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The Impact of the 2008-2009 Global Crisis on Manufacturing Firms' Bank Accounts, Overdraft Facilities, And Loans

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Abstract. *In this study, we focus on manufacturing firms in Eastern Europe and Central Asia and examine the impact of the 2008-2009 Global Crisis on these firms' accounts, overdraft facilities, and loans. Our objective is to see if the crisis affected the number of manufacturing firms that have a checking/savings account, that have an overdraft facility, or that have a line of credit/loan. We also want to see whether firms changed the type of financial institution that they borrowed from (i.e. private commercial bank, state-owned bank/agency, or non-bank financial institution). Our results show that, post-crisis, a significantly lower percentage of manufacturing firms had an overdraft facility. Also, post-crisis, a significantly lower percentage of firms had a line of credit/loan. On the other hand, there was no significant change with respect to the % of firms having a checking or a savings account. Also, there was no significant change with respect to the percentage of firms borrowing from a private commercial bank, a state-owned bank/agency, or a non-bank financial institution. Overall, we conclude that, after the crisis, financial institutions in the region significantly cut their credit facilities to manufacturing firms while firms continued to transact with the same institution or a similar institution.*

Keywords: overdraft, loan, line of credit, global crisis, manufacturing firms, eastern Europe, central Asia.

JEL Classification: G01, G20, G21, G22, G23, G28.

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Introduction. In this study, we focus on Eastern Europe and Central Asia and examine how manufacturing firms' relationships with their financial institutions changed after the 2008-2009 Global Crisis. We look at the impact of the global crisis on manufacturers' bank accounts, on their overdraft facilities, and on their borrowing activities. We also examine whether the crisis affected the type of financial institution that they dealt with. We obtain our data from EBRD-World Bank Business Environment and Enterprise Performance Surveys (i.e. BEEPS IV and BEEPS V surveys). We compare the pre-crisis period responses to the post-crisis period responses using these two surveys which are done in 32 countries in the region.

Previous research (i.e. Hüfner (2010), Liang (2012), Maredza and Ikhide (2013), Lysandrou and Nesvetailova (2015), Dungey and Gajurel (2015), Bordo et al. (2015), and others) shows that the 2008-2009 Global crisis had a negative impact on banking and insurance systems of countries. Therefore, in this study, we expect manufacturing firms in the region to have problems in getting credit from financial institutions after the crisis. Due to the negative impact of the Global crisis on banking systems, we expect financial institutions to be stricter (fewer overdraft facilities and fewer loans/lines of credit) when offering credit to these firms.

Our results show that, after the crisis, manufacturing firms in the region suffered because financial institutions allowed fewer firms to have an overdraft facility. Also, fewer firms were able to get a loan/line of credit during this period. On the other hand, we find that there was no significant change with respect to the percentage of firms having a checking or a savings account. Also, there was no significant change with respect to the percentage of firms borrowing from a private commercial bank, a state-owned bank/agency, or a non-bank financial institution (i.e. post-crisis, no significant change in the distribution of the type of financial institutions lending to these firms).

The rest of this paper is organized as follows. The next section reviews prior literature. Section 3 explains our hypotheses. Section 4 explains our data and methodology. Section 5 presents the empirical results. Section 6 includes our concluding remarks.

1. Literature Review

Previous research shows the impact of financial/economic crises on countries' banking systems. Hüfner (2010), Liang (2012), Maredza and Ikhide (2013), Lysandrou and Nesvetailova (2015), Dungey and Gajurel (2015), and Bordo et al. (2015) examine the impact of the 2008-2009 Global crisis on countries' banking systems. Hüfner (2010) contends that the German banking system can be stabilized by improving state banks, capitalization and fragmentation of the banking system, and banking regulations and supervision. Liang (2012) argues that the Chinese banking system was resilient during the crisis because of the capital control policies, the focus on traditional banking, and the weight of the state-owned banks. Maredza and Ikhide (2013) show that the crisis lowered bank efficiency in South Africa. Lysandrou and Nesvetailova (2015) discuss the role of shadow banking during the crisis. Dungey and Gajurel (2015) emphasize the importance of reducing the potential for idiosyncratic contagion, rather than systematic contagion. Bordo et al. (2015) argue that the crisis and contagion occurred due to the fragmented structure of the U.S. banking system. Besides these papers, a few other papers (i.e. Vogjazas and Nikolaidou (2011) and Nikolaidou and Vogiazas (2014)) examine the impact of the Greek crisis on several European countries' banking systems. Kaya (2021) examines the impact on the efficiency of the financial system and shows that the global crisis had a significant impact on two of the nine efficiency variables, which are return on assets and return on equity. Kaya (2017) examines the impact on the stability of the financial system and shows that banks' liquid assets significantly decreased while their non-performing loans significantly increased There was no significant change in bank Z-Score, bank capital, bank credit, regulatory capital, and provisions to non-performing loans.

We have to note that several of these papers (i.e. Hüfner (2010), Maredza and Ikhide (2013), Bordo et al. (2015), and Liang (2012)) explain how government's policies and reaction to the crisis negatively affected the impact of the crisis on a country's banking system.

Other papers like Bastürk and Sayin (2009), Njegomir et al. (2010), Balucha et al. (2011), Alzboon and Abu Orabi (2013), Kilic et al. (2014), Afzal et al. (2013), and Njegomir et al. (2014) examine the impact of the 2008-2009 crisis on the insurance industry.

There are several recent papers that examine the impact of the global crisis on access to finance. Kaya (2016) examines the impact of the 2008-2009 Crisis on three measures related to access to finance. The author finds that, post-crisis, stock market trading was more concentrated in just a few firms. The author does not find any significant impact on number of bank branches or on market capitalization outside of top 10 largest companies. Saiedi and Broström (2019) examine small and medium sized European firms and show that, during the crisis, these firms followed the pecking order theory of financing (i.e. first used internal funds, then used debt, and used equity financing as a last resort). They show that young firms sought debt more but they had difficulties in obtaining debt financing while doing better in equity financing. Isatayeva et al. (2019) examine young knowledge-based firms in Kazakhstan and show that these firms were more likely to be rejected when applying for loans compared to other firms. These firms' rejection possibilities went up even more after the global crisis. Tran (2021) examines 17 countries and shows that economic policy uncertainty had increased cost of debt financing due to information asymmetry and default risk. This effect on cost of debt was stronger during the global crisis. Lee et al. (2015) examine small and medium sized firms in the U.K. and show that innovative firms were more likely to be rejected than other firms and that this differential had worsened during the global crisis. They show that the worsening in credit conditions was even more pronounced for non-innovative firms.

Besides these papers, other recent papers also focus on the impact of the global crisis on access to finance.

Carbo et al. (2016) examines small and medium sized firms in Spain and show that credit constrained firms lean on trade credit (rather than bank loans). This dependence on trade credit had increased during the global crisis. The authors show that unconstrained firms were dependent on bank loans, rather than trade credit. Cowling et al. (2018) examine how a firm's age and entrepreneur's experience affected performance after the global crisis. They show that previous experiences had little value in this environment. But young firms still had a high growth rate. Leitner and Stehrer (2013) examine Latin American firms. They show that, during the global crisis, larger firms used less internal funds while foreign firms used more internal funds. Overall, firms used more bank loans and trade credit. Álvarez and Görg (2012) examine Chile and show that manufacturing plants laid off many workers during the economic crisis. Multinational firms were more likely to exit the country. Surviving foreign firms did fewer layoffs compared to domestic firms. Fernando et al. (2017) examine European firms and show that firms in financially stressed countries were more likely to be capital rationed and to face higher interest rates. These firms started to rely more on debt securities rather than bank loans. Andries et al. (2018) examine capital rationing in Europe and show that more concentrated banking markets had more credit rationing. Small firms were more negatively affected. The global crisis affected some countries more than others, and in these countries, financial constraints were stronger. Martinez-Sola et al. (2017) examine firms in Spain and find that there was a positive relationship between supplier financing and firm value. Firms with more financial resources and a lower cost do not value supplier financing as much as other firms. Anton and Bostan (2017) examine Europe and find a positive relationship between access to finance and entrepreneurial activities.

Overall, the above-mentioned studies argue that the 2008-2009 Global crisis had a negative impact on banking and insurance systems of countries, as well as on firms' access to finance. In this study, we focus on how the Global crisis affected Eastern European and Central Asian manufacturing firms' access to finance. We look at the impact on their checking and savings accounts, on their overdraft facilities, and on their loan/line of credit activities. We also examine how the crisis affected the type of financial institution that they dealt with.

Based on the previous papers, we expect manufacturing firms in the region to have problems in getting credit from financial institutions after the crisis. Due to the negative impact of the Global crisis on banking systems and access to finance, we expect financial institutions to be stricter (fewer overdraft facilities and fewer loans/lines of credit).

In the next section, we explain our hypotheses.

2. Hypotheses

While we expect the credit conditions to worsen after the global crisis, we do not expect any significant change in the proportion of firms using basic accounts like checking or savings accounts. Therefore, our first hypothesis is as follows:

Hypothesis 1: "After the global crisis, there was no significant change in manufacturing firms' checking/savings accounts".

Based on the previous papers, post-crisis, we expect to find a significant deterioration in financial conditions. We also expect to find fewer new loan applications or lines of credit after the global crisis. Therefore, our next two hypotheses are:

Hypothesis 2: "After the global crisis, there was a significant reduction in manufacturing firms' overdraft facilities".

Hypothesis 3: "After the global crisis, there was a significant reduction in new loans or lines of credit by manufacturing firms".

Since some governments supported firms through loans offered by state-owned banks, we expect to see a shift towards these types of loans post-crisis. On the other hand, this shift may not be significant enough since only some governments resort to this type of solution. Our final hypothesis is:

Hypothesis 4: "After the global crisis, there was a significant shift in manufacturing firms' financing activities towards state-owned banks".

3. Data and Methodology

We use the EBRD-World Bank Business Environment and Enterprise Performance Survey (i.e. BEEPS). We use the BEEPS IV survey (2007 survey) responses as our pre-crisis data and the BEEPS V survey (2010-2014) responses as our post-crisis data. These surveys cover 32 countries in Eastern Europe and Central Asia.

Besides several other questions, the surveys ask the following questions to manufacturers:

"At this time, does this establishment have a checking or savings account? Yes/No"

"At this time, does this establishment have an overdraft facility? Yes/No"

"At this time, does this establishment have a line of credit or a loan from a financial institution? Yes/No"

"Referring to the most recent line of credit or loan, what type of financial institution granted this loan? (1) Private Commercial Bank, (2) State-Owned bank or Government Agency, (3) Non-Bank Financial Institution, (4) Other"

To compare the distribution of the responses in the pre-crisis period to that in the post-crisis period, we use the Chi-square test.

4. Empirical Results

Table 1 compares the pre-crisis and the post-crisis percentages of manufacturing firms that had a checking or savings account. Our chi-square test shows that there was no statistically significant change in this measure (p=0.9908). In the pre-crisis period, 91.26% of manufacturing firms had a checking or savings account. In the post-crisis period, this percentage was 91.27%.

Table 1. Did the Manufacturing Firm Have a Checking or Savings Account?

	Pre-Crisis		Post-Crisis	
Variables	**N**	**%**	**N**	**%**
Yes	4,480	91.26	5,863	91.27
No	429	8.74	561	8.73
Total	4,909	100%	6,424	100%
Statistic	**df**	**Value**	**Prob**	
Chi-Square	1	0.0001	0.9908	

Source: Author's own work.

Table 2 compares the pre-crisis and the post-crisis percentages of manufacturing firms that had an overdraft facility. Our chi-square test shows that there was a statistically significant change in this measure (p<0.0001). In the pre-crisis period, 48.49% of manufacturing firms had an overdraft facility. In the post-crisis period, this percentage was only 37.89%. Therefore, we can conclude that there was a significant drop in the percentage of manufacturing firms that had an overdraft facility, which implies that financial institutions in the region significantly cut their credit facilities to manufacturing firms.

Table 2. Did the Manufacturing Firm Have an Overdraft Facility?

	Pre-Crisis		Post-Crisis	
Variables	**N**	**%**	**N**	**%**
Yes	2,273	48.49	2,381	37.89
No	2,415	51.51	3,903	62.11
Total	4,688	100%	6,284	100%
Statistic	**df**	**Value**	**Prob**	
Chi-Square	1	123.4116	<0.0001	

Source: Author's own work.

Table 3 compares the pre-crisis and the post-crisis percentages of manufacturing firms that had a line of credit or loan. Our test shows that there was a statistically significant change in this measure (p<0.0001) as well. In the pre-crisis period, 50.11% of manufacturing firms had a line of credit or loan. In the post-crisis period, this percentage was only 39.12%. This drop also supports our previous finding of a significant cut in credit facilities to manufacturing firms in the region.

Table 3. Did the Manufacturing Firm Have a Line of Credit/Loan?

	Pre-Crisis		Post-Crisis	
Variables	**N**	**%**	**N**	**%**
Yes	2,496	50.11	2,497	39.12
No	2,485	49.89	3,886	60.88

Table 3 (cont.). Did the Manufacturing Firm Have a Line of Credit/Loan?

Total	4,981	100%	6,383	100%
Statistic	**df**	**Value**	**Prob**	
Chi-Square	1	137.2046	<0.0001	

Source: Author's own work.

Table 4 examines whether manufacturing firms significantly changed their borrowing source post-crisis. Our test shows that there was no statistically significant change in the type of financial institution that manufacturers deal with (p=0.9290). The crisis did not change these firms' choice regarding their lending source (they continued to work with the same institution or with a similar institution).

Table 4. What Type of Fin. Institution Granted the Most Recent Loan?

	Pre-Crisis		**Post-Crisis**	
Variables	**N**	**%**	**N**	**%**
Private Commercial Bank	1,998	80.05	1,982	79.98
State-Owned bank or Govt Agency	404	16.19	410	16.55
Non-Bank Fin. Institution	66	2.64	59	2.38
Other	28	1.12	27	1.09
Total	2,496	100%	2,478	100%
Statistic	**df**	**Value**	**Prob**	
Chi-Square	3	0.4536	0.9290	

Source: Author's own work.

Conclusion

In this study, we examine the impact of the 2008-2009 Global Crisis on manufacturing firms' banking relationships. We focus on manufacturing firms in Eastern Europe and Central Asia (i.e. we use the BEEPS surveys). We use the BEEPS IV survey results as our pre-crisis data and the BEEPS V results as our post-crisis data.

We find that the Global crisis had a significant impact on the credit facilities of the manufacturing firms in the region. Both the percentage of manufacturers with an overdraft facility and the percentage of manufacturers with a line of credit or loan significantly decreased after the crisis. These findings indicate that financial institutions in the region significantly cut their credit facilities to manufacturing firms.

On the other hand, we do not find any significant change in the percentage of manufacturing firms that had a checking or savings account. Around 91% of these firms had a checking or savings account before or after the crisis.

When we examine whether the crisis affected their choice of lender, again we do not find any significant impact. Both before the crisis and after the crisis, around 80% of these firms borrowed from a private commercial bank, around 16% borrowed from a state-owned bank or agency, and around 2% borrowed from a non-bank financial institution.

We recommend policymakers in the region to consider these findings that relate a global economic crisis to manufacturing firms' credit facilities. Our findings show that financial institutions cut their credit offerings to these firms during this time when they needed funding the most. Governments or governmental agencies have to support these firms when a crisis is approaching, and this support needs to be ready as soon as the crisis starts.

Future studies may expand on this current study by examining the impact of such a crisis on different aspects of loans including the collateral requirement, the size of the collateral, the type of the collateral, the reason for firms not applying for a new loan, etc. There are many different aspects of financing that can be examined.

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