JOURNAL OF FINANCIAL AND QUANTITATIVE ANALYSIS Vol. 58, No. 6, Sept. 2023, pp. 2657–2691

doi:10.1017/S0022109022000928

Relationship Lending and Employment Decisions in Firms' Bad Times

Pierluigi Murro
LUISS Guido Carli University Department of Business and Management
pmurro@luiss.it (corresponding author)

Tommaso Oliviero
University of Naples Federico II Department of Economics and Statistics
tommaso.oliviero@unina.it

Alberto Zazzaro
University of Naples Federico II Department of Economics and Statistics
alberto.zazzaro@unina.it

Abstract

Using firm-level survey information, we investigate whether relationship lending affects firms' employment decisions in the face of negative sales shock. We find that firms with a durable relationship with their main bank display significantly less employment growth sensitivity to such shocks, especially where these are transitory. The result is stronger for younger and smaller firms that benefit from tighter bank-firm relationships, and for firms in sectors or economic environments where the costs of employment adjustment are greater. Our findings indicate that relationship lending provides liquidity insurance to firms to meet their demand for labor hoarding.

I. Introduction

Starting with the seminal contribution of Holmström and Tirole (1998), the literature has highlighted the utmost importance of liquidity management for corporate finance. The traditional focus is on long-term investment projects as a source of liquidity needs: firms use cash balances and credit lines to hedge against liquidity shocks and avoid cutting capital expenditure and hence, indirectly, employment (Holmström and Tirole (2011), Almeida, Campello, Cunha, and Weisbach (2014)). But liquidity management can also affect employment decisions directly (Benmelech, Bergman, and Seru (2021)).

This article analyzes the nexus between liquidity management and employment empirically. Specifically, it considers how relationship lending affects firms' employment response to idiosyncratic adverse shocks to sales.

We thank Daniel Carvalho (the referee), Jarrad Harford (the editor), Sotirios Kokas, Raffaele Oriani, Lorenzo Pandolfi, Francesco Sobbrio, and Emanuele Tarantino, and participants at the ADEIMF Conference 2020, at the 2nd annual conference of the CoPFiR (2019), at the workshop on Financial Fragmentation and Challenges for SMEs' Financing at the Essex Business School (2019), and at the seminar at LUISS University (2019) for helpful comments.

The banking literature commonly recognizes that relationship lending provides liquidity insurance for borrowers in financial difficulty (Boot, Greenbaum, and Thakor (1993), Allen and Gale (1999), Berlin and Mester (1999), Dinç (2000), and Bolton, Freixas, Gambacorta, and Mistrulli (2016)). Close, durable bank relationships enable firms to cover increased liquidity needs by accessing implicitly committed credit facilities (Hoshi, Kashyap, and Scharfstein (1990), Hoshi, Kashyap, and Scharfstein (1991), Elsas and Krahnen (1998), Gopalan, Udell, and Yerramilli (2011), Carvalho, Ferreira, and Matos (2015), Sette and Gobbi (2015), Beck, Degryse, De Haas, and Van Horen (2018), and Schafer (2019)). This is especially important for small and medium-sized enterprises, which are less likely to have available credit lines contractually committed by banks (Sufi (2009), Acharya, Almeida, Ippolito, and Perez-Orive (2021)).

There are two main reasons why relationship lending can have a direct impact on firms' employment decisions in response to liquidity shocks. First, given hiring, training, and dismissal costs, labor can be considered a quasi-fixed input (Oi (1962)), which could be efficient to hoard in bad times (Giroud and Mueller (2017), Caggese, Cuñat, and Metzger (2019)). Second, following the implicit contract argument, firms are in a better position to diversify risks than workers, enabling them to hire workers at a lower average cost while ensuring employment and wage stability in response to temporary fluctuations in their financial conditions (Baily (1974), Azariadis (1975)). From this perspective, access to implicitly committed credit lines at the firm's main bank enhances its ability to procure the liquidity required to hoard labor in the face of temporary shocks and offer tacit job insurance to its workers.

On the other hand, relationship lending could also accelerate firms' employment adjustments to shocks. Where informed employees are a source of external finance (thanks to lower initial wages), financially constrained firms use labor more intensively than the unconstrained (Garmaise (2008)). In this environment, firms with durable lending relationships may be less likely to retain employees when sales drop.

The main bank, for its part, is closely involved in the financial distress of its borrowers and has an interest in influencing their employment decisions, with potential insurance or disciplinary effects (Li, Lu, and Srinivasan (2019)). Recurrent lending to the firm mitigates information asymmetries, enabling the bank to distinguish between temporary and permanent financial distress (Chemmanur and Fulghieri (1994)). And, lenders with longer horizons are in a better position to support labor hoarding by borrowers during bad times, in expectations that they will recoup their investment in the future (Boot et al. (1993), Dinç (2000)). On the other hand, relational banks may also have incentives to use their position of strength to pressure borrower firms into rapid reaction to the shock, including layoffs (Admati and Pfleiderer (1994), Kang and Shivdasani (1997)).

To empirically explore whether a durable banking relationship affects a firm's response to a drop in sales, we examine a representative sample of Italian manufacturing firms. The data set comprises repeated cross-sectional surveys conducted every 3 years in the period of 1995 to 2009. As the objective is to study firms' reaction to idiosyncratic shocks, the main analysis focuses on the

period of 1995 to 2006, excluding the years of systemic financial crisis.[1] This serves to limit the confounding effects of the aggregate collapse of bank lending capacity. Our findings indicate that in the event of idiosyncratic adverse sales shocks, firms with durable lending relationships downsize significantly less than other companies. This supports the hypothesis that firms do use long-term lending relationships as a liquidity management device to achieve employment stability.

We acknowledge the limitations of our empirical analysis which is not based on an experimental setting. To address this concern, we take several approaches. First, we recognize the possibility that some systematic, unobserved differences between firms with lending relationships of different lengths may drive our results. Accordingly, we include in the baseline specification granular fixed effects to control for common unobserved geographical-year and sector-year characteristics. Furthermore, the full-fledged specification includes the interaction between the shock to sales and observable firm-level characteristics. We also replicate the baseline analysis for a group of firms with durable relationships with their main bank that is matched with similar firms that have shorter relationships; the results are in line with those for the full-fledged specification. Additionally, we show that results are not driven by preexisting trends in firms' employment associated with the shock. Taken together, these results confirm that our findings cannot be explained by systematic differences in either observable or unobservable characteristics between firms with longer and shorter lending relationships. Next, to address the possibility of reverse causality, we follow the strategy of Ellul, Pagano, and Schivardi (2017), considering for each firm the shock in the total sales of its sector, excluding the firm's own sales; the results stand confirmed. Finally, we test whether longer-lasting credit relationships are linked to milder employment adjustments to a transitory than to a permanent sales shock. Following the strategy by Guiso, Pistaferri, and Schivardi (2005), we conclude that the main bank provides liquidity insurance against temporary shocks, allowing firms to smooth employment fluctuations.

In the second part of the article, we inquire into the economic mechanism behind these baseline findings. First, we investigate the impact of relationship lending on other features of the firm, such as the cost of labor and rate of the growth in bank lending. Here too, the results confirm that relationship lending provides liquidity insurance, especially through access to short-term loans; this allows firms to bear the highest costs of hoarding their permanent staff. Second, we test for diverse effects among firms that differ in individual, sector, or institutional dimensions. The effect of relationship lending is especially great and significant for: i) younger and smaller firms, whose access to committed credit lines is more problematic; ii) high-tech firms, whose workers are arguably more valuable and more costly to replace; and iii) firms facing more severe legal constraints in the local labor market hence higher firing costs. In short, that is, relationship lending would appear to enable firms better hoard labor. Third, we consider whether the moderating role of relationship lending on employment reduction may not reflect instead

[1] In the Supplementary Material, we provide evidence for the crisis period of 2007 to 2009.

the impact of liquidity insurance on long-term investment. Accordingly, we run our regression analysis with capital expenditures scaled by tangible assets as dependent variable. We find that the decline in capital expenditure at firms hit by a liquidity shock is not significantly mitigated by the length of the relationship with the main bank, confirming the direct role of relationship lending in moderating firms' employment reductions.

Our article is related to several areas of research. We contribute to the empirical literature on the real economic effects of corporate liquidity (Holmström and Tirole (2011), Almeida et al. (2014)). This literature has focused mainly on capital expenditure, leaving the link with employment decisions relatively unexplored. Partial exceptions are Campello, Giambona, Graham, and Harvey ((2010), (2011)) who analyze the role of cash holdings and credit lines on planned changes in employment expenditures in the wake of the financial crisis. Our work also complements the studies of how firms' employment response of firms to adverse shocks varies with their financial leverage (Ofek (1993), Sharpe (1994), Calomiris, Orphanides, and Sharpe (1997), and Giroud and Mueller (2017)) or with the participation of the main bank in the firm's equity (Kang and Shivdasani (1997)).

This article also speaks to the finding of labor and finance literature that firms linked to banks impaired by adverse exogenous shocks show lower employment growth than comparable firms whose banks are healthier (Chodorow-Reich (2014), Cingano, Manaresi, and Sette (2016), Acharya, Eisert, Eufinger, and Hirsch (2018), Balduzzi, Brancati, and Schiantarelli (2018), Bentolila, Jansen, and Jimàez (2018), Berton, Mocetti, Presbitero, and Richiardi (2018), Popov and Rocholl (2018), Barbosa, Bilan, and Celerier (2019), and Bottero, Lenzu, and Mezzanotti (2020)). In a work more closely related to our analysis, Banerjee, Gambacorta, and Sette (2021) document that after the Lehman collapse Italian firms with a longer credit-weighted average duration of bank relationships displayed a faster increase in labor cost.

In addition, we contribute to the literature on the role of firms as employment insurance providers (Guiso and Pistaferri (2020), Pagano (2020)). These studies have exploited variations in corporate structure, such as family ownership or business group affiliation, as a measure of the degree of commitment that the firm can provide to employees' job stability (Sraer and Thesmar (2007), Bassanini, Breda, Caroli, and Rebàioux (2013), Ellul et al. (2017), and Faccio and O'Brien (2021)). We consider another factor that embeds commitment for implicit labor contracts, namely the liquidity insurance offered by durable lending relationships. Finally, our results are relevant to the literature on the impact of relationship lending on real economic outcomes (Herrera and Minetti (2007), Alessandrini, Presbitero, and Zazzaro (2010), Gambini and Zazzaro (2013), and Ferri, Minetti, and Murro (2019)).

The rest of the article is organized as follows: Section II describes the Italian institutional background. Section III presents the data and summary statistics. Section IV reports the baseline empirical results, and Section V describes a series of tests exploring the mechanisms through which relationship banking affects firms' employment decisions. Section VI concludes.

II. Institutional Background

Italy provides an ideal context for testing the role of relationship banking on firms' employment decisions in bad times. Similar to other continental European countries, the Italian labor market is historically characterized by significant rigidities and a high degree of employment protection, especially firing restrictions (Berton, Richiardi, and Sacchi (2012)). According to OECD statistics, from 1997 to 2006 – and still in 2019 – Italy featured one of the highest levels of employment protection legislation (EPL) against individual and collective dismissals of permanent workers in OECD countries, significantly larger than Canada, the U.K., and the U.S., and in line with Austria, France, Germany, the Netherlands, Portugal, and Sweden. Complexity, delays, and excessive length of civil proceedings in Italy introduce additional costs and risks for firms deciding on employee dismissals, and for workers deciding on whether to file a lawsuit for unfair dismissal. In response to these rigidities, starting from the second half of the 1990s, the Italian labor market has been affected by a series of legislative changes aimed at increasing flexibility and introducing atypical, fixed-term work arrangements. As a result, the share of temporary employment with atypical contracts increased from 7.2% of total employment in 1995 to 13.01% in 2006 (and 17.02% in 2018), a figure above the average value in European Union countries, similar to that prevailing in Finland, Sweden, and France.[2]

Consistent with the theoretical arguments of Bentolilla and Bertola (1990) and Mortensen and Pissarides ((1994), (1999)), the high level of EPL and firing costs has hampered movement from unemployment into employment and job mobility. In Italy, the average ratio of long-term nonemployed individuals to the unemployed labor force in the period of 1995 to 2006 was 58.9% (it was 59% in 2018), almost twice the average ratio of OECD countries in the same period. Furthermore, Jin, Fukahori, and Morgavi (2016) document that, conditional on job separation, Italian workers show a low probability of reemployment within 1 year and display large and permanent earning losses. These statistics support the external validity of our analysis, showing that the features of the Italian labor market are basically unchanged after our sample period.

Moving on to the business structure, Italy features a predominance of small and medium enterprises (SMEs) in the nonfinancial business sector (NFBS). In 2018, SMEs made up 99.9% of NFBS enterprises and accounted for 78.1% of employment and 66.9% of value-added, not very different from figures in 2000 (80% and 71%, respectively).[3] Typically, SMEs suffer from a "financing gap" and, especially when in financial distress or in turbulent times, they can face significant obstacles in accessing external finance to fund investments and current labor costs (Presbitero, Udell, and Zazzaro (2014), Micucci and Rossi (2017)). Banks represent the main source of external finance for Italian SMEs, while debt securities and

[2]For workers between the ages of 15 and 24, the corresponding share of temporary contracts was 17.92% in 1995, 40.91% in 2006 (and 64% in 2018). OECD statistics are available at https://data.oecd.org/emp/labour-force.htm.

[3]See ESCB (2007) and EC (2019). For an OECD-level comparison in the 1990s, see Bartelsman, Scarpetta, and Schivardi (2005).

equities are relatively little used.[4] Small business lending has a high content of soft information and is often provided on a relational basis, while access to irrevocably committed unused credit lines is less likely (Acharya et al. (2021)). The predictions of the implicit contract and the labor hoarding hypotheses, as well as the potential insurance and discipline effects of relational banks, all fit with the characteristics of the Italian labor market, business sector, and banking industry. The dualistic structure of the Italian labor market, characterized by the high dismissal costs of permanent workers and the insecurity of fixed-term employment, the importance of SMEs, and their high dependence on bank lending are similar to that observed in other countries of continental Europe. All these aspects make Italy a suitable laboratory for our empirical investigation and enhance the external validity of our findings.

III. Data and Summary Statistics

A. Data Description

Our main data sources are the "Survey of Italian Manufacturing Firms" (SIMF) conducted by the Italian banking group UniCredit-Capitalia and the BvD-AIDA database.[5] We use four waves of the UniCredit-Capitalia survey, each covering a 3-year period ending respectively in 1997, 2000, 2003, and 2006 and the EFIGE survey wave, ending in 2009.[6]

The SIMF collects detailed information about companies' ownership and governance structures, workforce characteristics and bank-firm relationships, export and internationalization activities, investments in innovation, and R&D expenditure. Industry codes (ATECO) at different digits are also reported. Some of these variables (e.g., investments and total sales) are available for each year covered by the survey, while others refer to the 3-year period covered by the survey (e.g., innovation activities or commercial partnership) or to the last year (e.g., legal form and ownership structure, the relationships with banks and access to credit). The data

[4]Between 2000 and 2008 (the main period of our analysis), the share of total debt of NFBS firms made up of debt securities was lower than that in the rest of the euro area countries (4.9% vs. 8.8%), while bank loans represented 85.8% (against 85.7% in the euro area; see ESCB (2013)). These figures are not very different from figures in the 2010s (in 2015 only 5.3% of Italian SMEs had bonds outstanding). From 1996 to 2000, just over 200 firms went public by launching an IPO in Italy, and the number was still lower from 2000 to 2013 (Acconcia, Del Monte, and Pennacchio (2011), Giovannini, Mayer, Micossi, Di Noia, Onado, Pagano, and Polo (2015)). According to the World Bank (2001), in 2000 the stock market capitalization of listed domestic companies (as a percentage of GDP), was 67.3% in Italy, compared to 146.9% in the United States or 156.4% in the United Kingdom, but in line with Germany (65.1%).

[5]The SIMF has been widely used in the empirical literature on Italian manufacturing firms, in particular in that on firms' financial constraints and relationship banking. Amongst others, see Herrera and Minetti (2007), Benfratello, Schiantarelli, and Sembenelli (2008), Alessandrini, Presbitero, and Zazzaro (2009), Minetti and Zhu (2011), Presbitero and Zazzaro (2011), Ferri and Murro (2015), and Murro and Peruzzi (2019).

[6]The EFIGE survey wave covers the financial crisis period starting from 2007. To avoid confounding effects due to the crisis, the summary statistics and baseline analyses are referring to the four waves of the UniCredit-Capitalia. However, for the sake of completeness, in a subsequent analysis, we replicate the baseline results using the EFIGE survey.

set includes a random, representative sample of all manufacturing firms with 10 to 500 employees – stratified by five classes of employees, the four Pavitt industry categories (supplier-dominated, scale intensive, specialized suppliers, science-based), and two geographical areas (North and Center-South) – and the universe of Italian manufacturing firms with more than 500 employees. In all, approximately 4,000 firms were interviewed in each survey wave. For the surveyed firms, we are able to attach balance-sheet information provided by BvD-AIDA, the most comprehensive source of financial information for Italian companies.

Table 1 displays summary statistics of the variables used in the empirical analysis (for all firms, by sales variation, and by lending duration). The mean level of total assets is 20.3 million euros, while the median is about 5 million euros (in terms of employees, the average number is 108 and the median 32). On average, the companies in our sample are 25.7 years old, with a median of 21. With regard to

TABLE 1

Summary Statistics

Summary statistics in Table 1 refer to the sample of firms in the last year of the survey (1995–2006). Please refer to the Appendix for exact definition of the variables.

	Full Sample			SHOCK_IN_SALES_5%			RELATIONSHIP_LENGTH_OVER_10		
	Obs.	Mean	Std. Dev.	Yes	No	*t*-Test	Yes	No	*t*-Test
Dependent Variables									
GROWTH_RATE (EMPLOYMENT)	15,181	0.020	0.130	−0.015	0.031	19.276	0.017	0.025	3.663
GROWTH_RATE (TOTAL_LABOR_COST)	11,597	0.058	0.154	−0.015	0.083	31.127	0.051	0.071	6.314
GROWTH_RATE (AVERAGE_LABOR_COST)	11,569	0.041	0.144	0.006	0.052	14.535	0.038	0.046	2.771
GROWTH_RATE (PERMANENT_WORKERS)	9,831	0.026	0.284	−0.014	0.039	14.580	0.018	0.034	2.954
GROWTH_RATE (TEMPORARY_WORKERS)	3,499	0.175	0.895	0.094	0.211	2.923	0.172	0.187	0.471
GROWTH_RATE (SHORT-TERM_BANK_CREDIT)	10,296	0.214	0.923	0.179	0.224	2.014	0.206	0.233	1.371
GROWTH_RATE (LONG-TERM_BANK_CREDIT)	6,468	0.019	0.805	−0.016	0.029	1.811	0.021	0.022	0.019
CAPITAL_EXPENDITURE	16,581	0.206	0.312	0.168	0.217	8.835	0.216	0.222	1.187
Relationship Lending Variables									
RELATIONSHIP_LENGTH	16,597	16.782	12.253	17.009	16.948	−0.263			
ln(RELATIONSHIP_LENGTH)	16,423	2.564	0.788	2.579	2.577	−0.162			
RELATIONSHIP_LENGTH_OVER10	16,597	0.590	0.492	0.596	0.595	−0.006			
Measures of Shock									
SHOCK_IN_SALES_5%	17,040	0.235	0.424				0.236	0.236	−0.006
SECTORAL_CHANGE_IN_SALES (NEG)	17,039	−0.053	0.102	−0.028	−0.061	−17.160	−0.053	−0.058	−2.683
CHANGE_IN_SALES (NEG)	17,049	−0.075	0.226	0.171	−0.151	−128.610	−0.065	−0.089	−6.356
LAGGED_SHOCK_IN_SALES_5%	17,135	0.285	0.451	0.321	0.272	−5.790	0.297	0.272	−3.382
SHOCK_IN_SALES_10%	17,040	0.154	0.361	0.655	0.000	−87.155	0.149	0.161	2.043
Additional Variables									
TOTAL_ASSETS	17,522	20,305	52,232	17,227	19,863	3.01	17,378	19,116	2.31
ln(TOTAL_ASSETS)	17,514	8.739	1.351	8.614	8.744	5.494	8.717	8.710	−0.336
AGE	18,179	25.751	20.566	25.626	25.926	0.814	29.458	19.645	−32.441
FAMILY	18,603	0.749	0.434	0.763	0.743	−2.542	0.785	0.728	−8.445
CORPORATION	18,603	0.928	0.258	0.928	0.937	1.778	0.925	0.931	1.426
ROE	17,514	0.044	0.067	0.031	0.048	13.341	0.045	0.040	−4.759
BUSINESS_GROUP	18,550	0.239	0.426	0.229	0.235	0.721	0.205	0.275	10.345
%_OF_GRADUATE_WORKERS	11,882	0.093	0.178	0.085	0.096	2.940	0.081	0.097	4.628
HIGH_TECH	18,603	0.312	0.463	0.324	0.304	−2.429	0.299	0.325	3.543
JUDICIAL_EFFICIENCY_PENDING_TRIALS	18,541	2.196	3.126	2.117	2.265	2.581	2.264	2.372	2.112
SURVEY_1995–1997	18,603	0.242	0.428	0.284	0.255	−3.586	0.256	0.260	0.589
SURVEY_1998–2000	18,603	0.252	0.434	0.164	0.258	13.430	0.271	0.271	0.105
SURVEY_2001–2003	18,603	0.231	0.421	0.316	0.182	−16.573	0.243	0.230	−2.006
SURVEY_2004–2006	18,603	0.276	0.447	0.236	0.305	8.819	0.230	0.238	1.288

the firms' legal structure, 56.4% of the firms are private limited companies, 2% are publicly listed and the rest are public limited companies. The firms' geographic distribution shows that 68.4% of firms are located in the North of Italy, while 17.9% of the firms are in the Center and 13.7% in the South.[7] Finally, we also use data from the Bank of Italy on the presence of banks in local markets and data provided by the Italian National Statistics Institute (ISTAT) for the variables measured at the provincial level.

B. Employment Decisions

The main employment decision of firms that we explore is the number of employees as reported in the AIDA database. Specifically, we consider the growth rate of firm employees in the last year of each survey. The average employment growth rate in our sample is 2%, while the median is zero. For 21.4% of the firms the size of the hired workforce decreases, while for 32.8% it increases and for 45.8% it remains steady. Figure 1 plots the average employment growth rate of our sample firms across Italian provinces. It shows that the variable has large variation across space but it does not correlate with the economic and financial gaps between northern and southern regions. We then consider the growth rates of total employment expenditures and the average cost of the hired workforce in the last year of the surveys. Also, in this case, data are drawn from the firms' financial statements reported in the AIDA database. On average, the firms in our sample display a 5.8% increase in total labor costs, while the average cost of labor increases by 4.1% (the median values are 4.7% and 3.4%, respectively).

C. Measures of Sales Shock

In our baseline regression analysis, we measure the shock on firms' sales by an indicator variable that takes the value 1 if, in the last year of the survey, the firm experienced a drop in the sales turnover equal to or greater than 5%, and 0 otherwise (SHOCK_IN_SALES_5%). Later in the article, we check the robustness of the baseline results to other measures of the sales shock. First, we consider the continuous variable CHANGE_IN_SALES, which is equal to the negative percentage change in sales turnover in the last year of the survey. Second, we construct the dummy LAGGED_SHOCK_IN_SALES_5% by using lagged data on sales growth in the second year of each survey. Finally, we use the dummy SHOCK_IN_SALES_10% that takes the value 1 if firms' sales turnover decreases by at least 10% in the last year of the survey.

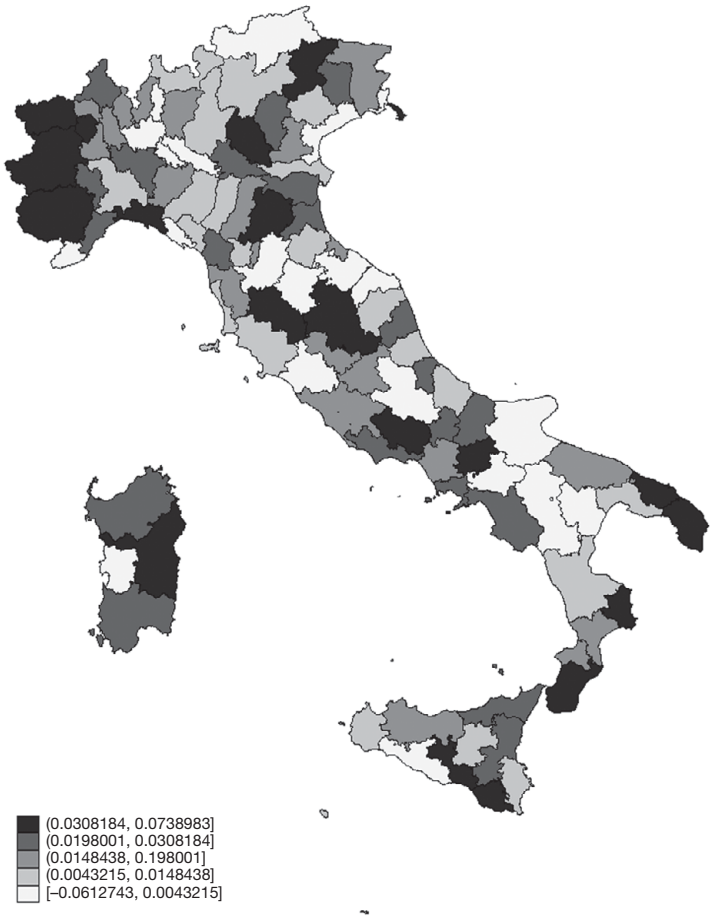
In our sample, in the last year of the survey, the firms' total sales turnover increases by 7.5% (Table 1); furthermore, for 23.5% of firms sales decreases by more than 5%, and for 15.4% of firms the drop is greater than 10%. Looking at employment decisions, as we expect, firms experiencing a negative sales shock reduce both the number of employees and total labor costs. On average, the percentage cut in employees and wages is the same, 1.5%, such that the average cost of labor remains broadly constant. This suggests that firms tend to respond to

[7]According to Pavitt's (1984) taxonomy, the distribution among sectors exhibits the predominance of businesses operating in traditional manufacturing sectors (48.7%).

FIGURE 1

Employment growth rate across Italian provinces

Figure 1 plots the employment growth rate averaged at province level in the last year of the survey over the years 1995–2006.



shocks by shrinking the internal workforce without making significant changes to its composition. By contrast, where firms do not experience an adverse shock, total labor expenditures increase more than the number of employees (8.3% vs. 3.1%), consistent with an increase in the use of overtime work and a skilled workforce.

D. Relationship Lending

Our second key explanatory variable is the strength of the bank-firm relationship, measured by the duration of the relationship with the main bank. The survey asks each firm "for how many years has this been the main bank with which the firm operates?" The variable ln(RELATIONSHIP_LENGTH) is the natural logarithm of the length in years of the relationship between the firm and its main bank. The length of the lending relationship is regarded by the empirical banking literature as a good

proxy of the strength of bank-firm ties and the use of relational lending technologies (Kysucky and Norden (2016), Beck, Ioannidou and Schafer (2018), and Duqi, Tomaselli, and Torluccio (2018)). The idea is that banks, by monitoring the borrowing firm, the movements of its accounts, and the compliance with its contractual obligations and covenants, have the opportunity to obtain exclusive soft information through repeated interactions over time (Petersen and Rajan (1994), Boot (2000), and Drexler and Schoar (2014)). However, the bank's information advantages may not vary continuously with the duration of the lending relationship with the firm. To take this nonlinearity into account, we check the robustness of our result by using, alternatively to the continuous variable, an indicator variable equal to 1 if the duration of the relationship is longer than 10 years, and 0 otherwise (RELATIONSHIP_LENGTH_OVER10).

In our sample, the average duration of the lending relationship with the main bank is 16.8 years (the median is 15), and for 59% of firms, it is longer than 10 years.[8] These figures are statistically the same for firms hit by a drop in sales and the others. Interestingly, main-bank-related firms (i.e., the firms for which RELATIONSHIP_LENGTH_OVER10 = 1) are on average more cautious in their employment decisions, increasing the number of employees and salaries paid significantly less than firms that do not have relational ties with a main bank (1.7% vs. 2.5% for the growth rate of employees and 5.1% vs. 7.1% for the growth of labor costs).

E. Additional Variables

In the empirical analysis, we employ some alternative outcome variables, such as the growth rate of short-term and long-term bank credit, which help validate our tested mechanisms. Furthermore, we control for a number of variables that potentially affect the employment decisions of firms and can be correlated with our key explanatory variables.

In detail, to account for the fact that larger and older firms could have a different propensity to change the workforce and that the duration of the lending relationship is mechanically influenced by the age of the firm, we first control the firm size, measured as the log of total assets, and age (years from a firm's inception). In addition, we include a dummy variable indicating whether a firm is a corporation. Furthermore, following the studies suggesting that employment stability in family firms is greater (Mueller and Philippon (2011), Bach and Serrano-Velarde (2015), and Ellul et al. (2017)), we add a dummy variable equal to 1 if the main shareholder of the firm is an individual or a family. Moreover, to consider the effects of access to internal capital markets, or to group internal labor markets, we include a dummy that takes the value 1 if the firm belongs to a business group, and zero otherwise (Faccio and O'Brien (2021)).

As the firm's economic performance may significantly affect its workforce dynamics, we include the profitability, measured by return on equity (ROE), in the

[8]Our data are consistent with those obtained by other studies analyzing relationship lending. For example, using the EFIGE survey on a sample of European manufacturing firms, Ferri, Murro, Peruzzi, and Rotondi (2019) find that in 2007–2009 the average duration of the lending relationship with the main bank was 15.85 (with a median value of 12 years).

set of control variables. Finally, to control for time-varying unobservable industry and local economy variation, we include sector-year dummies based on a 2-digit ATECO classification and provincial-year dummies.[9] From Table 1, firms experiencing a 5% or greater reduction in sales (SHOCK_IN_SALES_5% = 1) are significantly smaller on average, more likely family-owned, and less profitable than firms in good times. Small and family-owned firms are also more likely to have a long-lasting relationship with the main bank, as well as stand-alone firms. In addition, main-bank-related firms are, on average, older, and less profitable.

IV. Empirical Analysis

This section presents our empirical methodology and results. The main question is to establish the effect of relationship lending on the firms' workforce variation when companies are experiencing an adverse shock to their sales turnover and, consequently, to their capability of generating internal liquidity through normal business operations. As theory suggests, relationship lending provides liquidity insurance against firms' individual adverse liquidity shocks, which can lead them either to retain temporary workers within the organization or to restructure the firm's organization by cutting jobs. Our aim is to test whether companies with durable lending relations show a sensitivity of changes in workforce to shocks on sales that is lower or higher compared to companies that engage relatively more in transactional lending. In the next subsections, we present the baseline regression analysis. We then discuss the endogeneity concerns and show some additional results.

A. Baseline Specification

Our proposed model estimates the sensitivity of firms' employment to shocks in sales, and whether it depends on the intensity of relationship lending. We rely on repeated cross-section data from four waves of the UniCredit-Capitalia survey. The dependent variable is the percentage change in each company's workforce. The main explanatory variables are: i) a measure of each firm's idiosyncratic shock in sales; ii) a measure of the strength of relationship lending; and iii) the interaction term among (i) and (ii). Both dependent and independent variables are measured in the last year of the survey. The baseline specification of our regression analysis is:

$$(1) \qquad \Delta n_{it} = \beta_1 R_{it} + \beta_2 R_{it} \times S_{it} + \beta_3 S_{it} + \gamma_1 X_{it} + \gamma_2 X_{it} \times S_{it} + \mu_{jt} + \mu_{pt} + \varepsilon_{it},$$

where the subscripts i, t, j, and p index, respectively, firms, time (which corresponds to the last year of each wave of the surveys), sector, and province of the firms' headquarters. R_{it} is measured by the length (natural logarithm of the years) of a continuous relationship between each firm i and its main bank at year t. In our baseline analysis, we measure the sales shock (S_{it}) by constructing a dummy variable that identifies whether a company i at time t faces an annual change in

[9] ATECO is the industry classification adopted by the Italian Institute of Statistics (ISTAT) and substantially coincides with the NACE classification. Provinces are local entities with the size of U.S. counties. In Italy, there are 103 provinces, grouped into 20 regions.

sales that is lower than minus 5%.[10] μ_{jt} and μ_{pt} are, respectively, sector-year and province-year fixed effects; these sets of granular fixed effects absorb the impact of all sector and province-specific unobservable variables that may vary over time.

Coefficients β_1 and β_3 in equation (1) measure the average direct impact on changes in the internal workforce of, respectively, the length of the lending relation and the shock in sales. Our main coefficient of interest β_2 measures how the sensitivity of firms' employment to the sales shock varies depending on the degree of relationship lending the firm engages in. The empirical specification also includes the set of control variables (X_{it}) described in Section III.E: the log of total assets, age, ROE and family, corporation, and business group dummies. Furthermore, in the most complete empirical specification, we also include the above set of control variables that interacted with the shock ($X_{it} \times S_{it}$). The purpose of considering these last additional controls is to account for the firms' characteristics that can explain the dynamics of their workforce and are, at the same time, potentially correlated with the degree of relationship lending and can thus predict the differential impact of the sales shock.

Estimation results are reported in Table 2. In column 1, we present estimates from a specification that does not include controls, except for year-fixed effects. The negative estimated coefficient β_1 suggests that in "normal times" the closer the relationship of the firms with their main bank, the smaller the annual growth rate of employment,[11] whereas the negative estimated coefficient β_3 is consistent with firms responding to sales shocks by reducing employment (or relatively slowing its growth). The positive estimated coefficient attached to the interaction term, β_2, indicates that the negative impact of shock in sales on firms' workforce is smoothed by the length of the bank-firm relationship. To be precise, the baseline estimates in column 1 indicate that a negative shock in sales is associated with large drops in firms' workforce, that is about 7.5 pp reduction relative to the other firms, absent any effect of relationship lending; 1-standard-deviation in the log of relationship length (displayed in Table 1) mitigates the annual drop in the workforce of firms hit by negative sales shocks in sales by about 1 pp.

The coefficient estimates in column 1, in particular the main coefficient of interest β_2, remain similar across specifications, both in magnitude and significance when additional controls are progressively included in the regression model: sector-year fixed effects and province-year fixed effects (column 2), firm-level observables (column 3), and the interaction terms between control variables and the sales shock (column 4).[12]

[10] Later in the article, we provide robustness checks regarding the measurement of both independent variables.

[11] This result is consistent with recent findings by Behr, Norden, and Oliveira (2020) who show that Brazilian firms borrowing from a single bank employ significantly less workers than firms with multiple banks.

[12] As stated above, our analysis excludes the years of the global financial crisis covered by the EFIGE survey (2007–2009). The shocks related to the global recession are, in fact, different in nature with respect to the idiosyncratic drop in sales turnover considered in our baseline specification. More importantly, during this period, Italian banks suffered from capital and liquidity problems that impaired their lending capacity and produced a severe credit crunch for firms (Bonaccorsi di Patti and Sette (2012), Presbitero et al. (2014), Sette and Gobbi (2015), and Barone, De Blasio, and Mocetti (2018)). All these effects may have a confounding impact that may alter our estimates. Indeed, when replicating the

TABLE 2

Baseline Estimates

Table 2 shows estimates of equation (1). The dependent variable is measured by the yearly percentage change of the number of employees in the last year of each survey wave. The main explanatory variables are SHOCK_IN_SALES_5%, a dummy variable that takes the value equal to 1 if the yearly percentage change of sales in the last year of the survey is less than 5%, and 0 otherwise, and ln(RELATIONSHIP_LENGTH), the natural logarithm of the years of relationship between the firm and its main bank. The other explanatory variables are defined in the Appendix. Robust standard errors are reported in parentheses. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

	Dependent Variable: GROWTH_RATE(EMPLOYMENT)			
	1	2	3	4
ln(RELATIONSHIP_LENGTH)	−0.008***	−0.009***	−0.007***	−0.007***
	(0.002)	(0.002)	(0.002)	(0.002)
ln(REL_LENGTH) × SHOCK_IN_SALES_5%	0.012***	0.013***	0.013***	0.010***
	(0.003)	(0.003)	(0.003)	(0.004)
SHOCK_IN_SALES_5%	−0.075***	−0.076***	−0.074***	−0.092***
	(0.009)	(0.009)	(0.009)	(0.027)
ln(TOTAL_ASSETS)			−0.000	−0.001
			(0.001)	(0.001)
AGE			−0.001***	−0.001***
			(0.000)	(0.000)
FAMILY			−0.001	−0.000
			(0.003)	(0.003)
CORPORATION			−0.007	−0.006
			(0.005)	(0.006)
ROE			0.002***	0.002***
			(0.000)	(0.000)
BUSINESS_GROUP			−0.002	0.001
			(0.003)	(0.004)
ln(TOTAL_ASSETS) × SHOCK_IN_SALES_5%				0.003
				(0.002)
AGE × SHOCK_IN_SALES_5%				0.000
				(0.000)
FAMILY × SHOCK_IN_SALES_5%				−0.002
				(0.007)
CORPORATION × SHOCK_IN_SALES_5%				−0.002
				(0.011)
ROE × SHOCK_IN_SALES_5%				0.001
				(0.000)
BUSINESS_GROUP × SHOCK_IN_SALES_5%				−0.011
				(0.008)
Year dummies	Yes	No	No	No
Year × province dummies	No	Yes	Yes	Yes
Year × sector dummies	No	Yes	Yes	Yes
No. of obs.	13,498	13,483	13,037	13,037
R^2	0.037	0.075	0.086	0.086

B. Endogeneity Issues

The reliability of the OLS baseline estimates hinges on the assumption that, once controlling for sector-year and province-year fixed effects and observable variables (also interacted with the sales shock), our independent variables do not correlate with the residuals. There are two major threats to this assumption in our empirical setting: i) the potential reverse causality between the sales performance of

baseline analysis by using the EFIGE survey we find an average larger and significant impact of sales shocks on firms' employment, while the mitigating effect of relationship lending (i.e., the positive coefficient on the interaction term Rel length × Shock on sales 5%) is smaller and noisily estimated (see Supplementary Table A1).

each firm and its growth of the internal workforce, and ii) the possibility that unobserved factors are correlated with the intensity of relationship lending and affect the employment decisions of firms when facing an adverse shock.

In the next sections, we address the reverse causality issue by showing estimates that rely on shocks in sales that arise at industry rather than firm level. Then, we discuss the potential omitted variables issues by showing results based on a propensity score matching strategy. Finally, we perform a placebo-type analysis to exclude that the shock in sales at time t, and its interaction with relationship lending, correlate with the predetermined dynamics in firms' employment.

1. Industry Sales Shocks

The issue of reverse causality arises, for instance, in cases when the decrease of sales experienced by a firm is the result of a negative shock to internal workforce productivity; this may in turn affect the optimal level of the workforce and has a final negative effect on firms' production capacity and sales. To address this issue, we follow Ellul et al. (2017) and consider a measure of the shock in sales that is based on each firm's individual exposure to sectoral sales shock. In particular, we build the variable SECTORAL_CHANGE_IN_SALES as the percentage changes in sales in the industrial sector to which firm i belongs (defined at the 2-digit ATECO level), after subtracting the sales of firm i itself. We take the negative value of this variable to keep a consistent interpretation of the sign of the estimated coefficients with respect to the baseline. To the extent that a shock to labor productivity at a single firm level hardly affects the sales of other firms within a sector, this strategy overcomes potential reverse causality effects from the growth rate of firms' workforce to the growth rate of firms' sales. However, given the predominance of small and medium enterprises in our sample, the variability of SECTORAL_CHANGE_IN_SALES within sector-year is rather limited. Table 3 replicates the baseline strategy using the sectoral change in sales as an alternative measure of the shock. It shows that the estimated β_2 coefficient is positive and statistically different from zero in all specifications, confirming the reliability of the baseline estimates.[13] The estimated coefficients from the current analysis are not directly comparable with those in Table 2, which use a dummy variable to measure the sales shock. However, they are quantitatively in line with the estimates obtained from a version of the baseline model where the shock is defined continuously by the annual percentage change in sales of each firm (results are displayed in the robustness analysis, Table 6).

2. Matched-Sample Analysis

A second endogeneity concern is related to the potential bias caused by the presence of omitted variables correlated with the strength of relationship lending. There could be unobserved variables that jointly affect the propensity of companies to engage in long-lasting relationships with the main bank and the sensitivity of firm employment decisions to short-run changes in sales. For example, the scarce ability/willingness of firms to introduce changes in the internal and external organizational

[13]Note that the coefficient reduces its magnitude and significance in the most demanding specification in column 4, albeit showing a p-value of 0.059.

TABLE 3

Industry Sales Shocks

Table 3 shows estimates of equation (1). The dependent variable is measured by the yearly percentage change of the number of employees in the last year of each survey wave. The main explanatory variables are SECTORAL_CHANGE_ IN_SALES, the negative value of the yearly percentage change of total sales in the firm's sector, excluding the firm itself, measured in the last year of the survey, and ln(RELATIONSHIP_LENGTH), the natural logarithm of the years of relationship between the firm and its main bank. The other explanatory variables are defined in the Appendix. Robust standard errors are reported in parentheses. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

	Dependent Variable: GROWTH_RATE(EMPLOYMENT)			
	1	2	3	4
ln(RELATIONSHIP_LENGTH)	−0.004***	−0.004***	−0.003*	−0.003***
	(0.001)	(0.001)	(0.001)	(0.001)
ln(REL_LENGTH) × SECTORAL_CHANGE_IN_SALES	0.028***	0.030***	0.032***	0.017*
	(0.010)	(0.010)	(0.010)	(0.009)
SECTORAL_CHANGE_IN_SALES	−0.114***	−0.093**	−0.077*	−0.033
	(0.031)	(0.046)	(0.046)	(0.078)
ln(TOTAL_ASSETS)			0.001	0.001
			(0.001)	(0.001)
AGE			−0.001***	−0.001***
			(0.000)	(0.000)
FAMILY			−0.001	0.000
			(0.003)	(0.002)
CORPORATION			−0.006	−0.005
			(0.005)	(0.004)
ROE			0.002***	0.001***
			(0.000)	(0.000)
BUSINESS_GROUP			−0.002	−0.003
			(0.003)	(0.002)
ln(TOTAL_ASSETS) × SECTORAL_CHANGE_IN_SALES				−0.002
				(0.006)
AGE × SECTORAL_CHANGE_IN_SALES				0.002***
				(0.000)
FAMILY × SECTORAL_CHANGE_IN_SALES				0.006
				(0.018)
CORPORATION × SECTORAL_CHANGE_IN_SALES				−0.011
				(0.031)
ROE × SECTORAL_CHANGE_IN_SALES				−0.006***
				(0.001)
BUSINESS_GROUP × SECTORAL_CHANGE _IN_SALES				−0.019
				(0.020)
Year dummies	Yes	No	No	No
Year × province dummies	No	Yes	Yes	Yes
Year × sector dummies	No	Yes	Yes	Yes
No. of obs.	13,492	13,481	13,034	13,034
R^2	0.017	0.055	0.069	0.075

environment could explain both the propensity to have long-lasting relationship with the main bank and the decision to retain employees when a shock hits firms' sales. In practice, in the presence of control variables that aim to capture this potential source of correlation, such as the firm's age, the family ownership, the belonging to a business group, and the size of the firm (additionally interacted with the shock), and in the presence of provincial-year and sector-year fixed effects, this concern can be confidently regarded as "residual." However, to control for this potential source of bias in testing the effect of liquidity insurance of relationship lending on firms' workforce changes, in this section, we focus on a subsample of firms that are homogenous in terms of observable characteristics (Faccio and O'Brien (2021)).

TABLE 4

Matched Sample Analysis

Table 4 shows estimates of equation (1) on a subsample of companies obtained after implementing the propensity score matching procedure outlined in Section IV.B.2. The dependent variable is measured by the yearly percentage change of the number of employees in the last year of each survey wave. The main explanatory variables are SHOCK_IN_SALES_5%, a dummy variable that takes the value equal to 1 if the yearly percentage change of sales in the last year of the survey is less than 5%, and 0 otherwise, and ln(RELATIONSHIP_LENGTH), the natural logarithm of the years of relationship between the firm and its main bank. The firm-level controls include ln(TOTAL_ASSETS), AGE, FAMILY, CORPORATION, ROE, and BUSINESS_GROUP. These explanatory variables are defined in the Appendix. Robust standard errors are reported in parentheses. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

	Dependent Variable: GROWTH_RATE(EMPLOYMENT)			
	1	2	3	4
ln(RELATIONSHIP_LENGTH)	−0.005*	−0.005*	−0.005	−0.005
	(0.003)	(0.003)	(0.003)	(0.003)
ln(REL_LENGTH) × SHOCK_IN_SALES_5%	0.014**	0.016***	0.016***	0.016***
	(0.006)	(0.006)	(0.006)	(0.006)
SHOCK_IN_SALES_5%	−0.076***	−0.082***	−0.080***	−0.098*
	(0.013)	(0.013)	(0.013)	(0.050)
Firm controls	No	No	Yes	Yes
Firm controls × SHOCK_IN_SALES_5%	No	No	No	Yes
Year dummies	Yes	No	No	No
Year × province dummies	No	Yes	Yes	Yes
Year × sector dummies	No	Yes	Yes	Yes
No. of obs.	3,758	3,758	3,758	3,758
R^2	0.042	0.142	0.154	0.155

Specifically, we employ a propensity score matching strategy based on predetermined firm characteristics (size, profitability, age, ownership, legal type, sector, and province), and identify a sample of matched firms that differ in the intensity of relationship lending. Propensity scores are calculated on the probability of firms engaging in long-lasting relationship with the main bank (above/below 10 years of relationship length). Matched firms were selected without replacement using a propensity score distance (caliper) $\delta = 0.001$; the matched-sample includes 3,758 firms. In Table 4, we replicate the baseline analysis on the subsample of matched firms. Results display that our estimates are robust to this check, both in terms of magnitude and statistical significance. The main coefficient of interest β_2 is stable across all specifications, including the full-fledged specification in column 4.[14]

3. Placebo Test

As a further check for the reliability of our OLS baseline results, we estimate the regression in equation (1) by employing as a dependent variable the lagged value of the growth rate of employment for each firm i: Δn_{it-1}. The rationale of this test is to support the hypothesis that the shock in sales at time t, and its interaction

[14]Furthermore, to address the possible selection biases due to different characteristics of firms with longer relationships with the main bank, we follow an alternative strategy based on a IV approach. In the spirit of Guiso, Sapienza, and Zingales (2004), we instrument relationship banking (measured at the firm level) by exploiting variation in local banking markets in 1936 as resulted from the strict structural regulation of the Italian banking industry set by the banking law in that same year. The assumption is that the geography of bank branches that originated from the law was quasi-randomly distributed, largely uncorrelated with the geographical distribution of economic activity at the time, and even more so it is orthogonal to the firms' employment decisions in the recent years. Results are explained in detail and displayed in the Supplementary Section A2.

TABLE 5

Placebo Test

Table 5 shows estimates of equation (1) but the dependent variable is measured at time $t-1$. The dependent variable is measured by the yearly percentage change of the number of employees in the year before the last one of each survey wave. The main explanatory variables are SHOCK_IN_SALES_5%, a dummy variable that takes the value equal to 1 if the yearly percentage change of sales in the last year of the survey is less than 5%, and 0 otherwise, and ln(RELATIONSHIP_LENGTH), the natural logarithm of the years of relationship between the firm and its main bank. The firm-level controls include ln(TOTAL_ASSETS), AGE, FAMILY, CORPORATION, ROE, and BUSINESS_GROUP. These explanatory variables are defined in the Appendix. Robust standard errors are reported in parentheses. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

	Dependent Variable: GROWTH_RATE_$t-1$(EMPLOYMENT)			
	1	2	3	4
ln(RELATIONSHIP_LENGTH)	−0.013***	−0.011***	−0.008***	−0.009***
	(0.002)	(0.002)	(0.002)	(0.002)
ln(REL_LENGTH) × SHOCK_IN_SALES_5%	0.001	0.001	0.001	0.004
	(0.004)	(0.004)	(0.004)	(0.004)
SHOCK_IN_SALES_5%	−0.011	−0.013	−0.012	0.008
	(0.011)	(0.011)	(0.011)	(0.030)
Firm controls	No	No	Yes	Yes
Firm controls × SHOCK_IN_SALES_5%	No	No	No	Yes
Year dummies	Yes	No	No	No
Year × province dummies	No	Yes	Yes	Yes
Year × sector dummies	No	Yes	Yes	Yes
No. of obs.	12,988	12,976	12,545	12,545
R^2	0.017	0.067	0.079	0.079

with relationship lending, does not correlate with the predetermined changes in firms' employment. Estimation results, in Table 5, confirm that the variable S_{it}, and its interaction with R_{it} does not correlate with the lagged value of growth rate of employment, so there is no underlying trend in the dependent variable that may create a spurious interpretation of our baseline results.

C. Robustness Checks

In this section, we discuss measurement issues related to the definition of the main independent variables. Results are reported in Table 6. First, we consider the sensitivity of our estimates to alternative measures of the shock in sales, S_{it}, keeping the measure of relationship lending as in the baseline specification (columns 1–3). In detail, in column 1, S_{it} is measured continuously by the annual percentage change in sales; in order to have a more direct comparison with the baseline estimates, we take the negative value of this variable. The advantage of using a continuous variable is that we do not rely on arbitrary choices of the threshold to define an idiosyncratic shock in sales; the disadvantage is that tiny annual changes in sales do not capture events that may induce the companies to change their workforce. Our results show that the estimated β_2 is positive and statistically significant, confirming that access to implicitly committed credit lines provided by long-lasting lending relationships with the main bank mitigates the employment response of firms to negative shocks. A second concern is related to the fact that our baseline definition of shock in sales cannot capture the entire effects on changes in workforce because the adjustments of the labor force may require some time. In order to allay such a concern, in column 2 of Table 6, we show estimates when the variable S_{it} is a dummy variable based on the lagged value of the change in sales. Baseline results

TABLE 6
Robustness Checks

Table 6 shows estimates of equation (1) using alternative measures of the main explanatory variables. The dependent variable is measured by the yearly percentage change of the number of employees in the last year of each survey wave. The main explanatory variables in column 1 are the ln(RELATIONSHIP_LENGTH) and CHANGE_IN_SALES, the negative value of the yearly percentage change of firms' sales in the last year of each survey. The main explanatory variables in column 2 are the ln(RELATIONSHIP_LENGTH) and the SHOCK_IN_SALES_5% measured at time $t-1$, that is the year before the last one of each survey. The main explanatory variables in column 3 are the ln(RELATIONSHIP_LENGTH) and the SHOCK_IN_SALES_10%, a dummy variable that takes the value equal to 1 if the yearly percentage change of sales in the last year of the survey is less than 10%, and 0 otherwise. The main explanatory variables in column 4 are the RELATIONSHIP_LENGTH_OVER10, a dummy variable that takes the value equal to 1 if the years of relationship between the firm and its main bank is equal to or greater than 10 years, and 0 otherwise, and the SHOCK_IN_SALES_5%. Other explanatory variables are defined in the Appendix. The firm-level controls include ln(TOTAL_ASSETS), AGE, FAMILY, CORPORATION, ROE, and BUSINESS_GROUP. In each column, firm-level controls are interacted with the definition of the shock used as main explanatory variable in the corresponding regression model. Robust standard errors are reported in parentheses. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

	Dependent Variable: GROWTH_RATE(EMPLOYMENT)			
	1	2	3	4
ln(RELATIONSHIP_LENGTH)	−0.001	−0.007***	−0.006***	
	(0.002)	(0.002)	(0.002)	
ln(REL_LENGTH) × CHANGE_IN_SALES	0.022*			
	(0.012)			
CHANGE_IN_SALES	−0.295***			
	(0.068)			
ln(REL_LENGTH) × LAGGED_SHOCK_IN_SALES_5%		0.008**		
		(0.003)		
LAGGED_SHOCK_IN_SALES_5%		−0.027		
		(0.023)		
ln(REL_LENGTH) × SHOCK_IN_SALES_10%			0.010**	
			(0.005)	
SHOCK_IN_SALES_10%			−0.079**	
			(0.031)	
RELATIONSHIP_LENGTH_OVER10				−0.010***
				(0.003)
REL_LENGTH_OVER10 × SHOCK_IN_SALES_5%				0.016***
				(0.005)
SHOCK_IN_SALES_5%				−0.073***
				(0.025)
Firm controls	Yes	Yes	Yes	Yes
Firm controls × SHOCK	Yes	Yes	Yes	Yes
Year × province dummies	Yes	Yes	Yes	Yes
Year × sector dummies	Yes	Yes	Yes	Yes
No. of obs.	13,037	12,797	13,037	13,174
R^2	0.114	0.094	0.087	0.086

are confirmed also in this case. In column 3, we also show the robustness of our baseline results by using an alternative threshold for the definition of the shock in sales (at minus 10%). Both the magnitude and significance of coefficients for S_{it} and $R_{it} \times S_{it}$ are virtually identical to those in the baseline specification, suggesting that a 5% decrease in sales turnover properly captures employment-relevant shocks.[15] Finally, in column 4, we provide empirical estimates based on alternative measures of relationship lending, keeping the baseline definition of the shock in sales. We replicate the analysis by measuring the strength of bank-firm relations with a dummy that takes a value 1 if the number of years of the relation is above 10, and 0 otherwise. Also, in this case, baseline results are confirmed.

[15] In an untabulated regression, we use an alternative measure of the idiosyncratic shock based on the annual change in cash flows rather than sales. Results, available upon request, are qualitatively similar.

D. Transitory Versus Persistent Shocks

The sensitivity of employment growth at distressed firms to relationship banking should differ depending on whether the sales shock is transitory or persistent. Firms can be expected to hoard labor and provide wage insurance to greater degree in the case of transitory declines in sales (Gamber (1988)). In turn, the main bank is also more likely to continue financing firms in temporary financial distress than those experiencing a permanent loss of annual sales turnover.

In this section, we formally test this thesis in a context where firms differ in relationship lending. The empirical strategy used here was originally developed by Guiso et al. (2005); it provides a methodology to separately identify the transitory and persistent components of changes in turnover using firm-level data. This strategy was subsequently applied in the literature to analyze the wage response of firms exposed to shocks with different degrees of persistence in various countries,[16] and by Ellul et al. (2017) to test for the employment response of family firms to sales shock in a cross-country framework.

In line with this last study, we decompose the variation in the annual changes in sales using an instrumental variable approach. The identifying assumption is that the residual component of the annual change in sales in year t (obtained after running a regression of annual changes in sales on some observables) can be instrumented using its residuals in year $t+1$ and its powers to isolate the transitory component. The moving average of the residuals in years $t-1$, t, and $t+1$, and its powers, can instrument the residual changes in sales to identify the permanent component.[17] After identifying the temporary and persistent components of the change in sales at each firm, we check whether the liquidity insurance provided by durable lending relationships with the main bank enables firms hit by transitory sales shocks to achieve employment stability more than those suffering permanent shocks.

Consistent with the baseline analysis, we measure the shock by the negative values of the residuals of the annual growth rate in sales. The empirical estimates in Table 7 are fully consistent with the hypothesis that the main bank gives its long-lasting client firms access to liquidity to cope with temporary shocks and, ultimately, attenuate employment adjustments (columns 1 and 2). However, when the sales decline is persistent, the job impact is not significantly smaller at the firms with longer lending relationships (columns 3 and 4).

Note that in this analysis the sample is smaller than in the baseline, because the identification strategy requires that sales and other firm characteristics were observed also in the year after the last year of the survey. So the sample for the analysis of temporary and permanent shocks includes only the firms observed for two or more consecutive survey waves. To compare the IV and OLS estimates, Table 7 reports the estimates from the baseline specification using the reduced sample (columns 5 and 6). These are quantitatively in line with those in column 1 of Table 6, for the entire sample. This reassures us that the subsample does not display substantial differences with respect to the full sample.

[16]The reader may refer to Guiso and Pistaferri (2020) for an updated review of the literature.

[17]For a formal and detailed description of this strategy, see the Appendix in Ellul et al. (2017).

TABLE 7

Transitory and Persistent Idiosyncratic Shocks

Table 7 presents the estimates from the strategy that isolate persistent and temporary shocks in sales for the subsample of companies observed for at least two consecutive waves of the survey. The dependent variable is measured by the residuals of a regression that has the yearly percentage change of the number of employees as dependent variable and firm-level controls, province, and sector fixed effects as explanatory variables. The displayed estimates are the results of second stage IV regressions that identify transitory (columns 1 and 2) and permanent (columns 3 and 4) shocks to sales using the methodology outlined in Section IV.D. The displayed estimates in columns 5 and 6 are from OLS estimation strategy. ln(RELATIONSHIP_LENGTH) is the natural logarithm of the years of relationship between the firm and its main bank. The regressions in columns 2, 4, and 6 include firm-level controls. The firm-level controls include ln(TOTAL_ASSETS), AGE, FAMILY, CORPORATION, ROE, and BUSINESS_GROUP. These explanatory variables are defined in the Appendix. The *p*-value associated to the *F*-test on the excluded instruments provides the results from a test on the power of instruments. Robust standard errors are reported in parentheses. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

	Dependent Variable: GROWTH_RATE(EMPLOYMENT)					
	Transitory Shocks		Permanent Shocks		OLS	
	1	2	3	4	5	6
ln(RELATIONSHIP_LENGTH)	−0.007*	−0.003	−0.010***	−0.002	−0.010***	−0.003
	(0.004)	(0.004)	(0.003)	(0.002)	(0.002)	(0.003)
ln(REL_LENGTH) × SHOCK	0.261**	0.244**	0.032	0.027	0.038**	0.033*
	(0.119)	(0.121)	(0.044)	(0.044)	(0.019)	(0.018)
SHOCK	−0.446*	−0.342	−0.489***	−0.477***	−0.261***	−0.253***
	(0.249)	(0.237)	(0.129)	(0.128)	(0.060)	(0.061)
Firm controls	No	Yes	No	Yes	No	Yes
Year × province dummies	Yes	Yes	Yes	Yes	Yes	Yes
Year × sector dummies	Yes	Yes	Yes	Yes	Yes	Yes
No. of obs.	3.531	3.531	3.461	3.461	3.531	3.531
F-test (*p*-value)	0.008	0.007	<0.001	<0.001		

The estimates in columns 1 and 2 are greater than the OLS estimates (columns 5 and 6), indicating a stronger impact of relationship lending when the shocks are transitory. Quantitatively, considering the estimated coefficients in column 1, we find that the marginal impact of the temporary shock diminishes from about −0.45 to −0.25 for a standard deviation increase in the log of relationship length. A similar calculation for the OLS estimates in column 5 indicates a considerably smaller marginal impact of relationship lending (from −0.26 to −0.23).

E. Cost and Composition of Workforce

Our findings on the growth of employment are consistent with the liquidity insurance role of long-lasting lending relationships. Negative sales shocks generate a liquidity shortage for firms which, without the liquidity insurance mechanism generated by tighter lending relations, translate into choices aimed at reducing firms' operating costs, among which the dismissal of permanent employees is a natural candidate. On the contrary, our results seem to be at odds with the disciplinary role of relationship banking, according to which the main bank, as the principal debt-holder, calls for a restructuring of the corporate organization which will safeguard its competitiveness, profitability, and ability to serve debt obligations. This would involve resorting to layoffs of less productive workers, often temporary, and possibly replacing them with a more qualified workforce. To corroborate the predominance of the insurance effects, in this section we consider the cost of labor as an outcome of our regression analysis. The idea is that if a

TABLE 8

The Effects on Cost of Labor and Labor Composition

Table 8 shows estimates of equation (1) with different definition of the dependent variable. In columns 1 and 2, the dependent variable is the GROWTH_RATE (TOTAL_LABOR_COST), the yearly percentage change of the total labor costs of employees in the last year of each survey. In columns 3 and 4, the dependent variable is the GROWTH_RATE (AVERAGE_ LABOR_COST), the yearly percentage change of the total labor costs divided by the number of employees, measured in the last year of each survey. In column 5, the dependent variable is the GROWTH_RATE (PERMANENT_WORKERS), the yearly percentage change of the number of employees with open-ended labor contracts in the last year of each survey, an information that is available for a subgroup of firms in our full sample. In column 6, the dependent variable is the GROWTH_ RATE (TEMPORARY_WORKERS), the yearly percentage change of the number of employees with fixed-term labor contracts in the last year of each survey, an information that is available for a subgroup of firms in our full sample. The main explanatory variables are SHOCK_IN_SALES_5%, a dummy variable that takes the value equal to 1 if the yearly percentage change of sales in the last year of the survey is less than 5%, and 0 otherwise, and ln(RELATIONSHIP_LENGTH), the natural logarithm of the years of relationship between the firm and its main bank. The firm-level controls include ln(TOTAL_ASSETS), AGE, FAMILY, CORPORATION, ROE, and BUSINESS_GROUP. These explanatory variables are defined in the Appendix. Robust standard errors are reported in parentheses. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

	Dependent Variable: GROWTH_RATE of:					
	TOTAL_ LABOR_COST		AVERAGE_ LABOR_COST		PERMANENT_ WORKERS	TEMPORARY_ WORKERS
	1	2	3	4	5	6
ln(RELATIONSHIP_LENGTH)	−0.018***	−0.015***	−0.008***	−0.006***	−0.012***	0.017
	(0.002)	(0.002)	(0.002)	(0.002)	(0.003)	(0.027)
ln(REL_LENGTH) × SHOCK_IN_SALES_5%	0.013***	0.009*	0.005	0.002	0.007*	0.052
	(0.004)	(0.005)	(0.005)	(0.005)	(0.004)	(0.060)
SHOCK_IN_SALES_5%	−0.128***	−0.128***	−0.061***	−0.064*	−0.043	−0.575
	(0.012)	(0.033)	(0.013)	(0.034)	(0.031)	(0.436)
Firm controls	No	Yes	No	Yes	Yes	Yes
Firm controls × SHOCK_IN_SALES_5%	No	Yes	No	Yes	Yes	Yes
Year × province dummies	Yes	Yes	Yes	Yes	Yes	Yes
Year × sector dummies	Yes	Yes	Yes	Yes	Yes	Yes
No. of obs.	11,286	11,166	11,251	11,135	8,099	2,903
R^2	0.122	0.140	0.055	0.058	0.057	0.066

liquidity insurance mechanism is at work, conditional on a negative shock, bank-related firms experience a lower decrease in total cost of labor and no significant effects on the average cost of labor. By contrast, if relationship banking generates disciplinary effects, distressed firms with long-lasting lending relationships should experience an increase in the average cost of labor, with a modest impact on the total cost of labor.

Therefore, we replicate the baseline analysis by using as outcomes of the regression analysis the growth rate of the total labor cost and the growth rate of the unit cost of labor. Results are reported in Table 8: estimates in column 1 show that companies hit by a sales shock feature a negative growth rate of total labor cost; however, consistent with the insurance hypothesis, this sensitivity is significantly mitigated if the companies have a durable lending relationship with the main bank. This result is confirmed in the full specified model that includes control variables and their interaction with the shock (column 2). The results in columns 3 and 4, instead, use the growth rate of unit cost of labor (average labor cost) as a dependent variable. The coefficient attached to the interaction term between the sales shock and relationship lending is small and not statistically different from zero in both specifications that include or not the full set of controls. Once again, this finding corroborates the liquidity insurance hypothesis, while it is not in line with a workforce decrease driven by a flight to productivity, as the disciplinary role of relationship banking would predict.

Finally, we distinguish the firms' employees between those with open-ended labor contracts (permanent workers) and those with fixed-term contracts

(temporary workers). The idea is to empirically verify whether the insurance effect of relationship banking dominates, and so the impact is positive for permanent workers, or the disciplinary role dominates and, as a consequence, the effect is larger from temporary workers who represent a more adjustable source of labor supply. The estimates in columns 5 and 6 show that, as expected, the (negative) elasticity of employment to sales shocks is larger for temporary than permanent workers. As for the interaction effect of relationship lending, the results confirm that its impact is positive and significant for permanent workers, in line with the liquidity insurance hypothesis.

V. Relationship Lending and Employment Stability: Insights on Mechanisms

In this section, we investigate the economic mechanisms that explain how and why relationship lending affects employment decisions of firms experiencing a drop in sales. First, we provide evidence on the liquidity management role of long-lasting lending relationships by considering the growth rate of bank lending as an outcome variable. Second, we explore whether the liquidity insurance provided by the main bank meets predominantly the firms' demand for labor hoarding or for implicit labor contracts. To this end, we conduct a number of heterogeneity exercises that distinguish firms on the basis of their predetermined characteristics. Overall, the results suggest that long-lasting lending relationships are a liquidity management device for firms, which respond to the needs for employment stability in firms' bad times.

A. The Impact on Bank Debt

In this section, we provide a direct test of the liquidity insurance role of relationship lending by analyzing whether the occurrence of a negative sales shock is associated with a greater expansion of bank debt when firms maintain longer relationships with the main bank. For this purpose, we estimate the baseline regression model by using bank debt growth rate as the outcome variable. From the balance sheet information merged with the UniCredit-Capitalia survey for a subsample of firms, we distinguish between short and long-term bank credit. The liquidity insurance role of implicit credit lines from the main bank against temporary sales shocks should result in an immediate increase of short-term debt to fund current employment expenditures, while the effects on long-term debt are more uncertain and may be diluted over time.

Table 9 reports estimates for the growth rate of short-term bank debt (columns 1 and 2) and the growth rate of long-term bank debt (columns 3 and 4). Notice that the specifications in columns 1 and 3 include sector-year and province-year fixed effects, while specifications in columns 2 and 4 additionally consider the full set of controls. In line with the liquidity insurance role of relationship lending for employment stability, the coefficient on the interaction term between the sales shock and the length of the lending relationship with the main bank lending is positive for both sources of bank credit, but it is statistically different from zero only for short-term credit.

TABLE 9

The Impact on Bank Credit

Table 9 shows estimates of equation (1) with different definition of the dependent variable. In columns 1 and 2, the dependent variable is the GROWTH_RATE (SHORT_TERM_BANK_CREDIT), the yearly percentage change of the loans provided by banks with short maturity, measured in the last year of each survey. In columns 3 and 4, the dependent variable is the GROWTH_RATE (LONG_TERM_BANK_CREDIT), the yearly percentage change of the loans provided by banks with long maturity, measured in the last year of each survey. The main explanatory variables are SHOCK_IN_SALES_5%, a dummy variable that takes the value equal to 1 if the yearly percentage change of sales in the last year of the survey is less than 5%, and 0 otherwise, and ln(RELATIONSHIP_LENGTH), the natural logarithm of the years of relationship between the firm and its main bank. The firm-level controls include ln(TOTAL_ASSETS), AGE, FAMILY, CORPORATION, ROE, and BUSINESS_GROUP. These explanatory variables are defined in the Appendix. Robust standard errors are reported in parentheses. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

	Dependent Variable			
	GROWTH_RATE (SHORT_TERM_BANK_CREDIT)		GROWTH_RATE (LONG_TERM_BANK_CREDIT)	
	1	2	3	4
ln(RELATIONSHIP_LENGTH)	−0.019	−0.030*	−0.018	−0.027
	(0.015)	(0.016)	(0.016)	(0.017)
ln(REL_LENGTH) × SHOCK_IN_SALES_5%	0.054*	0.056*	0.042	0.043
	(0.030)	(0.034)	(0.033)	(0.037)
SHOCK_IN_SALES_5%	−0.185**	0.080	−0.155*	−0.271
	(0.083)	(0.261)	(0.092)	(0.283)
Firm controls	No	Yes	No	Yes
Firm controls × SHOCK_IN_SALES_5%	No	Yes	No	Yes
Year × province dummies	Yes	Yes	Yes	Yes
Year × sector dummies	Yes	Yes	Yes	Yes
No. of obs.	9,191	9,039	5,758	5,655
R^2	0.043	0.047	0.067	0.073

B. Labor Hoarding Versus Implicit Contract

Our results so far indicate that relationship lending provides liquidity insurance to the firms against temporary shocks and plays an insurance role for the firms' employees. The longer the lending relationships with the main bank, the smoother the impact of negative sales shocks on the total number of employees and total labor cost, while the composition of the internal workforce and, therefore, the average labor costs remain unaffected. As we stated in the introduction, there are two main mechanisms that can explain the insurance role of relationship banking. First, bank-related firms can have access to implicitly committed credit lines and, as a result, are able to sign implicit contracts with their employees, trading a commitment not to lay off or (drastically) reduce wages during bad times in exchange for lower wages in normal times. Second, access to implicitly committed credit lines can make it cheaper for bank-related firms to fund labor costs and hoard employees who are temporarily in excess, rather than to handle the firing and rehiring processes.

In this section, we aim to validate the main economic mechanisms driving our baseline results. Although the available data do not allow us to unambiguously identify which of the two above-described mechanisms most contributes to generating the occupational insurance effects of close and durable lending relationships with a main bank, in what follows we provide some helpful clues to distinguish between them. To this end, we repeat the baseline analysis in Table 2 by splitting the initial sample into different subgroups according to preidentified firm-level or business-environment characteristics. The choice of observable characteristics is based on theoretical arguments and empirical findings in the related literature.

Accordingly, we identify subgroups of companies that should benefit more from relationship banking and for which one of the two mechanisms (implicit contract or labor hoarding) is expected to be more relevant. Then, using a specification that includes an interaction term of the main effect of interest with the heterogenous characteristics, we formally test whether the estimated insurance effects of relationship lending on workforce changes of firms hit by a negative sales shock are statistically different between the identified subgroups (i.e., we test whether the difference between the coefficients on the interaction term $R_{it} \times S_{it}$ in equation (1) estimated for the two subgroups is statistically different from zero).

1. Size, Age, and Family Ownership

Typically, small and young firms are more vulnerable to negative liquidity shocks, because they are more informationally opaque and less likely to have access to unused, committed credit lines (Sufi (2009), Acharya et al. (2021)). In addition, for these firms, the explicit and hidden costs of employee turnover are especially high (Li, Lourie, Nekrasov, and Shevlin (2021)) and therefore, conditional on the support of banks, labor hoarding in bad times is a more advantageous option. Therefore, we expect the liquidity insurance effect of long-lasting bank relationships on employment stability to be stronger for small and young firms.

We test for this hypothesis by splitting our initial sample into two subsamples: i) firms with total assets below or above the median value (4.8 million euros); ii) firms with age above or below the median value (about 21 years). We replicate the baseline analysis for these subgroups and report the results in Table 10. Empirical estimates validate the above theoretical hypothesis by showing that the effect of relationship lending interacted with the sales shock is largely driven by smaller and younger firms. Panel A of Table 10 shows that the coefficient on the interaction term between the sales shock and the length of the lending relationship is positive and statistically different from zero for the firms below the median value of total assets (column 1) and age (column 3). A formal test of the statistical difference between the coefficients of interest estimated for the subgroups (below and above the median value of size and age) is provided in Panel B.[18] The coefficients of the triple interactions are statistically different from zero at the conventional level of significance, confirming that the baseline results are mostly driven by smaller and younger firms.

Finally, in columns 5 and 6 of Table 10, we split the sample of companies between family and nonfamily owned firms. Following the literature, the assumption is that family-owned firms are more prone to provide labor insurance to their workers and sign implicit labor contracts (Mueller and Philippon (2011), Bach and Serrano-Velarde (2015), and Ellul et al. (2017)). At the same time, family firms may benefit relatively more from relationship lending (D'Aurizio, Oliviero, and Romano (2015), Cucculelli, Peruzzi, and Zazzaro (2019)). Following these

[18] In Panel B, we report estimates of a regression model that contains a variable defined by the triple interaction between the log of relationship length, the shock, and a dummy that identifies the firms in one of the two subgroups (below or above the median). These regression models also include the double interactions between the dummy that identifies the subgroups of interest and the main independent variables.

insights, we find that the coefficient of the interaction term between the shock and the length of the relationship is positive and statistically different from zero for the subgroup of family firms, while it is slightly lower but noisily estimated for nonfamily firms. However, estimates in Panel B do not display a statistically difference between family and non-family owned companies, thus not providing clear-cut evidence on the relevance of this dimension of heterogeneity in our empirical context.

2. Technology, Judicial Efficiency, and Labor Costs

If labor hoarding is the driving mechanism of the insurance role of relationship banking, we should expect that the mitigating impact of long-lasting lending relationships on the layoffs by distressed firms is stronger when the level of the firm-specific human capital of employees is high and the internal workforce is

TABLE 10

Heterogeneous Effects: The Role of Size, Age, and Family Ownership

Panel A of Table 10 shows estimates of equation (1) on different subsamples. Estimates in column 1 display baseline results considering the subsample of companies whose total assets, measured in the last year of the survey, are below the sample median; estimates in column 2 display baseline results considering the subsample of companies whose total assets, measured in the last year of the survey, is above the sample median. Estimates in column 3 display baseline results considering the subsample of companies whose age, number of years from the firm's inception measured in the last year of the survey, is below the sample median; estimates in column 4 display baseline results considering the subsample of companies whose age is above the sample median. Estimates in column 5 display baseline results considering the subsample of family firms in our sample; estimates in column 6 display baseline results considering the subsample of non-family firms. Panel B shows estimates from a regression model that includes a triple interaction term between the SHOCK_IN_SALES_5%, ln(RELATIONSHIP_ LENGTH), and different dimensions of firms' heterogeneity. In column 1, the dimension of heterogeneity regards firms' size, and the triple interaction is with the variable TOTAL_ASSETS_BELOW, a dummy variable that takes the value equal to 1 if companies display a level of total assets in the last year of the survey below the sample median, and 0 otherwise. In column 3, the dimension of heterogeneity regards firms' age, and the triple interaction is with the variable AGE_BELOW, a dummy variable that takes the value equal to 1 if companies display number of years from their inceptionan below the sample median value in the last year of the survey, and 0 otherwise. In column 5, the dimension of heterogeneity regards firms' family ownership, and the triple interaction is with the variable FAMILY, a dummy variable that takes the value equal to 1 if the firm is a family firm, and 0 otherwise. The dependent variable is measured by the yearly percentage change of the number of employees in the last year of each survey wave. The main explanatory variables are SHOCK_IN_SALES_5%, a dummy variable that takes the value equal to 1 if the yearly percentage change of sales in the last year of the survey is less than 5%, and 0 otherwise, and ln(RELATIONSHIP_LENGTH), the natural logarithm of the years of relationship between the firm and its main bank. The firm-level controls include ln(TOTAL_ASSETS), AGE, FAMILY, CORPORATION, ROE, and BUSINESS_GROUP. These explanatory variables are defined in the Appendix. Robust standard errors are reported in parentheses. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

Panel A. Subsample Estimations

	Dependent Variable: GROWTH_RATE (EMPLOYMENT)					
	Below Median (TOTAL_ASSETS)	Above Median (TOTAL_ASSETS)	Below Median (AGE)	Above Median (AGE)	FAMILY	NO_FAMILY
	1	2	3	4	5	6
ln(RELATIONSHIP_ LENGTH)	−0.007**	−0.007***	−0.006	−0.001	−0.007***	−0.004
	(0.003)	(0.002)	(0.004)	(0.002)	(0.002)	(0.003)
ln(REL_LENGTH) × SHOCK_IN_SALES_5%	0.016***	0.007	0.015*	0.006	0.011**	0.008
	(0.006)	(0.005)	(0.008)	(0.005)	(0.004)	(0.007)
SHOCK_IN_SALES_5%	−0.121*	−0.031	−0.090**	−0.094***	−0.115***	−0.048
	(0.062)	(0.044)	(0.043)	(0.033)	(0.030)	(0.044)
Firm controls	Yes	Yes	Yes	Yes	Yes	Yes
Firm controls × SHOCK_IN_SALES_5%	Yes	Yes	Yes	Yes	Yes	Yes
Year × province dummies	Yes	Yes	Yes	Yes	Yes	Yes
Year × sector dummies	Yes	Yes	Yes	Yes	Yes	Yes
No. of obs.	6,518	6,518	6,399	6,637	9,806	3,230
R^2	0.124	0.122	0.118	0.114	0.090	0.164

(continued on next page)

TABLE 10 (continued)
Heterogeneous Effects: The Role of Size, Age, and Family Ownership

Panel B. Interactions

	Dependent Variable: GROWTH_RATE (EMPLOYMENT)		
ln(RELATIONSHIP_LENGTH)	−0.003 (0.003)	−0.002 (0.002)	−0.003 (0.003)
ln(REL_LENGTH) × SHOCK_IN_SALES_5%	0.006 (0.006)	0.006 (0.005)	0.006 (0.006)
SHOCK_IN_SALES_5%	−0.054*** (0.018)	−0.071** (0.029)	−0.081*** (0.030)
ln(REL_LENGTH) × TOT_ASS_BELOW × SHOCK_IN_SALES_5%	0.009** (0.004)		
ln(REL_LENGTH) × TOT_ASS_BELOW	−0.008*** (0.003)		
TOT_ASS_BELOW × SHOCK_IN_SALES_5%	−0.033** (0.012)		
TOTAL_ASSETS_BELOW	0.023*** (0.007)		
ln(REL_LENGTH) × AGE_BELOW × SHOCK_IN_SALES_5%		0.013* (0.008)	
ln(REL_LENGTH) × AGE_BELOW		−0.012*** (0.004)	
AGE_BELOW × SHOCK_IN_SALES_5%		−0.038* (0.020)	
AGE_BELOW		0.043*** (0.010)	
ln(REL_LENGTH) × FAMILY × SHOCK_IN_SALES_5%			0.006 (0.007)
ln(REL_LENGTH) × FAMILY			−0.005 (0.004)
FAMILY × SHOCK_IN_SALES_5%			−0.017 (0.019)
FAMILY			0.012 (0.011)
Firm controls	Yes	Yes	Yes
Firm controls × SHOCK_IN_SALES_5%	Yes	Yes	Yes
Year × province dummies	Yes	Yes	Yes
Year × sector dummies	Yes	Yes	Yes
No. of obs.	13,036	13,036	13,036
R^2	0.084	0.082	0.083

imperfectly substitutable. To verify this hypothesis, we first exploit cross-sectional variation in firms' sector of activity; in detail, we split our initial sample into firms in high-tech or low-tech industrial sectors, based on the assumption that employees in high-tech sectors are, on average, more specialized and display a lower degree of substitutability (Carpenter and Petersen (2002), Finegold and Frenkel (2006)).[19] Consistent with the labor hoarding hypothesis, results reported in Table 11 show that relationship lending is especially helpful to mitigate the negative effects of the drop in sales on employment when the human capital of employees is more valuable

[19]We adopt the classification of high-tech firms put forth by Parisi, Schiantarelli, and Sembenelli (2006) and Benfratello et al. (2008) who, by using the same survey that we use, consider a firm high-tech if its main activity belongs to one of the following manufacturing sectors: chemicals (24); nonelectric machinery (29); office equipment and computers (30); electric machinery (31); electronic material, measuring and communication tools, TV and radio (32); medical apparels and instruments (33); vehicles (34); other transportation (35), where the 2-digit ATECO 1991 codes are reported in parentheses.

TABLE 11

Implicit Tests of the Labor Hoarding Hypothesis

Panel A (columns 1–4) of Table 11 shows estimates of equation (1) on different subsamples. Estimates in column 1 display baseline results considering the subsample of companies that operate in the high-tech sector; estimates in column 2 display baseline results considering the subsample of companies that operate in sectors other than high-tech. Estimates in column 3 display baseline results considering the subsample of companies operating in provinces where the normalized number of pending labor-related trials is below the national median value, while estimates in column 4 display baseline results considering the subsample of companies operating in provinces where the normalized number of pending labor-related trials is above the national median value. Panel B shows estimates from a regression model that includes a triple interaction term between the SHOCK_IN_SALES_5%, ln(RELATIONSHIP_LENGTH), and different dimensions of firms' heterogeneity. In column 1, the dimension of heterogeneity regards firms' sector, and the triple interaction is with the variable, HIGH_TECH, a dummy variable that takes the value equal to 1 if companies operate in the high-tech sector and 0 otherwise. In column 3, the dimension of heterogeneity regards judicial efficiency, and the triple interaction is with the variable PENDING_TRIALS_ABOVE, a dummy variable that takes the value equal to 1 if companies operate in a province where the number of pending labor-related trials is above the national median value, and 0 otherwise. In Panel A (columns 1–4) and Panel B, the dependent variable is measured by the yearly percentage change of the number of employees in the last year of each survey wave. The main explanatory variables are SHOCK_IN_SALES_5%, a dummy variable that takes the value equal to 1 if the yearly percentage change of sales in the last year of the survey is less than 5%, and 0 otherwise, and ln(RELATIONSHIP_LENGTH), the natural logarithm of the years of relationship between the firm and its main bank. Estimates in columns 5 refer to a regression analysis where the dependent variable is the average cost of labor, while the main explanatory variable is the ln(RELATIONSHIP_LENGTH); in column 6 the percentage of graduate workers is included as an additional regressor together with other firm-level controls. The firm-level controls include ln(TOTAL_ASSETS), AGE, FAMILY, CORPORATION, ROE, and BUSINESS_GROUP. In Panel A (columns 1–4) and Panel B, firm-level controls are interacted with the shock. These explanatory variables are defined in the Appendix. Robust standard errors are reported in parentheses. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

Panel A. Subsample Estimations

	Dependent Variable: GROWTH_RATE (EMPLOYMENT)					
	High-Skilled Workers		Judicial Efficiency		Cost of Labor	
	HIGH_TECH	NO_HIGH_TECH	Below Median (PENDING_TRIALS)	Above Median (PENDING_TRIALS)	AVG_LABOR_COST	AVG_LABOR_COST
	1	2	3	4	5	6
ln(RELATIONSHIP_LENGTH)	−0.011***	−0.005**	0.000	−0.012***	0.806**	0.842*
	(0.003)	(0.002)	(0.002)	(0.003)	(0.395)	(0.521)
ln(REL_LENGTH) × SHOCK_IN_SALES_5%	0.017***	0.008*	−0.001	0.018***		
	(0.006)	(0.005)	(0.004)	(0.006)		
SHOCK_IN_SALES_5%	−0.034	−0.122***	−0.041	−0.092**		
	(0.045)	(0.033)	(0.033)	(0.042)		
%_OF_GRADUATE_WORKERS						0.198***
						(4.755)
Firm controls	Yes	Yes	Yes	Yes	Yes	Yes
Firm controls × SHOCK_IN_SALES_5%	Yes	Yes	Yes	Yes	No	No
Year × province dummies	Yes	Yes	Yes	Yes	Yes	Yes
Year × sector dummies	Yes	Yes	Yes	Yes	Yes	Yes
No. of obs.	4,027	9,007	6,036	7,000	11,565	8,852
R^2	0.155	0.093	0.087	0.091	0.166	0.179

Panel B. Interactions

	Dependent Variable: GROWTH_RATE (EMPLOYMENT)	
ln(RELATIONSHIP_LENGTH)	−0.005*	0.001
	(0.002)	(0.002)
ln(REL_LENGTH) × SHOCK_IN_SALES_5%	0.007	0.000
	(0.005)	(0.004)
SHOCK_IN_SALES_5%	−0.084***	−0.035
	(0.022)	(0.028)
ln(REL_LENGTH) × HIGH_TECH × SHOCK_IN_SALES_5%	0.009*	
	(0.005)	
ln(REL_LENGTH) × HIGH_TECH	−0.005	
	(0.003)	
HIGH_TECH × SHOCK_IN_SALES_5%	−0.013	
	(0.014)	
HIGH_TECH	0.019**	
	(0.009)	
ln(REL_LENGTH) × PEND_TRIALS_ABOVE × SHOCK_IN_SALES_5%		0.015**
		(0.006)
ln(REL_LENGTH) × PEND_TRIALS_ABOVE		−0.014***
		(0.003)
PEND_TRIALS_ABOVE × SHOCK_IN_SALES_5%		−0.068***
		(0.018)
Firm controls	Yes	Yes
Firm controls × SHOCK_IN_SALES_5%	Yes	Yes
Year × province dummies	Yes	Yes
Year × sector dummies	Yes	Yes
No. of obs.	13,034	13,036
R^2	0.085	0.089

to firms and can be replaced only at large costs. Columns 1 and 2 indicate that firms in high-tech sectors, conditional on maintaining close relationships with the main bank, have a higher propensity to hoard excess employees in bad times. The coefficient on the interaction term $R_{it} \times S_{it}$ is twice as large as that of the subgroup of low-tech firms, although both coefficients are statistically different from zero. In Panel B of Table 11, column 1, we provide evidence that the difference between the two coefficients is statistically different from zero.

Second, we provide empirical evidence consistent with the labor hoarding hypothesis based on heterogeneity that hinges on the degree of judicial efficiency regarding labor trials in the province where the firm is headquartered. The idea is that courts play an important role in determining the strictness of EPL legislation (Ichino, Polo, and Rettore (2003), Autor, Kerr, and Kugler (2007)) and that courts' delays in settling labor disputes significantly increase the expected firing costs (Gianfreda and Vallanti (2017)). Therefore, to the extent that the insurance role of relationship banking is driven by the opportunity for bank-related firms to avoid firing costs by hoarding excess labor in bad times, we should expect the estimated coefficient β_2 on the interaction term $R_{it} \times S_{it}$ in equation (1) to be larger in provinces where the efficiency of courts is lower.[20] Estimates in columns 3 to 4 of Table 11 are in line with this prediction. We find the effect of relationship lending is mainly driven by the subgroup of companies located in provinces where the share of pending trials in labor matters is above the median value. Estimates in Panel B of Table 11 confirm that the difference of the coefficients in the two subgroups is statistically different from zero.

In a final attempt to indirectly test for the labor hoarding versus implicit contract hypotheses, we investigate the link between relationship lending and the *level* of average labor cost (i.e., per-employee-cost) in normal times. The idea is that if bank-related firms were able to sign an implicit contract with their employees, they would benefit from paying lower wages during normal times. In contrast to this prediction, results in column 5 show that firms engaging in longer relationships with the main bank display, on average, larger average labor costs. This suggests that relationship lending does not imply an implicit employer–employees insurance contract. On the contrary, our evidence suggests that for firms with a long-lasting relationship with their main bank, labor is a valuable input that is hard to dismiss and, therefore, is worth retaining in the face of a temporary shock. The larger average labor costs for firms with longer relationships is confirmed in column 6, where we control for the share of high-skilled workers that is proxied by the percentage of graduated employees.

C. The Impact on Capital Expenditure

An alternative explanation for our findings is that the moderating role of relationship lending on the employment response of firms to a fall in sales simply reflects the traditional effect of liquidity insurance on long-term investment, and not labor hoarding. If this is the case, then relationship lending should also have a

[20]Disaggregated data for Italy show that the length of trials and the share of pending trials is highly heterogeneous throughout the country. For example, in 2001 (roughly the middle year of our sample) the average length of labor proceedings was 404 days in Turin and 1,263 days in Naples.

TABLE 12

The Impact on Capital Expenditure

Table 12 shows estimates of equation (1). The dependent variable is measured by capital expenditure scaled by tangible assets in the last year of each survey wave. The main explanatory variables are SHOCK_IN_SALES_5%, a dummy variable that takes the value equal to 1 if the yearly percentage change of sales in the last year of the survey is less than 5%, and 0 otherwise, and ln(RELATIONSHIP_LENGTH), the natural logarithm of the years of relationship between the firm and its main bank. The firm-level controls include ln(TOTAL_ASSETS), AGE, FAMILY, CORPORATION, ROE, and BUSINESS_GROUP. These explanatory variables are defined in the Appendix. Robust standard errors are reported in parentheses. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

	Dependent Variable: CAPITAL_EXPENDITURE			
	1	2	3	4
ln(RELATIONSHIP_LENGTH)	−0.007*	−0.008*	−0.007	−0.007*
	(0.004)	(0.004)	(0.004)	(0.004)
ln(REL_LENGTH) × SHOCK_IN_SALES_5%	−0.001	−0.002	−0.001	0.002
	(0.008)	(0.008)	(0.008)	(0.009)
SHOCK_IN_SALES_5%	−0.066***	−0.063***	−0.054**	−0.051
	(0.023)	(0.023)	(0.023)	(0.061)
Firm controls	No	No	Yes	Yes
Firm controls × SHOCK_IN_SALES_5%	No	No	No	Yes
Year dummies	Yes	No	No	No
Year × province dummies	No	Yes	Yes	Yes
Year × sector dummies	No	Yes	Yes	Yes
No. of obs.	12,852	12,852	12,852	12,852
R^2	0.131	0.159	0.183	0.184

moderating impact on capital expenditure after a liquidity shock. Accordingly, we replicate our baseline regression, taking as dependent variable capital expenditures scaled by tangible assets as dependent variable. Table 12 shows that, as expected, adverse shocks to sales have a significant negative impact on capital expenditure, but there is no significant impact of the interaction of the shock with relationship lending.

Similarly, we replicate the heterogeneity analysis in Table 11 with capital expenditure as dependent variable. Supplementary Table A4 shows that the interaction term between relationship lending and the sales shock is not statistically different from zero for the subgroup of firms operating in high-tech sectors and that of firms located in provinces where the share of pending labor dispute trials is above the median.[21] Overall, these findings validate our conclusion that relationship lending affects firms' employment adjustments directly, by enabling them to engage in labor hoarding as desired.

VI. Conclusions

In this article, we showed that relationship lending has a significant impact on firms' labor demand. In particular, it helps smooth the negative effects of temporary sales shocks on firms' employment growth rate. We used four waves of the UniCredit-Capitalia survey to identify a measure of relationship lending and

[21] Additionally, in line with Benmelech et al. (2021), we include capital expenditure scaled by tangible assets in our baseline regression in Table 2 as an additional regressor. The results are displayed in Supplementary Table A5. They show that the estimated coefficient for capital expenditure is positive and significant. However, our coefficients of interest are confirmed in significance and magnitude with respect to the baseline analysis.

combined this source of data with administrative information on firms' workforce and balance sheets. Our empirical results validate the theories on the insurance role of relationship lending: firms with longer and established relations with their main bank exhibit relatively lower sensitivity of workforce variation to sales shocks. Additionally, we find that the greater employment stability is matched with higher growth rate of short-term bank loans in response to adverse shocks. This confirms the hypothesis that relationship lending provides liquidity insurance and enables firms to hoard labor in bad times. The result is mostly driven by younger and smaller firms, that benefit from more established relationship with the main bank, and by companies that face larger hiring and firing costs because their internal workforce is skilled or because of their legal environment. We finally exclude that our findings on employment are merely driven by capital adjustments. Taken together, our results confirm that firms use relationship lending as a liquidity management tool for their employment policies, that is to provide labor insurance to their employees and, especially, to avoid costs in firing and rehiring workers when experiencing temporary shortfalls.

Appendix. Data Source and Variable Definitions

This appendix describes the definitions of the variables used in the article. Two main data sources are used in the empirical analysis: i) four waves of the Capitalia Survey of Italian Manufacturing Firms (SIMF), which cover 3-year periods ending respectively in 1997, 2000, 2003, and 2006 and ii) the BvD-AIDA database (AIDA). We also use some data from the Italian National Statistics Office (ISTAT).

Dependent Variables

GROWTH_RATE (EMPLOYMENT): Yearly percentage change of the number of employees in the last year of each survey. Source: AIDA.

GROWTH_RATE (TOTAL_LABOR_COST): Yearly percentage change of the total cost of labor in the last year of each survey. Source: AIDA.

GROWTH_RATE (AVERAGE_LABOR_COST): Yearly percentage change of the total cost of labor divided by the number of employees in the last year of each survey. Source: AIDA.

GROWTH_RATE (PERMANENT_WORKERS): Yearly percentage change of the number of permanent workers in the last year of each survey. This information is not available in the 2004–2006 survey. Source: SIMF.

GROWTH_RATE (TEMPORARY_WORKERS): Yearly growth rate of the number of temporary workers in the last year of each survey. The growth rate is measured as in Davis and Haltiwanger (1992). This information is not available in the 2004–2006 survey. Source: SIMF.

GROWTH_RATE (SHORT_TERM_BANK_CREDIT): Yearly percentage change of the short-term bank credit (maturity within the year) in the last year of each survey. Source: AIDA.

GROWTH_RATE (LONG_TERM_BANK_CREDIT): Yearly percentage change of the long-term bank credit (maturity beyond the year) in the last year of each survey. Source: AIDA.

CAPITAL_EXPENDITURE: Capital expenditure (yearly change in tangible assets plus depreciation) scaled by tangible assets in the last year of each survey. Source: AIDA.

Relationship Lending Variables

ln(RELATIONSHIP_LENGTH): Logarithm of the length in years of the relationship between the firm and its main bank. Source: SIMF.

RELATIONSHIP_LENGTH_OVER_10: Dummy that takes the value of 1 if the length in years of the relationship between the firm and its main bank is over 10, and 0 otherwise. Source: SIMF.

Measures of Sales Shock

SHOCK_IN_SALES_5%: Dummy that takes the value of 1 if the variation in the firm's sales in the last year of each survey is equal to or less than −5%, and 0 otherwise. Source: AIDA.

SECTORAL_CHANGE_IN_SALES: The negative value of the yearly percentage change of total sales in the firm's sector in the last year of each survey. The sector is taken at a 2-digit ATECO level. Source: AIDA.

CHANGE_IN_SALES: The negative value of the yearly percentage change of firm's sales in the last year of each survey. Source: AIDA.

LAGGED_SHOCK_IN_SALES_5%: Dummy that takes the value of 1 if the variation of the firm's sales in the second year of each survey is equal to or less than −5%, and 0 otherwise. Source: AIDA.

SHOCK_IN_SALES_10%: Dummy that takes the value of 1 if the variation of the firm's sales in the last year of each survey is equal to or less than −10.

Additional Variables

ln(TOTAL_ASSETS): This variable is balance sheet data, available for each year covered by the survey. We use the average over the 3 years of each survey. Source: AIDA.

AGE: Number of years since inception. Source: SIMF.

FAMILY: The survey asks each firm to report the characteristics of the main shareholder of the firm. Family is a dummy that takes the value of 1 if the main shareholder is a family or an individual. Source: SIMF.

CORPORATION: The survey asks each firm whether it is publicly listed. In the survey, the information on whether the firm is a private limited company (LTD) or a public limited company (PLCs) is available only for the 2003 and 2006 surveys. For the other years, the information, which is publicly available on firms' websites, has been imputed by hand using the VAT identification number. Corporation is a dummy that takes the value of 1 if the firm is a LTD or PLC. Source: SIMF.

ROE: For each firm and year of the survey, we calculate the ratio of gross profit to equity; then we compute the average over the 3 years for each survey. Source: AIDA.

BUSINESS_GROUP: Dummy that takes the value of 1 if the firm reports that it belonged to a business group in the 3 years of the survey, and 0 otherwise. Source: SIMF.

%_OF_GRADUATE_WORKERS: Share of graduate workers in the last year of the survey. Source: SIMF.

HIGH_TECH: We use the classification proposed in Benfratello et al. (2008). The High-tech dummy takes the value of 1 for these industries, and 0 otherwise.

JUDICIAL_EFFICIENCY_PENDING_TRIALS: We considered the number of civil suits pending in each of the 27 district courts of Italy, scaled by the population of the district. We imputed this variable to the firms according to the districts where they are headquartered. Source: ISTAT.

SECTOR: The survey reports the sector of activity of firms (ATECO code). Based on this information we construct sectoral dummies at 2-digit ATECO level. Source: SIMF.

Supplementary Material

To view supplementary material for this article, please visit https://doi.org/10.1017/S0022109022000928.

References

Acconcia, A.; A. Del Monte; and L. Pennacchio. "Underpricing and Firm's Distance from Financial Centre: Evidence from Three European Countries." CSEF Working Paper No. 295 (2011).

Acharya, V. V.; H. Almeida; F. Ippolito; and A. Perez-Orive. "Credit Lines and the Liquidity Insurance Channel." *Journal of Money Credit and Banking*, 53 (2021), 901–938.

Acharya, V. V.; T. Eisert; C. Eufinger; and C. Hirsch. "Real Effects of the Sovereign Debt Crisis in Europe: Evidence from Syndicated Loans." *Review of Financial Studies*, 31 (2018), 2855–2896.

Admati, A. R., and P. Pfleiderer. "Robust Financial Contracting and the Role of Venture Capitalists." *Journal of Finance*, 49 (1994), 371–402.

Alessandrini, P.; A. F. Presbitero; and A. Zazzaro. "Banks, Distances and Firms' Financing Constraints." *Review of Finance*, 13 (2009), 261–307.

Alessandrini, P.; A. F. Presbitero; and A. Zazzaro. "Bank Size or Distance: What Hampers Innovation Adoption by SMEs?" *Journal of Economic Geography*, 10 (2010), 845–881.

Allen, F., and D. Gale. "Innovations in Financial Services, Relationships, and Risk Sharing." *Management Science*, 45 (1999), 1239–1253.

Almeida, H.; M. Campello; I. Cunha; and M. S. Weisbach. "Corporate Liquidity Management: A Conceptual Framework and Survey." *Annual Review of Financial Economics*, 6 (2014), 135–162.

Autor, D. H.; W. R. Kerr; and A. D. Kugler. "Does Employment Protection Reduce Productivity? Evidence from US States." *Economic Journal*, 117 (2007), F189–F217.

Azariadis, C. "Implicit Contracts and Underemployment Equilibria." *Journal of Political Economy*, 83 (1975), 1183–1202.

Bach, L., and N. Serrano-Velarde. "CEO Identity and Labor Contracts: Evidence from CEO Transitions." *Journal of Corporate Finance*, 33 (2015), 227–242.

Baily, M. N. "Wages and Employment Under Uncertain Demand." *Review of Economic Studies*, 41 (1974), 37–50.

Balduzzi, P.; E. Brancati; and F. Schiantarelli. "Financial Markets, Banks' Cost of Funding, and Firms' Decisions: Lessons from Two Crises." *Journal of Financial Intermediation*, 36 (2018), 1–15.

Banerjee, R.; L. Gambacorta; and E. Sette. "The Real Effects of Relationship Lending." *Journal of Financial Intermediation*, 48 (2021), 100923.

Barbosa, L.; A. Bilan; and C. Celerier. "Credit Supply Shocks and Human Capital: Evidence from a Change in Accounting Norms." European Central Bank Working Paper No. 2271 (2019).

Barone, G.; G. De Blasio; and S. Mocetti. "The Real Effects of Credit Crunch in the Great Recession: Evidence from Italian Provinces." *Regional Science and Urban Economics*, 70 (2018), 352–359.
Bartelsman, E.; S. Scarpetta; and F. Schivardi. "Comparative Analysis of Firm Demographics and Survival: Evidence from Micro-Level Sources in OECD Countries." *Industrial and Corporate Change*, 14 (2005), 365–391.
Bassanini, A.; T. Breda; E. Caroli; and A. Rebérioux. "Working in Family Firms: Paid Less but More Secure? Evidence from French Matched Employer-Employee Data." *ILR Review*, 66 (2013), 433–466.
Beck, T.; H. Degryse; R. De Haas; and N. Van Horen. "When Arm's Length is Too Far: Relationship Banking over the Credit Cycle." *Journal of Financial Economics*, 127 (2018), 174–196.
Beck, T.; V. Ioannidou; and L. Schäfer. "Foreigners vs. Natives: Bank Lending Technologies and Loan Pricing." *Management Science*, 64 (2018), 3792–3820.
Behr, P.; L. Norden; and R. Oliveira. "Labor and Finance: The Effect of Bank Relationships." Central Bank of Brazil Working Paper No. 534 (2020).
Benfratello, L.; F. Schiantarelli; and A. Sembenelli. "Banks and Innovation: Microeconometric Evidence on Italian Firms." *Journal of Financial Economics*, 90 (2008), 197–217.
Benmelech, E.; N. K. Bergman; and A. Seru. "Financing Labor." *Review of Finance*, 25 (2021), 1365–1393.
Bentolila, S.; M. Jansen; and G. Jiménez. "When Credit Dries Up: Job Losses in the Great Recession." *Journal of the European Economic Association*, 16 (2018), 650–695.
Bentolilla, S., and G. Bertola. "Firing Costs and Labour Demand: How Bad Is Eurosclerosis." *Review of Economic Studies*, 57 (1990), 381–402.
Berlin, M., and L. J. Mester. "Deposits and Relationship Lending." *Review of Financial Studies*, 12 (1999), 579–607.
Berton, F.; S. Mocetti; A. F. Presbitero; and M. Richiardi. "Banks, Firms, and Jobs." *Review of Financial Studies*, 31 (2018), 2113–2156.
Berton, F.; M. Richiardi; and S. Sacchi. *The Political Economy of Work Security and Flexibility: Italy in Comparative Perspective*. Bristol: Policy Press (2012).
Bolton, P.; X. Freixas; L. Gambacorta; and P. E. Mistrulli. "Relationship and Transaction Lending in a Crisis." *Review of Financial Studies*, 29 (2016), 2643–2676.
Bonaccorsi di Patti, E., and E. Sette. "Bank Balance Sheets and the Transmission of Financial Shocks to Borrowers: Evidence from the 2007–2008 Crisis." Bank of Italy Working Paper No. 848 (2012).
Boot, A. A. "Relationship Banking: What Do We Know?" *Journal of Financial Intermediation*, 9 (2000), 7–25.
Boot, A. W. A.; S. I. Greenbaum; and A. V. Thakor. "Reputation and Discretion in Financial Contracting." *American Economic Review*, 83 (1993), 1165–1183.
Bottero, M.; S. Lenzu; and F. Mezzanotti. "Sovereign Debt Exposure and the Bank Lending Channel: Impact on Credit Supply and the Real Economy." *Journal of International Economics*, 126 (2020), 103328.
Caggese, A.; V. Cuñat; and D. Metzger. "Firing the Wrong Workers: Financing Constraints and Labor Misallocation." *Journal of Financial Economics*, 133 (2019), 589–607.
Calomiris, C. W.; A. Orphanides; and S. A. Sharpe. "Leverage as a State Variable for Employment, Inventory Accumulation and Fixed Investment." In *Asset Prices and the Real Economy*, F. Capie and G. E. Wood, eds. Cham, Switzerland: Springer (1997), 169–196.
Campello, M.; E. Giambona; J. R. Graham; and C. R. Harvey. "Corporate Liquidity Management: A Conceptual Framework and Survey." *Journal of Financial Economics*, 97 (2010), 135–162.
Campello, M.; E. Giambona; J. R. Graham; and C. R. Harvey. "Liquidity Management and Corporate Investment During a Financial Crisis." *Review of Financial Studies*, 24 (2011), 1944–1979.
Carpenter, R. E., and B. C. Petersen. "Capital Market Imperfections, High-Tech Investment, and New Equity Financing." *Economic Journal*, 112 (2002), F54–F72.
Carvalho, D.; M. A. Ferreira; and P. Matos. "Lending Relationships and the Effect of Bank Distress: Evidence from the 2007–2009 Financial Crisis." *Journal of Financial and Quantitative Analysis*, 50 (2015), 1165–1197.
Chemmanur, T. J., and P. Fulghieri. "Reputation, Renegotiation, and the Choice Between Bank Loans and Publicly Traded Debt." *Review of Financial Studies*, 7 (1994), 475–506.
Chodorow-Reich, G. "The Employment Effects of Credit Market Disruptions: Firm-Level Evidence from the 2008–9 Financial Crisis." *Quarterly Journal of Economics*, 129 (2014), 1–59.
Cingano, F.; F. Manaresi; and E. Sette. "Does Credit Crunch Investment Down? New Evidence on the Real Effects of the Bank-Lending Channel." *Review of Financial Studies*, 29 (2016), 2737–2773.
Cucculelli, M.; V. Peruzzi; and A. Zazzaro. "Relational Capital in Lending Relationships: Evidence from European Family Firms." *Small Business Economics*, 52 (2019), 277–301.

Davis, S. J., and J. Haltiwanger. "Gross Job Creation, Gross Job Destruction, and Employment Reallocation." *Quarterly Journal of Economics*, 107 (1992), 819–863.
D'Aurizio, L.; T. Oliviero; and L. Romano. "Family Firms, Soft Information and Bank Lending in a Financial Crisis." *Journal of Corporate Finance*, 33 (2015), 279–292.
Dinç, I. S. "Bank Reputation, Bank Commitment, and the Effects of Competition in Credit Markets." *Review of Financial Studies*, 13 (2000), 781–812.
Drexler, A., and A. Schoar. "Do Relationships Matter? Evidence from Loan Officer Turnover." *Management Science*, 60 (2014), 2722–2736.
Duqi, A.; A. Tomaselli; and G. Torluccio. "Is Relationship Lending Still a Mixed Blessing? A Review of Advantages and Disadvantages for Lenders and Borrowers." *Journal of Economic Surveys*, 32 (2018), 1446–1482.
EC. "Annual Report on European SMEs 2018/2019." Technical Report, European Commission (2019).
Ellul, A.; M. Pagano; and F. Schivardi. "Employment and Wage Insurance Within Firms: Worldwide Evidence." *Review of Financial Studies*, 31 (2017), 1298–1340.
Elsas, R., and J. P. Krahnen. "Is Relationship Lending Special? Evidence from Credit-File Data in Germany." *Journal of Banking and Finance*, 22 (1998), 1283–1316.
ESCB. "Corporate Finance in the Euro Area." ECB Occasional Paper Series 63, Task Force of the Monetary Policy Committee of the European System of Central Banks (2007).
ESCB. "Corporate Finance and Economic Activity in the Euro Area." ECB Occasional Paper Series 151, Task Force of the Monetary Policy Committee of the European System of Central Banks (2013).
Faccio, M., and W. O'Brien. "Business Groups and Employment." *Management Science*, 67 (2021), 3321–3984.
Ferri, G.; R. Minetti; and P. Murro. "Credit Relationships in the Great Trade Collapse. Micro Evidence from Europe." *Journal of Financial Intermediation*, 40 (2019), 100809.
Ferri, G., and P. Murro. "Do Bank-Firm "Odd-Couples" Exacerbate Credit Rationing?" *Journal of Financial Intermediation*, 24 (2015), 231–251.
Ferri, G.; P. Murro; V. Peruzzi; and Z. Rotondi. "Bank Lending Technologies and Credit Availability in Europe: What Can We Learn from the Crisis?" *Journal of International Money and Finance*, 95 (2019), 128–148.
Finegold, D., and S. Frenkel. "Managing People Where People Really Matter: The Management of Human Resources in Biotech Companies." *International Journal of Human Resource Management*, 17 (2006), 1–24.
Gamber, E. N. "Long-Term Risk-Sharing Wage Contracts in an Economy Subject to Permanent and Temporary Shocks." *Journal of Labor Economics*, 6 (1988), 83–99.
Gambini, A., and A. Zazzaro. "Long-Lasting Bank Relationships and Growth of Firms." *Small Business Economics*, 40 (2013), 977–1007.
Garmaise, M. J. "Production in Entrepreneurial Firms: The Effects of Financial Constraints on Labor and Capital." *Review of Financial Studies*, 21 (2008), 543–577.
Gianfreda, G., and G. Vallanti. "Institutions' and Firms' Adjustments: Measuring the Impact of Courts' Delays on Job Flows and Productivity." *Journal of Law and Economics*, 60 (2017), 135–172.
Giovannini, A.; C. Mayer; S. Micossi; C. Di Noia; M. Onado; M. Pagano; and A. Polo. *Restarting European Long-Term Investment Finance.* A Green Paper Discussion Document, London (2015).
Giroud, X., and H. M. Mueller. "Firm Leverage, Consumer Demand, and Employment Losses During the Great Recession." *Quarterly Journal of Economics*, 132 (2017), 271–316.
Gopalan, R.; G. F. Udell; and V. Yerramilli. "Why Do Firms Form New Banking Relationships?" *Journal of Financial and Quantitative Analysis*, 46 (2011), 1335–1365.
Guiso, L., and L. Pistaferri. "The Insurance Role of the Firm." *Geneva Risk and Insurance Review*, 45 (2020), 1–23.
Guiso, L.; L. Pistaferri; and F. Schivardi. "Insurance Within the Firm." *Journal of Political Economy*, 113 (2005), 1054–1087.
Guiso, L.; P. Sapienza; and L. Zingales. "Does Local Financial Development Matter?" *Quarterly Journal of Economics*, 119 (2004), 929–969.
Herrera, A. M., and R. Minetti. "Informed Finance and Technological Change: Evidence from Credit Relationships." *Journal of Financial Economics*, 83 (2007), 223–269.
Holmström, B., and J. Tirole. "Private and Public Supply of Liquidity." *Journal of Political Economy*, 106 (1998), 1–40.
Holmström, B., and J. Tirole. *Inside and Outside Liquidity.* Cambridge, MA: MIT Press (2011).
Hoshi, T.; A. Kashyap; and D. Scharfstein. "The Role of Banks in Reducing the Costs of Financial Distress in Japan." *Journal of Financial Economics*, 27 (1990), 67–88.
Hoshi, T.; A. Kashyap; and D. Scharfstein. "Corporate Structure, Liquidity, and Investment: Evidence from Japanese Industrial Groups." *Quarterly Journal of Economics*, 106 (1991), 33–60.

Ichino, A.; M. Polo; and E. Rettore. "Are Judges Biased by Labor Market Conditions?" *European Economic Review*, 47 (2003), 913–944.
Jin, Y.; R. Fukahori; and H. Morgavi. "Labour Market Transitions in Italy: Job Separation, Re-Employment and Policy Implications." OECD Working Paper No. 1291 (2016).
Kang, J.-K., and A. Shivdasani. "Corporate Restructuring During Performance Declines in Japan." *Journal of Financial Economics*, 46 (1997), 29–65.
Kysucky, V., and L. Norden. "The Benefits of Relationship Lending in a Cross-Country Context: A Meta-Analysis." *Management Science*, 62 (2016), 90–110.
Li, Q.; B. Lourie; A. Nekrasov; and T. J. Shevlin. "Employee Turnover and Firm Performance: Large-Sample Archival Evidence." *Management Science*, 68 (2021), 5557–6354.
Li, Y.; R. Lu; and A. Srinivasan. "Relationship Bank Behavior During Borrower Distress." *Journal of Financial and Quantitative Analysis*, 54 (2019), 1231–1262.
Micucci, G., and P. Rossi. "Debt Restructuring and the Role of Banks' Organizational Structure and Lending Technologies." *Journal of Financial Services Research*, 51 (2017), 339–361.
Minetti, R., and S. C. Zhu. "Credit Constraints and Firm export: Microeconomic Evidence from Italy." *Journal of International Economics*, 83 (2011), 109–125.
Mortensen, D. T., and C. A. Pissarides. "Job Creation and Job Destruction in the Theory of Unemployment." *Review of Economic Studies*, 61 (1994), 397–415.
Mortensen, D. T., and C. A. Pissarides. "Unemployment Responses to Skill Biased Shocks: The Role of Labor Market Policy." *Economic Journal*, 109 (1999), 242–265.
Mueller, H. M., and T. Philippon. "Family Firms, Paternalism, and Labor Relations." *American Economic Journal: Macroeconomics*, 3 (2011), 218–245.
Murro, P., and V. Peruzzi. "Family Firms and Access to Credit. Is Family Ownership Beneficial?" *Journal of Banking and Finance*, 101 (2019), 173–187.
Ofek, E. "Capital Structure and Firm Response to Poor Performance: An Empirical Analysis." *Journal of Financial Economics*, 34 (1993), 3–30.
Oi, W. J. "Labor as a Quasi-Fixed Factor." *Journal of Political Economy*, 70 (1962), 538–555.
Pagano, M. "Risk Sharing Within the Firm: A Primer." *Foundations and Trends in Finance*, 12 (2020), 117–198.
Parisi, M. L.; F. Schiantarelli; and A. Sembenelli. "Productivity, Innovation and R&D: Micro Evidence for Italy." *European Economic Review*, 50 (2006), 2037–2061.
Pavitt, K. "Sectoral Patterns of Technical Change: Towards a Taxonomy and a Theory." *Research Policy*, 13 (1984), 343–373.
Petersen, M. A., and R. G. Rajan. "The Benefits of Lending Relationships: Evidence from Small Business Data." *Journal of Finance*, 49 (1994), 3–37.
Popov, A., and J. Rocholl. "Do Credit Shocks Affect Labor demand? Evidence for Employment and Wages During the Financial Crisis." *Journal of Financial Intermediation*, 36 (2018), 16–27.
Presbitero, A. F.; G. F. Udell; and A. Zazzaro. "The Home Bias and the Credit Crunch: A Regional Perspective." *Journal of Money, Credit and Banking*, 46 (2014), 53–85.
Presbitero, A. F., and A. Zazzaro. "Competition and Relationship Lending: Friends or Foes?" *Journal of Financial Intermediation*, 20 (2011), 387–413.
Schäfer, L. ""Forgive but Not Forget": The Behavior of Relationship Banks When Firms Are in Distress." *Review of Finance*, 23 (2019), 1079–1114.
Sette, E., and G. Gobbi. "Relationship Lending During a Financial Crisis." *Journal of the European Economic Association*, 13 (2015), 453–481.
Sharpe, S. A. "Financial Market Imperfections, Firm Leverage, and the Cyclicality of Employment." *American Economic Review*, 84 (1994), 1060–1074.
Sraer, D., and D. Thesmar. "Performance and Behavior of Family Firms: Evidence from the French Stock Market." *Journal of the European Economic Association*, 5 (2007), 709–751.
Sufi, A. "Private and Public Supply of Liquidity." *Review of Financial Studies*, 22 (2009), 1057–1088.