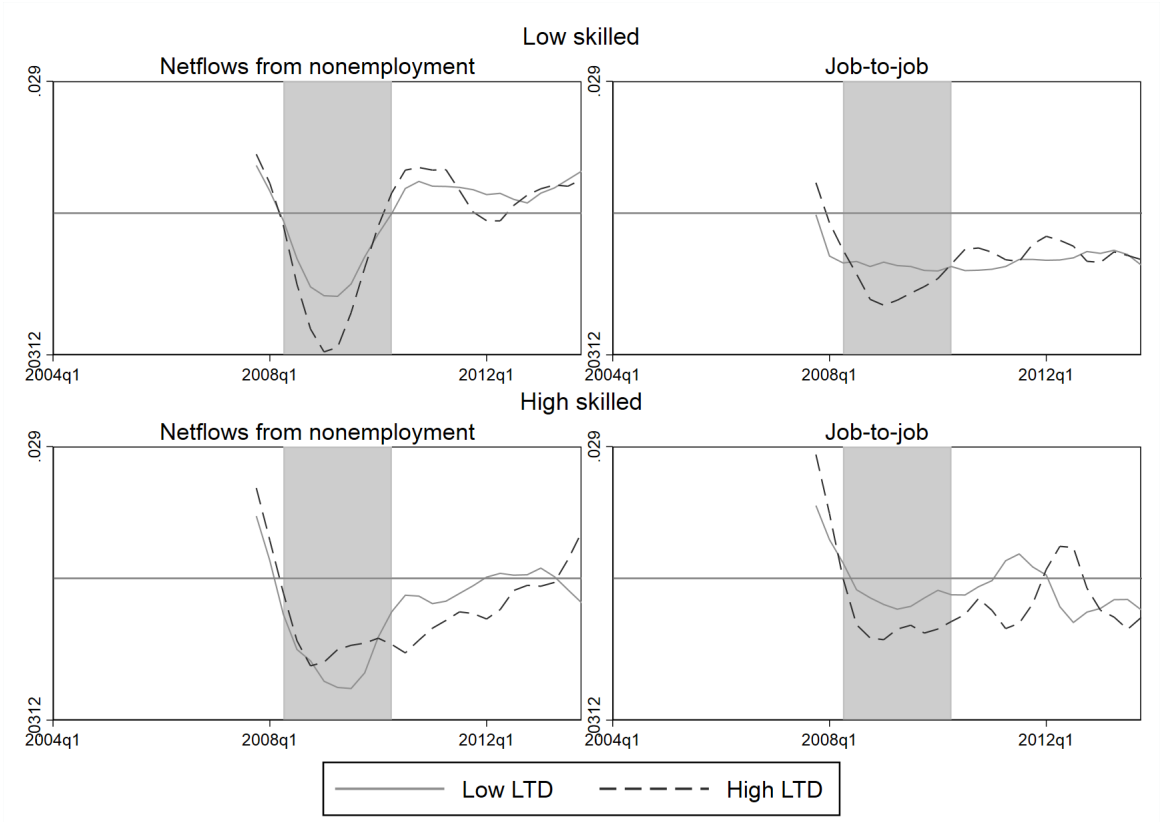


Figure A-21: Quarterly net flows from nonemployment and job-to-job for small-young firms with low value-added per worker. Flows are split by high and low skilled workers. We compare firms with banks with low and high LTD. High skilled workers are defined by the major categories 1-3 of ISCO, these are managers, professionals, and technicians and associate professionals. Low skilled workers are the rest. Small-young firms have between 5 and 50 employees in 2007 and are between 0 and 3 years old in 2007. The flows include firm exits. The plotted series are centered moving averages.

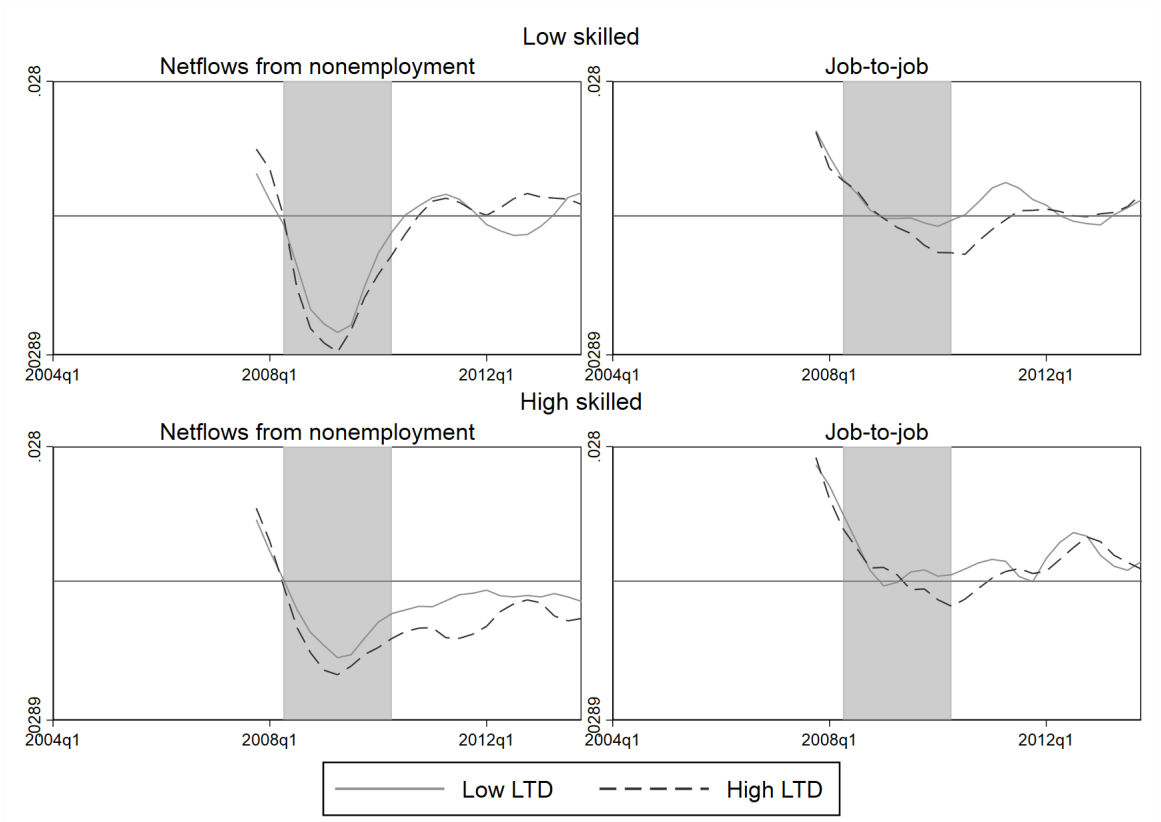


Figure A-22: Quarterly net flows from nonemployment and job-to-job for small-young firms with high value-added per worker. Flows are split by high and low skilled workers. We compare firms with banks with low and high LTD. High skilled workers are defined by the major categories 1-3 of ISCO, these are managers, professionals, and technicians and associate professionals. Low skilled workers are the rest. Small-young firms have between 5 and 50 employees in 2007 and are between 0 and 3 years old in 2007. The flows include firm exits. The plotted series are centered moving averages.

| | No controls | | | With fixed effects | | | All controls | | |
|---|---|---|---|---|---|---|---|---|---|
| | Large firms | Small firms | Small-young firms | Large firms | Small firms | Small-young firms | Large firms | Small firms | Small-young firms |
| 2008 | -0.168 | -0.258*** | -0.386** | -0.200 | -0.337*** | -0.540*** | -0.141 | -0.343*** | -0.560*** |
| | (0.204) | (0.0925) | (0.158) | (0.208) | (0.0955) | (0.172) | (0.268) | (0.0864) | (0.202) |
| 2008-2009 | -0.201 | -0.0593 | -0.342** | -0.227 | -0.0767 | -0.387** | -0.146 | -0.0992 | -0.452** |
| | (0.147) | (0.0857) | (0.142) | (0.154) | (0.0916) | (0.183) | (0.200) | (0.0784) | (0.216) |
| 2008-2010 | -0.149 | -0.0614 | -0.342** | -0.159 | -0.0702 | -0.402** | -0.0896 | -0.0881 | -0.483** |
| | (0.111) | (0.0768) | (0.135) | (0.123) | (0.0821) | (0.171) | (0.164) | (0.0689) | (0.200) |
| 2008-2011 | -0.176* | -0.0730 | -0.288** | -0.166 | -0.0789 | -0.341** | -0.0772 | -0.0851 | -0.427** |
| | (0.0952) | (0.0721) | (0.115) | (0.109) | (0.0826) | (0.150) | (0.143) | (0.0769) | (0.176) |
| 2008-2012 | -0.196** | -0.106 | -0.340*** | -0.178* | -0.105 | -0.405*** | -0.0771 | -0.110 | -0.465*** |
| | (0.0891) | (0.0679) | (0.115) | (0.105) | (0.0787) | (0.152) | (0.139) | (0.0730) | (0.177) |
| 2008-2013 | -0.130 | -0.0919 | -0.347*** | -0.118 | -0.0753 | -0.364** | -0.0399 | -0.0787 | -0.422** |
| | (0.0810) | (0.0638) | (0.110) | (0.0968) | (0.0766) | (0.149) | (0.127) | (0.0705) | (0.170) |
| Observations | | | | | | | | | |
| 2008 | 7,581 | 50,230 | 6,826 | 7,546 | 49,130 | 5,912 | 7,436 | 48,883 | 5,711 |
| 2008-2009 | 9,110 | 61,096 | 9,348 | 9,104 | 60,810 | 9,126 | 8,998 | 60,594 | 8,943 |
| 2008-2010 | 10,523 | 70,821 | 11,487 | 10,517 | 70,533 | 11,261 | 10,407 | 70,306 | 11,071 |
| 2008-2011 | 11,878 | 79,763 | 13,395 | 11,872 | 79,492 | 13,181 | 11,755 | 79,258 | 12,985 |
| 2008-2012 | 13,177 | 88,026 | 15,097 | 13,170 | 87,763 | 14,886 | 13,038 | 87,526 | 14,678 |
| 2008-2013 | 14,431 | 95,683 | 16,655 | 14,425 | 95,425 | 16,448 | 14,291 | 95,169 | 16,223 |

Table A-1: The effect on annual log changes log changes in total loan amounts from having a primary bank with a high LTD as in equation (4). Each cell is the difference-in-differences estimate from a regression of the log changes in total loans on a dummy for high loan-to-deposit ratio interacted with different post periods, i.e. the estimated $\beta$ from equation (4). The columns with all controls include industry × year dummies, industry × municipality dummies, and firm fixed effects. All estimates are unweighted. Firms are only included if the firms' loan amounts per worker exceed 7,000 DKK in 2007. Small firms have between 5 and 50 employees in 2007, young firms are between 0 and 3 years old in 2007, and large firms have more than 50 employees in 2007. Standard errors are clustered on primary banks. *** $p < 0.01$, ** $p < 0.05$, *$p < 0.1$.

| | No controls | | | With fixed effects | | | All controls | | |
|---|---|---|---|---|---|---|---|---|---|
| | Large firms | Small firms | Small-young firms | Large firms | Small firms | Small-young firms | Large firms | Small firms | Small-young firms |
| 2008 | 0.409 | -0.227** | -0.402** | 0.246 | -0.328*** | -0.623*** | 0.250 | -0.342*** | -0.658*** |
| | (0.447) | (0.107) | (0.177) | (0.446) | (0.107) | (0.209) | (0.244) | (0.0998) | (0.223) |
| 2008-2009 | 0.103 | 0.00260 | -0.386** | -0.00510 | -0.0263 | -0.511*** | 0.0698 | -0.0509 | -0.620*** |
| | (0.209) | (0.100) | (0.163) | (0.217) | (0.0985) | (0.198) | (0.162) | (0.0877) | (0.202) |
| 2008-2010 | -0.0331 | -0.0293 | -0.391** | -0.0797 | -0.0692 | -0.528*** | -0.0427 | -0.0821 | -0.630*** |
| | (0.133) | (0.0888) | (0.154) | (0.140) | (0.0869) | (0.181) | (0.116) | (0.0725) | (0.182) |
| 2008-2011 | -0.181 | -0.0456 | -0.285** | -0.141 | -0.0648 | -0.449*** | 0.0230 | -0.0738 | -0.553*** |
| | (0.144) | (0.0844) | (0.144) | (0.148) | (0.0890) | (0.166) | (0.113) | (0.0832) | (0.168) |
| 2008-2012 | -0.0877 | -0.0686 | -0.327** | -0.0435 | -0.0947 | -0.513*** | 0.0138 | -0.106 | -0.605*** |
| | (0.108) | (0.0806) | (0.137) | (0.128) | (0.0859) | (0.167) | (0.108) | (0.0799) | (0.168) |
| 2008-2013 | 0.0399 | -0.0822 | -0.363*** | 0.0241 | -0.0781 | -0.468*** | 0.118 | -0.0843 | -0.558*** |
| | (0.141) | (0.0743) | (0.132) | (0.143) | (0.0820) | (0.164) | (0.111) | (0.0755) | (0.163) |
| Observations | | | | | | | | | |
| 2008 | 7,581 | 50,230 | 6,826 | 7,546 | 49,130 | 5,912 | 7,436 | 48,883 | 5,711 |
| 2008-2009 | 9,110 | 61,096 | 9,348 | 9,104 | 60,810 | 9,126 | 8,998 | 60,594 | 8,943 |
| 2008-2010 | 10,523 | 70,821 | 11,487 | 10,517 | 70,533 | 11,261 | 10,407 | 70,306 | 11,071 |
| 2008-2011 | 11,878 | 79,763 | 13,395 | 11,872 | 79,492 | 13,181 | 11,755 | 79,258 | 12,985 |
| 2008-2012 | 13,177 | 88,026 | 15,097 | 13,170 | 87,763 | 14,886 | 13,038 | 87,526 | 14,678 |
| 2008-2013 | 14,431 | 95,683 | 16,655 | 14,425 | 95,425 | 16,448 | 14,291 | 95,169 | 16,223 |
| F-statistics | | | | | | | | | |
| 2008 | 0.839 | 4.482 | 5.165 | .305 | 9.426 | 8.919 | 1.044 | 11.745 | 8.750 |
| 2008-2009 | 0.241 | .001 | 5.605 | .001 | 0.071 | 6.662 | 0.186 | 0.337 | 9.399 |
| 2008-2010 | 0.062 | .109 | 6.463 | .324 | 0.634 | 8.527 | 0.135 | 1.283 | 12.019 |
| 2008-2011 | 1.570 | .292 | 3.921 | .903 | 0.531 | 7.297 | 0.042 | 0.787 | 10.813 |
| 2008-2012 | 0.665 | .726 | 5.728 | .116 | 1.215 | 9.474 | 0.016 | 1.758 | 13.031 |
| 2008-2013 | 0.08 | 1.222 | 7.595 | .028 | 0.909 | 8.147 | 1.131 | 1.244 | 11.724 |

Table A-2: The effect on annual log changes log changes in total loan amounts from having a primary bank with a high LTD as in equation (4). Each cell is the difference-in-differences estimate from a regression of the log changes in total loans on a dummy for high loan-to-deposit ratio interacted with different post periods, i.e. the estimated $\beta$ from equation (4). We include industry × year dummies, industry × municipality dummies, and firm fixed effects. All estimates are weighted by the firm's number of employees in year t-1. Firms are only included if the firms' loan amounts per worker exceed 7,000 DKK in 2007. Small firms have between 5 and 50 employees in 2007, young firms are between 0 and 3 years old in 2007, and large firms have more than 50 employees in 2007. Standard errors are clustered on primary banks. *** $p < 0.01$, ** $p < 0.05$, *$p < 0.1$.

| | Bank loans > 3,500 DKK/worker | | | Bank loans > 14,000 DKK/worker | | |
|---|---|---|---|---|---|---|
| | Large firms | Small firms | Small-young firms | Large firms | Small firms | Small-young firms |
| HighLTD X 2008 | -0.183 | -0.342*** | -0.541*** | -0.228 | -0.287*** | -0.413** |
| | (0.259) | (0.0855) | (0.197) | (0.242) | (0.0875) | (0.199) |
| HighLTD X 2008-2009 | -0.140 | -0.120 | -0.457** | -0.159 | -0.0790 | -0.397** |
| | (0.192) | (0.0804) | (0.221) | (0.197) | (0.0795) | (0.195) |
| HighLTD X 2008-2010 | -0.0602 | -0.106 | -0.498** | -0.110 | -0.0613 | -0.434** |
| | (0.158) | (0.0687) | (0.207) | (0.165) | (0.0702) | (0.183) |
| HighLTD X 2008-2011 | -0.0419 | -0.0954 | -0.460** | -0.0763 | -0.0568 | -0.382** |
| | (0.136) | (0.0765) | (0.181) | (0.148) | (0.0790) | (0.161) |
| HighLTD X 2008-2012 | -0.0732 | -0.117 | -0.491*** | -0.0986 | -0.0832 | -0.413** |
| | (0.131) | (0.0716) | (0.181) | (0.145) | (0.0755) | (0.164) |
| HighLTD X 2008-2013 | -0.0398 | -0.0877 | -0.446** | -0.0562 | -0.0569 | -0.371** |
| | (0.119) | (0.0703) | (0.173) | (0.130) | (0.0729) | (0.159) |
| Observations | | | | | | |
| 2008 | 7,777 | 50,287 | 5,844 | 7,019 | 46,856 | 5,500 |
| 2008-2009 | 9,405 | 62,365 | 9,181 | 8,488 | 58,082 | 8,598 |
| 2008-2010 | 10,873 | 72,369 | 11,374 | 9,818 | 67,382 | 10,638 |
| 2008-2011 | 12,283 | 81,594 | 13,341 | 11,086 | 75,950 | 12,472 |
| 2008-2012 | 13,623 | 90,118 | 15,086 | 12,294 | 83,860 | 14,092 |
| 2008-2013 | 14,932 | 98,002 | 16,681 | 13,472 | 91,189 | 15,572 |

Table A-3: The effect on annual log changes in total loan amounts from having a primary bank with a high LTD as in equation (4). Each cell is the difference-in-differences estimate from a regression of the log changes in total loans on a dummy for high loan-to-deposit ratio interacted with different post periods, i.e. the estimated $\beta$ from equation (4). We include industry × year dummies, industry × municipality dummies, and firm fixed effects. All estimates are unweighted. In columns 2-4, firms are only included if their loan amount per worker is above 3,500 DKK in 2007. In columns 5-7, firms are only included if their loan amounts per worker exceed 14,000 DKK in 2007. Small firms have between 5 and 50 employees in 2007, young firms are between 0 and 3 years old in 2007, and large firms have more than 50 employees in 2007. Standard errors are clustered on primary banks. *** $p < 0.01$, ** $p < 0.05$, *$p < 0.1$.

| | Zero loans recoded as 0.001 | | | Zero loans recoded as 1,000 | | |
|---|---|---|---|---|---|---|
| | Large firms | Small firms | Small-young firms | Large firms | Small firms | Small-young firms |
| HighLTD X 2008 | -0.174 | -0.479*** | -0.805*** | -0.108 | -0.207*** | -0.315*** |
| | (0.335) | (0.128) | (0.311) | (0.210) | (0.0519) | (0.111) |
| HighLTD X 2008-2009 | -0.210 | -0.148 | -0.631* | -0.0817 | -0.0502 | -0.272*** |
| | (0.249) | (0.119) | (0.344) | (0.156) | (0.0419) | (0.101) |
| HighLTD X 2008-2010 | -0.137 | -0.129 | -0.683** | -0.0421 | -0.0469 | -0.283*** |
| | (0.214) | (0.106) | (0.320) | (0.119) | (0.0357) | (0.0923) |
| HighLTD X 2008-2011 | -0.0907 | -0.124 | -0.589** | -0.0638 | -0.0464 | -0.266*** |
| | (0.189) | (0.116) | (0.277) | (0.102) | (0.0410) | (0.0861) |
| HighLTD X 2008-2012 | -0.0962 | -0.155 | -0.643** | -0.0580 | -0.0641 | -0.286*** |
| | (0.182) | (0.109) | (0.284) | (0.100) | (0.0392) | (0.0844) |
| HighLTD X 2008-2013 | -0.0529 | -0.110 | -0.577** | -0.0269 | -0.0473 | -0.268*** |
| | (0.168) | (0.106) | (0.271) | (0.0904) | (0.0375) | (0.0832) |
| Observations | | | | | | |
| 2008 | 7,436 | 48,883 | 5,711 | 7,436 | 48,883 | 5,711 |
| 2008-2009 | 8,998 | 60,594 | 8,943 | 8,998 | 60,594 | 8,943 |
| 2008-2010 | 10,407 | 70,306 | 11,071 | 10,407 | 70,306 | 11,071 |
| 2008-2011 | 11,755 | 79,258 | 12,985 | 11,755 | 79,258 | 12,985 |
| 2008-2012 | 13,038 | 87,526 | 14,678 | 13,038 | 87,526 | 14,678 |
| 2008-2013 | 14,291 | 95,169 | 16,223 | 14,291 | 95,169 | 16,223 |

Table A-4: The effect on annual log changes in total loan amounts from having a primary bank with a high LTD as in equation (4). Each cell is the difference-in-differences estimate from a regression of the log changes in total loans on a dummy for high loan-to-deposit ratio interacted with different post periods, i.e. the estimated $\beta$ from equation (4). We include industry $\times$ year dummies, industry $\times$ municipality dummies, and firm fixed effects. All estimates are unweighted. In column 2-4, zero loans are recoded to 0.001 DKK, while in column 5-7 zero loans are recoded to 1,000 DKK. Firms are only included if the firms' loan amounts per worker exceed 7,000 DKK in 2007. Small firms have between 5 and 50 employees in 2007, young firms are between 0 and 3 years old in 2007, and large firms have more than 50 employees in 2007. Standard errors are clustered on primary banks. *** $p < 0.01$, ** $p < 0.05$, *$p < 0.1$.

| | No controls | | | With fixed effects | | | All controls | | |
|---|---|---|---|---|---|---|---|---|---|
| | Large firms | Small firms | Small-young firms | Large firms | Small firms | Small-young firms | Large firms | Small firms | Small-young firms |
| HighLTD X 2008 | -0.119 | -0.129*** | -0.119 | -0.121 | -0.126*** | -0.120 | -0.0635 | -0.108** | -0.125 |
| | (0.137) | (0.0439) | (0.0790) | (0.149) | (0.0468) | (0.0919) | (0.183) | (0.0453) | (0.0974) |
| HighLTD X 2008-2009 | -0.0651 | -0.0404 | -0.136** | -0.0611 | -0.0260 | -0.109 | -0.0127 | -0.00764 | -0.134* |
| | (0.103) | (0.0324) | (0.0658) | (0.117) | (0.0325) | (0.0738) | (0.139) | (0.0315) | (0.0799) |
| HighLTD X 2008-2010 | -0.0419 | -0.0375 | -0.103* | -0.0299 | -0.0330 | -0.0970 | -0.000307 | -0.0178 | -0.120* |
| | (0.0707) | (0.0255) | (0.0536) | (0.0857) | (0.0270) | (0.0643) | (0.100) | (0.0268) | (0.0696) |
| HighLTD X 2008-2011 | -0.0943 | -0.0452* | -0.105* | -0.0791 | -0.0416 | -0.0995 | -0.0426 | -0.0196 | -0.131* |
| | (0.0590) | (0.0241) | (0.0565) | (0.0716) | (0.0266) | (0.0654) | (0.0853) | (0.0263) | (0.0680) |
| HighLTD X 2008-2012 | -0.0737 | -0.0571** | -0.131** | -0.0560 | -0.0542** | -0.127* | -0.0193 | -0.0371 | -0.147** |
| | (0.0566) | (0.0235) | (0.0598) | (0.0690) | (0.0263) | (0.0700) | (0.0827) | (0.0264) | (0.0743) |
| HighLTD X 2008-2013 | -0.0505 | -0.0536** | -0.140** | -0.0342 | -0.0493** | -0.123* | 0.0123 | -0.0295 | -0.136* |
| | (0.0545) | (0.0218) | (0.0559) | (0.0648) | (0.0246) | (0.0683) | (0.0755) | (0.0248) | (0.0731) |
| Observations | | | | | | | | | |
| 2008 | 7,281 | 46,578 | 6,300 | 7,223 | 45,130 | 5,275 | 7,105 | 44,878 | 5,083 |
| 2008-2009 | 8,722 | 56,545 | 8,552 | 8,703 | 56,035 | 8,213 | 8,586 | 55,817 | 8,048 |
| 2008-2010 | 10,074 | 65,403 | 10,462 | 10,054 | 64,885 | 10,114 | 9,932 | 64,659 | 9,932 |
| 2008-2011 | 11,364 | 73,498 | 12,159 | 11,346 | 73,036 | 11,848 | 11,215 | 72,805 | 11,663 |
| 2008-2012 | 12,594 | 80,869 | 13,654 | 12,575 | 80,424 | 13,356 | 12,428 | 80,193 | 13,158 |
| 2008-2013 | 13,778 | 87,694 | 15,027 | 13,762 | 87,264 | 14,736 | 13,616 | 87,021 | 14,519 |

Table A-5: The effect on annual log changes in total loan amounts from having a primary bank with a high LTD as in equation (4). Each cell is the difference-in-differences estimate from a regression of the log changes in total loans on a dummy for high loan-to-deposit ratio interacted with different post periods, i.e. the estimated $\beta$ from equation (4). We include industry $\times$ year dummies, industry $\times$ municipality dummies, and firm fixed effects. The table shows results for the intensive margin because observations with zero loans have been deleted. Firms are only included if the firms' loan amounts per worker exceed 7,000 DKK in 2007. Small firms have between 5 and 50 employees in 2007, young firms are between 0 and 3 years old in 2007, and large firms have more than 50 employees in 2007. Standard errors are clustered on primary banks. *** $p < 0.01$, ** $p < 0.05$, *$p < 0.1$.

| | No controls | | | With fixed effects | | | All controls | | |
|---|---|---|---|---|---|---|---|---|---|
| | Large firms | Small firms | Small-young firms | Large firms | Small firms | Small-young firms | Large firms | Small firms | Small-young firms |
| 2008 | -0.0121 | 0.00930 | -0.0543** | -0.0143 | 0.00379 | -0.0635** | -0.000119 | 0.00617 | -0.0642** |
| | (0.0208) | (0.00903) | (0.0250) | (0.0273) | (0.00866) | (0.0263) | (0.0171) | (0.00840) | (0.0281) |
| 2008-2009 | -0.00501 | 0.00899 | -0.0504** | -0.000791 | 0.00698 | -0.0596*** | 0.00664 | 0.00711 | -0.0583*** |
| | (0.0186) | (0.00788) | (0.0214) | (0.0225) | (0.00754) | (0.0206) | (0.0130) | (0.00734) | (0.0221) |
| 2008-2010 | -0.00793 | 0.00736 | -0.0517*** | -0.00167 | 0.00723 | -0.0580*** | 0.00527 | 0.00706 | -0.0584*** |
| | (0.0165) | (0.00731) | (0.0192) | (0.0201) | (0.00757) | (0.0206) | (0.0124) | (0.00740) | (0.0217) |
| 2008-2011 | -0.0120 | 0.00594 | -0.0488*** | -0.00507 | 0.00649 | -0.0603*** | 0.00200 | 0.00639 | -0.0601*** |
| | (0.0153) | (0.00772) | (0.0188) | (0.0186) | (0.00818) | (0.0214) | (0.0121) | (0.00783) | (0.0223) |
| 2008-2012 | -0.0103 | 0.00581 | -0.0441** | -0.00264 | 0.00566 | -0.0579*** | 0.00228 | 0.00457 | -0.0600*** |
| | (0.0153) | (0.00690) | (0.0174) | (0.0184) | (0.00803) | (0.0213) | (0.0119) | (0.00755) | (0.0223) |
| 2008-2013 | -0.00962 | 0.00758 | -0.0429** | -0.00251 | 0.00747 | -0.0568*** | 0.00163 | 0.00624 | -0.0586*** |
| | (0.0149) | (0.00656) | (0.0169) | (0.0180) | (0.00814) | (0.0217) | (0.0118) | (0.00753) | (0.0223) |
| Observations | | | | | | | | | |
| 2008 | 9,071 | 59,754 | 7,069 | 9,040 | 58,821 | 6,219 | 8,930 | 58,589 | 6,020 |
| 2008-2009 | 10,617 | 70,917 | 9,671 | 10,610 | 70,700 | 9,476 | 10,501 | 70,488 | 9,298 |
| 2008-2010 | 12,061 | 81,016 | 11,917 | 12,054 | 80,808 | 11,729 | 11,941 | 80,586 | 11,543 |
| 2008-2011 | 13,445 | 90,361 | 13,939 | 13,439 | 90,157 | 13,755 | 13,314 | 89,928 | 13,559 |
| 2008-2012 | 14,766 | 99,050 | 15,754 | 14,760 | 98,849 | 15,573 | 14,620 | 98,609 | 15,366 |
| 2008-2013 | 16,042 | 107,191 | 17,447 | 16,036 | 106,991 | 17,267 | 15,893 | 106,738 | 17,041 |

Table A-6: The effect on annual employment growth in the firm from having a primary bank with a high LTD. Employment growth is defined as the net job flow, $NJF_i$ at firm $i$ as in equation (2), divided by the firm's lagged employment level. Each cell in the reduced-form columns is a difference-in-differences estimate from a regression of employment growth on a dummy for high LTD interacted with different post periods, i.e. $\beta$ from equation (4) when replacing the dependent variable with the employment growth. In the "All controls" columns, we include industry × year dummies, industry × municipality dummies, and firm fixed effects. Firms are only included if the firms' loan amounts per worker exceeding 7,000 DKK in 2007. Small firms have between 5 and 50 employees in 2007, young firms are between 0 and 3 years old in 2007, and large firms have more than 50 employees in 2007. All estimates are weighted by the firm's number of employees in year t-1 Standard errors are clustered on primary banks. *** $p < 0.01$, ** $p < 0.05$, *$p < 0.1$.

| | Bank loans > 3,500 DKK/worker | | | | Bank loans > 14,000 DKK per worker | | | |
|---|---|---|---|---|---|---|---|---|
| | Reduced-form | | | IV | Reduced-form | | | IV |
| | Large firms | Small firms | Small-young firms | Small-young firms | Large firms | Small firms | Small-young firms | Small-young firms |
| 2008 | 0.00115 | 0.00593 | -0.0669** | 0.0791 | -0.000493 | 0.00847 | -0.0673** | 0.111 |
| | (0.0155) | (0.00838) | (0.0278) | (0.0663) | (0.0201) | (0.00878) | (0.0289) | (0.0954) |
| 2008-2009 | 0.00685 | 0.00675 | -0.0607*** | 0.0859 | 0.00808 | 0.00907 | -0.0598** | 0.0975 |
| | (0.0122) | (0.00731) | (0.0224) | (0.0527) | (0.0140) | (0.00755) | (0.0236) | (0.0594) |
| 2008-2010 | 0.00369 | 0.00707 | -0.0599*** | 0.0972* | 0.00814 | 0.00852 | -0.0606*** | 0.115** |
| | (0.0117) | (0.00736) | (0.0220) | (0.0500) | (0.0134) | (0.00749) | (0.0231) | (0.0578) |
| 2008-2011 | 0.000485 | 0.00601 | -0.0611*** | 0.113** | 0.00554 | 0.00822 | -0.0608*** | 0.132** |
| | (0.0113) | (0.00774) | (0.0226) | (0.0532) | (0.0132) | (0.00783) | (0.0235) | (0.0666) |
| 2008-2012 | 0.000408 | 0.00462 | -0.0601*** | 0.106** | 0.00650 | 0.00620 | -0.0598** | 0.122** |
| | (0.0111) | (0.00745) | (0.0226) | (0.0488) | (0.0129) | (0.00760) | (0.0235) | (0.0617) |
| 2008-2013 | -0.00108 | 0.00628 | -0.0579*** | 0.109** | 0.00548 | 0.00753 | -0.0583** | 0.128* |
| | (0.0110) | (0.00744) | (0.0223) | (0.0509) | (0.0128) | (0.00766) | (0.0235) | (0.0669) |
| Observations | | | | | | | | |
| 2008 | 9,344 | 60,418 | 6,189 | 5,844 | 8,418 | 56,045 | 5,772 | 5,500 |
| 2008-2009 | 10,983 | 72,716 | 9,583 | 9,181 | 9,892 | 67,406 | 8,902 | 8,598 |
| 2008-2010 | 12,484 | 83,146 | 11,894 | 11,374 | 11,249 | 77,039 | 11,041 | 10,638 |
| 2008-2011 | 13,921 | 92,801 | 13,968 | 13,341 | 12,540 | 85,953 | 12,967 | 12,472 |
| 2008-2012 | 15,286 | 101,779 | 15,834 | 15,086 | 13,768 | 94,231 | 14,690 | 14,092 |
| 2008-2013 | 16,615 | 110,187 | 17,563 | 16,681 | 14,969 | 101,992 | 16,287 | 15,572 |

Table A-7: The effect on annual employment growth in the firm from having a primary bank with a high LTD. Employment growth is defined as the net job flow, $NJF_i$ at firm $i$ as in equation (2), divided by the firm's lagged employment level. Each cell in the Reduced-form columns is a difference-in-differences estimate from a regression of employment growth on a dummy for high LTD interacted with different post periods, i.e. $\beta$ from equation (4) when replacing the dependent variable with the employment growth. Columns 5 and 9 contain IV-estimates using the dummy for high LTD interacted with the post period dummy as instrument for loan growth as in equation (5). In all regressions, we include industry × year dummies, industry × municipality dummies, and firm fixed effects. In column 2-5, the estimation samples only include firms with loans per worker exceeding 3,500 DKK. In column 6-9, the estimation samples only include firms with loans per worker exceeding 14,000 Small firms have between 5 and 50 employees in 2007, young firms are between 0 and 3 years old in 2007, and large firms have more than 50 employees in 2007. DKK. All estimates are weighted by the firm's number of employees in year t-1 Standard errors are clustered on primary banks. Standard errors are clustered on primary banks. ***$p < 0.01$, ** $p < 0.05$, *$p < 0.1$.

| | Reduced-form | | | IV | | |
|---|---|---|---|---|---|---|
| | No controls | Firm fixed effects | All controls | No controls | Firm fixed effects | All controls |
| 2008 | -0.0534** | -0.0539** | -0.0496* | 0.133* | 0.0866 | 0.0736 |
| | (0.0252) | (0.0268) | (0.0280) | (0.0790) | (0.0584) | (0.0650) |
| 2008-2009 | -0.0508** | -0.0537** | -0.0505** | 0.132* | 0.113* | 0.0838 |
| | (0.0218) | (0.0214) | (0.0229) | (0.0692) | (0.0661) | (0.0522) |
| 2008-2010 | -0.0509*** | -0.0522** | -0.0505** | 0.130** | 0.117** | 0.0972* |
| | (0.0196) | (0.0214) | (0.0223) | (0.0600) | (0.0591) | (0.0500) |
| 2008-2011 | -0.0481** | -0.0568** | -0.0548** | 0.169* | 0.149** | 0.116** |
| | (0.0193) | (0.0223) | (0.0231) | (0.0970) | (0.0709) | (0.0563) |
| 2008-2012 | -0.0433** | -0.0550** | -0.0536** | 0.132** | 0.127** | 0.109** |
| | (0.0178) | (0.0220) | (0.0230) | (0.0647) | (0.0579) | (0.0514) |
| 2008-2013 | -0.0426** | -0.0537** | -0.0524** | 0.117** | 0.136** | 0.114** |
| | (0.0174) | (0.0224) | (0.0231) | (0.0547) | (0.0629) | (0.0538) |
| Observations | | | | | | |
| 2008 | 6,826 | 5,912 | 5,711 | 6,826 | 5,912 | 5,711 |
| 2008-2009 | 9,348 | 9,126 | 8,943 | 9,348 | 9,126 | 8,943 |
| 2008-2010 | 11,487 | 11,261 | 11,071 | 11,487 | 11,261 | 11,071 |
| 2008-2011 | 13,395 | 13,181 | 12,985 | 13,395 | 13,181 | 12,985 |
| 2008-2012 | 15,097 | 14,886 | 14,678 | 15,097 | 14,886 | 14,678 |
| 2008-2013 | 16,655 | 16,448 | 16,223 | 16,655 | 16,448 | 16,223 |

Table A-8: The effect on annual employment growth for small-young firm from having a primary bank with a high LTD (columns 2-4) and the effect of loan growth in the firm on employment growth in the firm (columns 5-7). Employment growth is defined as the net job flow, $NJF_i$ at firm $i$ as in equation (2), divided by the firm's lagged employment level. Each cell in columns 2-4 is a difference-in-differences estimate from the reduced-form regression of employment growth on a dummy for high LTD interacted with different post periods, i.e. $\beta$ from equation (4) when replacing the dependent variable with employment growth. Columns 5-8 contain IV-estimates using the dummy for high LTD interacted with the post period dummy as instrument for loan growth as in equation (5). In the "All controls" columns, we include industry × year dummies, industry × municipality dummies, and firm fixed effects. Firms are only included if the firms' loan amounts per worker exceed 7,000 DKK in 2007. Small-young firms have between 5 and 50 employees in 2007 and are between 0 and 3 years old in 2007. All estimates are weighted by the firm's number of employees in year t-1 Standard errors are clustered on primary banks. $p < 0.01$, ** $p < 0.05$, *$p < 0.1$.

| | Zeros recoded as 1 | Zeros recoded as 0.001 | Zeros recoded as 1,000 |
|---|---|---|---|
| 2008 | 0.0736 | 0.0518 | 0.128 |
| | (0.0650) | (0.0463) | (0.111) |
| 2008-2009 | 0.0838 | 0.0620 | 0.129* |
| | (0.0522) | (0.0397) | (0.0781) |
| 2008-2010 | 0.0972* | 0.0710* | 0.154** |
| | (0.0500) | (0.0374) | (0.0771) |
| 2008-2011 | 0.116** | 0.0875** | 0.174** |
| | (0.0563) | (0.0439) | (0.0812) |
| 2008-2012 | 0.109** | 0.0807** | 0.167** |
| | (0.0514) | (0.0394) | (0.0766) |
| 2008-2013 | 0.114** | 0.0855** | 0.170** |
| | (0.0538) | (0.0418) | (0.0785) |
| Observations | | | |
| 2008 | 5,711 | 5,711 | 5,711 |
| 2008-2009 | 8,943 | 8,943 | 8,943 |
| 2008-2010 | 11,071 | 11,071 | 11,071 |
| 2008-2011 | 12,985 | 12,985 | 12,985 |
| 2008-2012 | 14,678 | 14,678 | 14,678 |
| 2008-2013 | 16,223 | 16,223 | 16,223 |

Table A-9: The effect of annual loan growth on annual employment growth using the dummy for high LTD interacted with the post period dummy as instrument for loan growth as in equation (5). Employment growth is defined as the net job flow, $NJF_i$ at firm $i$ as in equation (2), divided by the firm's lagged employment level. We include industry $\times$ year dummies, industry $\times$ municipality dummies, and firm fixed effects. Column 2 shows the IV estimates of column 5 in Table 3. In column 3, we have recoded zero loans to 0.001 DKK prior to estimating the IV regression. In column 4, the zero loans have been recoded as 1,000 DKK. Firms are only included if the firms' loan amounts per worker exceed 7,000 DKK in 2007. Only small-young firms (with 5 to 50 employees in 2007 and between 0 and 3 years old in 2007) are included. All estimates are weighted by the firm's number of employees in year t-1. $p < 0.01$, ** $p < 0.05$, *$p < 0.1$.

| | Reduced-form | Total employment effect | Minimum share |
|---|---|---|---|
| 2008 | -0.0642** | -0.160*** | 0.401 |
| | (0.0281) | (0.0147) | |
| 2009 | -0.0583*** | -0.204*** | 0.286 |
| | (0.0221) | (0.0131) | |
| 2010 | -0.0584*** | -0.198*** | 0.295 |
| | (0.0217) | (0.0128) | |
| 2011 | -0.0601*** | -0.194*** | 0.310 |
| | (0.0223) | (0.0134) | |
| 2012 | -0.0600*** | -0.193*** | 0.311 |
| | (0.0223) | (0.0133) | |
| 2013 | -0.0586*** | -0.195*** | 0.301 |
| | (0.0223) | (0.0131) | |
| 2008 | 6,020 | 6,020 | |
| 2009 | 9,298 | 9,298 | |
| 2010 | 11,543 | 11,543 | |
| 2011 | 13,559 | 13,559 | |
| 2012 | 15,366 | 15,366 | |
| 2013 | 17,041 | 17,041 | |

Table A-10: The table shows the minimum share of the total employment growth, which is due to tightened credit constraints. We calculate this by assuming that the loan reductions in high LTD banks arose solely as a consequence of a lower loan demand by the firms. This means that we divide the reduced-form estimate in column 2 with the total employment effect in column 3 in order to calculate the minimum share in column 4. The reduced-form estimates are the estimated effect on employment growth of having a high LTD bank after 2007. The estimates in column 2 are identical to the estimates in column 4 of Table 3. We obtain the estimates in column 3 by regression the employment growth on year dummies for 2005-2006 and a dummy for the post period. We include industry $\times$ municipality dummies, and firm fixed effects. Firms are only included if the firms' loan amounts per worker exceed 7,000 DKK in 2007. Only small-young firms (with 5 to 50 employees in 2007 and between 0 and 3 years old in 2007) are included. All estimates are weighted by the firm's number of employees in year t-1 Standard errors are clustered on primary banks. *** $p < 0.01$, ** $p < 0.05$, *$p < 0.1$.

| | Netflows from nonemployment | | | Net job-to-job flows | | |
|---|---|---|---|---|---|---|
| | No controls | With fixed effects | All controls | No controls | With fixed effects | All controls |
| HighLTD X 2008 | -0.0286** | -0.0377*** | -0.0402*** | -0.0256 | -0.0258 | -0.0241 |
| | (0.0127) | (0.0131) | (0.0146) | (0.0192) | (0.0203) | (0.0225) |
| HighLTD X 2008-2009 | -0.0227** | -0.0308*** | -0.0254* | -0.0278* | -0.0288* | -0.0329** |
| | (0.0110) | (0.0114) | (0.0132) | (0.0158) | (0.0152) | (0.0167) |
| HighLTD X 2008-2010 | -0.0223** | -0.0293*** | -0.0241* | -0.0294** | -0.0288* | -0.0343** |
| | (0.0105) | (0.0110) | (0.0125) | (0.0141) | (0.0151) | (0.0163) |
| HighLTD X 2008-2011 | -0.0198** | -0.0288*** | -0.0233* | -0.0290** | -0.0315** | -0.0367** |
| | (0.00990) | (0.0108) | (0.0123) | (0.0140) | (0.0155) | (0.0162) |
| HighLTD X 2008-2012 | -0.0197** | -0.0292*** | -0.0254** | -0.0244* | -0.0286* | -0.0345** |
| | (0.00929) | (0.0105) | (0.0122) | (0.0136) | (0.0156) | (0.0162) |
| HighLTD X 2008-2013 | -0.0191** | -0.0272** | -0.0239** | -0.0238* | -0.0295* | -0.0347** |
| | (0.00919) | (0.0106) | (0.0120) | (0.0132) | (0.0156) | (0.0161) |
| Observations | | | | | | |
| 2008 | 7,069 | 6,219 | 6,020 | 7,069 | 6,219 | 6,020 |
| 2008-2009 | 9,671 | 9,476 | 9,298 | 9,671 | 9,476 | 9,298 |
| 2008-2010 | 11,917 | 11,729 | 11,543 | 11,917 | 11,729 | 11,543 |
| 2008-2011 | 13,939 | 13,755 | 13,559 | 13,939 | 13,755 | 13,559 |
| 2008-2012 | 15,754 | 15,573 | 15,366 | 15,754 | 15,573 | 15,366 |
| 2008-2013 | 17,447 | 17,267 | 17,041 | 17,447 | 17,267 | 17,041 |

Table A-11: The effect on annual employment growth from having a primary bank with a high LTD. Employment growth is split into the growth due to net nonemployment and net job-to-job flows, by dividing net nonemployment flows (i.e. $H_i^{ne} - S_i^{ne}$ from equation (2)) by lagged employment and by dividing job-to-job flows (i.e. $H_i^{ee} - S_i^{ee}$ from equation (2)) by lagged employment. Each cell is a difference-in-differences estimate from a regression of the relevant employment growth on a dummy for high LTD interacted with different post periods, i.e. $\beta$ from equation (4) when replacing the dependent variable with the employment growth due to nonemployment and job-to-job flows, respectively. We include industry $\times$ year dummies, industry $\times$ municipality dummies, and firm fixed effects. Firms are only included if the firms' loan amounts per worker exceed 7,000 DKK in 2007. Only small-young firms (with 5 to 50 employees in 2007 and between 0 and 3 years old in 2007) are included. All estimates are weighted by the firm's number of employees in year t-1 Standard errors are clustered on primary banks. *** $p < 0.01$, ** $p < 0.05$, *$p < 0.1$.

| | Reduced form effect | | Total net flows | | Minimum share | |
|---|---|---|---|---|---|---|
| | Net flows from nonemployment | Net job-to-job flows | Net flows from nonemployment | Net job-to-job flows | Net flows from nonemployment | Net job-to-job flows |
| 2008 | -0.0402*** | -0.0241 | -0.0834*** | -0.0765*** | 0.482 | 0.315 |
| | (0.0146) | (0.0225) | (0.00852) | (0.0118) | | |
| 2009 | -0.0254* | -0.0329** | -0.112*** | -0.0915*** | 0.227 | 0.360 |
| | (0.0132) | (0.0167) | (0.00788) | (0.00965) | | |
| 2010 | -0.0241* | -0.0343** | -0.104*** | -0.0940*** | 0.232 | 0.365 |
| | (0.0125) | (0.0163) | (0.00767) | (0.00934) | | |
| 2011 | -0.0233* | -0.0367** | -0.0984*** | -0.0954*** | 0.237 | 0.385 |
| | (0.0123) | (0.0162) | (0.00745) | (0.00956) | | |
| 2012 | -0.0254** | -0.0345** | -0.0960*** | -0.0970*** | 0.265 | 0.356 |
| | (0.0122) | (0.0162) | (0.00745) | (0.00950) | | |
| 2013 | -0.0239** | -0.0347** | -0.0953*** | -0.0993*** | 0.251 | 0.349 |
| | (0.0120) | (0.0161) | (0.00730) | (0.00931) | | |
| 2008 | 6,020 | 6,020 | 6,020 | 6,020 | | |
| 2009 | 9,298 | 9,298 | 9,298 | 9,298 | | |
| 2010 | 11,543 | 11,543 | 11,543 | 11,543 | | |
| 2011 | 13,559 | 13,559 | 13,559 | 13,559 | | |
| 2012 | 15,366 | 15,366 | 15,366 | 15,366 | | |
| 2013 | 17,041 | 17,041 | 17,041 | 17,041 | | |

Table A-12: The table shows the minimum share of the employment growth due to net flows from nonemployment and net job-to-job flows, which are due to tightened credit constraints. We calculate these shares by assuming that the loan reductions in high LTD banks arose solely as a consequence of a lower loan demand by the firms. This means that we divide the reduced-form estimates in columns 2 and 3 with the total effects in columns 4 and 5 in order to calculate the minimum shares in column 6 and 7. The estimates in column 2 and 3 are identical to the estimates in columns 4 and 7 in Table A-11. We obtain the estimates in columns 4 and 5 by regressing the employment growth due to nonemployment flows and job-to-job flows on year dummies for 2005-2006 and a dummy for the post period. We include industry × municipality dummies, and firm fixed effects. Firms are only included if the firms' loan amounts per worker exceed 7,000 DKK in 2007. Only small-young firms (with 5 to 50 employees in 2007 and between 0 and 3 years old in 2007) are included. All estimates are weighted by the firm's number of employees in year t-1 Standard errors are clustered on primary banks. *** $p < 0.01$, ** $p < 0.05$, *$p < 0.1$.

| | First stage | | | | Reduced form | | | |
|---|---|---|---|---|---|---|---|---|
| | No controls | | All controls | | No controls | | All controls | |
| | Low value-added | High value-added | Low value-added | High value-added | Low value-added | High value-added | Low value-added | High value-added |
| HighLTD X 2008 | -0.428* | -0.344 | -0.858*** | -0.390 | -0.054 | -0.054* | -0.081* | -0.030 |
| | (0.240) | (0.260) | (0.286) | (0.367) | (0.036) | (0.029) | (0.049) | (0.038) |
| HighLTD X 2008-2009 | -0.337* | -0.425** | -0.788*** | -0.525** | -0.052* | -0.058** | -0.060* | -0.044 |
| | (0.203) | (0.200) | (0.261) | (0.247) | (0.031) | (0.026) | (0.033) | (0.032) |
| HighLTD X 2008-2010 | -0.375** | -0.366* | -0.729*** | -0.555** | -0.040 | -0.071*** | -0.053* | -0.051* |
| | (0.176) | (0.207) | (0.238) | (0.225) | (0.027) | (0.025) | (0.030) | (0.030) |
| HighLTD X 2008-2011 | -0.220 | -0.315 | -0.598** | -0.519** | -0.032 | -0.075*** | -0.047 | -0.061** |
| | (0.188) | (0.196) | (0.236) | (0.221) | (0.026) | (0.025) | (0.030) | (0.030) |
| HighLTD X 2008-2012 | -0.246 | -0.381** | -0.587** | -0.644*** | -0.029 | -0.067*** | -0.051* | -0.055* |
| | (0.171) | (0.192) | (0.229) | (0.218) | (0.025) | (0.024) | (0.029) | (0.030) |
| HighLTD X 2008-2013 | -0.265 | -0.427** | -0.515** | -0.613*** | -0.030 | -0.063*** | -0.051* | -0.053* |
| | (0.179) | (0.197) | (0.229) | (0.214) | (0.024) | (0.023) | (0.028) | (0.030) |
| Observations | | | | | | | | |
| 2008 | | 6,337 | | 5,419 | | 6,549 | | 5,695 |
| 2008-2009 | | 8,689 | | 8,361 | | 8,971 | | 8,674 |
| 2008-2010 | | 10,685 | | 10,346 | | 11,064 | | 10,764 |
| 2008-2011 | | 12,472 | | 12,140 | | 12,955 | | 12,649 |
| 2008-2012 | | 14,072 | | 13,731 | | 14,659 | | 14,346 |
| 2008-2013 | | 15,542 | | 15,187 | | 16,245 | | 15,915 |

Table A-13: The effect on annual employment growth from having a primary bank with a high LTD across firms with high and low value-added per worker. Firms are split by their value-added per worker in 2007 at the median. Employment growth is defined as the net job flow, $NJF_i$ at firm $i$ as in equation (2), divided by the firm's lagged employment level. The table shows pairwise results from a triple-diff-in-diff regression. Hence, our parameter of interest is the interaction between the dummies for high and low value-added with the dummy for high LTD interacted with the different post periods, i.e. $highVA \times highLTD_{j(i)} \times post_t$ and $lowVA \times highLTD_{j(i)} \times post_t$. This means that for a given row, columns 2 and 3 report estimates from a single triple-diff-in-diff regression. Similarly, columns 4 and 5 are from the same triple-diff-in-diff regression, and so are columns 6 and 7, and column 8 and 9. Besides the interaction with the post period, we include dummies for high and low value-added and their interactions with pre-period dummies and the high LTD dummy. The outcome variable in columns 2-5 is loan growth, while the outcome variable in columns 6-9 is employment growth. In columns with controls, we include industry × year dummies, industry × municipality dummies, and firm fixed effects. Firms are only included if the firms' loan amounts per worker exceed 7,000 DKK in 2007. Only small-young firms (with 5 to 50 employees in 2007 and between 0 and 3 years old in 2007) are included. All estimates are weighted by the firm's number of employees in year t-1. Standard errors are clustered on primary banks. *** $p < 0.01$, ** $p < 0.05$, *$p < 0.1$.

| | Reduced form effect | | Total net flows | | Minimum share | |
|---|---|---|---|---|---|---|
| | Low value-added | High value-added | Low value-added | High value-added | Low value-added | High value-added |
| 2008 | -0.0811* | -0.0301 | -0.185*** | -0.136*** | 0.438 | 0.221 |
| | (0.0485) | (0.0375) | (0.0206) | (0.0200) | | |
| 2009 | -0.0596* | -0.0442 | -0.226*** | -0.189*** | 0.264 | 0.234 |
| | (0.0334) | (0.0320) | (0.0181) | (0.0174) | | |
| 2010 | -0.0529* | -0.0513* | -0.218*** | -0.184*** | 0.243 | 0.279 |
| | (0.0304) | (0.0299) | (0.0168) | (0.0167) | | |
| 2011 | -0.0468 | -0.0612** | -0.215*** | -0.177*** | 0.218 | 0.346 |
| | (0.0297) | (0.0302) | (0.0170) | (0.0171) | | |
| 2012 | -0.0511* | -0.0550* | -0.213*** | -0.178*** | 0.240 | 0.309 |
| | (0.0288) | (0.0302) | (0.0166) | (0.0167) | | |
| 2013 | -0.0509* | -0.0533* | -0.213*** | -0.181*** | 0.239 | 0.294 |
| | (0.0282) | (0.0303) | (0.0163) | (0.0164) | | |
| 2008 | | 5,695 | | 5,695 | | |
| 2009 | | 8,674 | | 8,674 | | |
| 2010 | | 10,764 | | 10,764 | | |
| 2011 | | 12,649 | | 12,649 | | |
| 2012 | | 14,346 | | 14,346 | | |
| 2013 | | 15,915 | | 15,915 | | |

Table A-14: The table shows, for respectively low and high value-added small-young firms, the minimum shares of the total employment effect, which are due to tightened credit constraints. We calculate these by assuming that the loan reductions in high LTD banks arose solely as a consequence of a lower loan demand by the firms. This means that we divide the reduced-form estimate in column 2 and 3 with the total employment effect in column 4 and 5 in order to calculate the minimum shares in column 6 and 7. The estimates in column 2 and 3 are identical to the estimates in columns 3 and 4 in Table A-13, respectively. We obtain the estimates in column 4 and 5 by regression the employment growth on year dummies for 2005-2006 and a dummy for the post period on samples of low and high value-added firms, respectively. We include industry × municipality dummies, and firm fixed effects. Firms are split by their value-added per worker in 2007 at the median. Firms are only included if the firms' loan amounts per worker exceed 7,000 DKK in 2007. Small-young firms have between 5 and 50 employees in 2007 and are between 0 and 3 years old in 2007. All estimates are weighted by the firm's number of employees in year t-1 Standard errors are clustered on primary banks. *** $p < 0.01$, ** $p < 0.05$, *$p < 0.1$.

| | First stage | | Reduced-form | |
|---|---|---|---|---|
| | Low leverage | High leverage | Low leverage | High leverage |
| HighLTD X 2008 | -0.948** | -0.636** | -0.0403 | -0.0319 |
| | (0.465) | (0.320) | (0.0321) | (0.0462) |
| HighLTD X 2008-2009 | -1.041*** | -0.388 | -0.0373 | -0.0524 |
| | (0.378) | (0.258) | (0.0274) | (0.0339) |
| HighLTD X 2008-2010 | -0.952*** | -0.491** | -0.0523* | -0.0512 |
| | (0.361) | (0.228) | (0.0272) | (0.0315) |
| HighLTD X 2008-2011 | -0.822** | -0.432** | -0.0630** | -0.0487 |
| | (0.328) | (0.215) | (0.0273) | (0.0305) |
| HighLTD X 2008-2012 | -0.947*** | -0.479** | -0.0672** | -0.0427 |
| | (0.307) | (0.216) | (0.0277) | (0.0302) |
| HighLTD X 2008-2013 | -0.936*** | -0.391* | -0.0629** | -0.0443 |
| | (0.324) | (0.212) | (0.0268) | (0.0296) |
| Observations | | | | |
| 2008 | | 4,402 | | 4,649 |
| 2008-2009 | | 6,883 | | 7,172 |
| 2008-2010 | | 8,619 | | 9,007 |
| 2008-2011 | | 10,220 | | 10,684 |
| 2008-2012 | | 11,661 | | 12,221 |
| 2008-2013 | | 12,973 | | 13,641 |

Table A-15: The effect on annual employment growth from having a primary bank with a high LTD across firms with high and low leverage. Firms are split by their leverage in 2007 at the median. Employment growth is defined as the net job flow, $NJF_i$ at firm $i$ as in equation (2), divided by the firm's lagged employment level. The table shows pairwise results from a triple-diff-in-diff regression. Hence, our parameter of interest is the interaction between the dummies for high and low leverage with the dummy for high LTD interacted with the different post periods, i.e. $highLeverage \times highLTD_{j(i)} \times post_t$ and $lowLeverage \times highLTD_{j(i)} \times post_t$. This means that for a given row, columns 2 and 3 report estimates from a single triple-diff-in-diff regression. Similarly, columns 4 and 5 are from the same triple-diff-in-diff regression. Besides the interaction with the post period, we include dummies for high and low leverage and their interactions with pre-period dummies and the high LTD dummy. The outcome variable in columns 2-3 is loan growth, while the outcome variable in columns 4-5 is employment growth. In all regressions, we include industry × year dummies, industry × municipality dummies, and firm fixed effects. Firms are only included if the firms' loan amounts per worker exceed 7,000 DKK in 2007. Only small-young firms (with 5 to 50 employees in 2007 and between 0 and 3 years old in 2007) are included. All estimates are weighted by the firm's number of employees in year t-1. Standard errors are clustered on primary banks. *** $p < 0.01$, ** $p < 0.05$, *$p < 0.1$.