Zombie firms and credit access in Russia

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1 Introduction

Nowadays we see increased attention to the current state of problem firms and assessment of their impact on the economic and financial stability. Zombie firms or non-viable firms remains a concern and a subject of growing debates in academy and policy institutions. The covid-19 pandemic has provoked more discussions. As a result of the pandemic and a significant drop in income, the government has started programs to support business in the form of concessional lending. In this situation the problem of ineffective distribution of resources and the inability to identify true zombie firms has become aggravated. Feeding zombies will just make the recovery longer and slower, crowding out more worthy enterprises and wasting resources (Financial Times, 2020 [11]). We need to control and monitor such firms and their support by government, because extending such measures could block or slow down the exits of zombie firms. These firms faced financial difficulties before the COVID-19 pandemic and have poor recovery prospects. In this paper we will define zombie firms for Russian economy on micro data, describe zombification process in Russian economy, and try to estimate the effects of government support on a zombification of the economy during the COVID-19 crisis.

2 Literature

Our paper contributes to the growing literature on zombie firms and their impact on economic activity. More recent literature defines such firms as insolvent companies that are not able to cover debt service costs from their profits over a period of time ([10], [5], etc). Zombification of the economy and its effect on economic activity are of great concern. According to the literature the reasons of existence zombie firms could be linkages with weak banks [6]. The authors find that zombie lending can hinder the recovery and development of the economy after the crisis. In other research the authors document the positive effect of zombie firms in short term, although they increase imbalances in the long term [9]. However most recent papers show that zombie firms can lead to drop in productivity through credit misallocation that affects both directly and indirectly. The direct effect is due to the keeping zombie alive and crowding-out effect when zombie lending tightens the credit constraints of high-productivity firms ([3]; [5]; [1]). The indirect channel arises from subsidies to weak firms, which can distort competition in both product and resource markets and reduce long-term investment by zombie firms ([2], [4]). Moreover,

Figure 1. Share of firms with new credits in 2020 across levels of labour productivity.

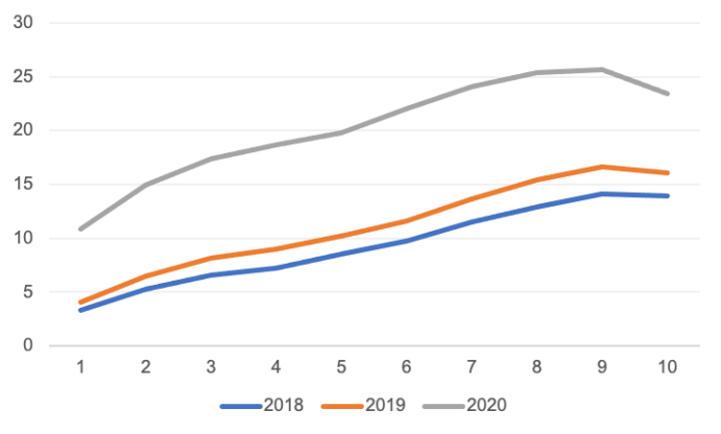

Figure 2. Firms with new loans across levels of labour productivity, thou

government intervention during the COVID-19 crisis has reinforced the existing trend of zombification [8].

3 Data and descriptive statistics

3.1 Lending dynamics

We use firm-level data combining several data sources. We use annual financial statement from SPARK database. Our database covers time period from 2016 to 2020. After we calculate labor productivity for our analysis number of firms with labor productivity consists of 1,837,480. We also computed several definitions of zombie firms and marked these firms Then we tried to find new loans for these firms in credit registry database (form 0409303, Bank of Russia) over the period January 2017 – September 2021. The we merged this data with labor productivity decile and the labels of zombie firm with one-year lag. We see that a small number of firms use bank lending. On average in 2020 only 18.5% of firms with labor productivity received loans (Figure 1, where 1 – less productive firms, 10 – more productive firms).

If we look at the dynamics of new loans, we can see significant increase in number of credits in 2020 (Figure 2). This is due to the loans as a part of government support programs during the COVID-19 pandemic.

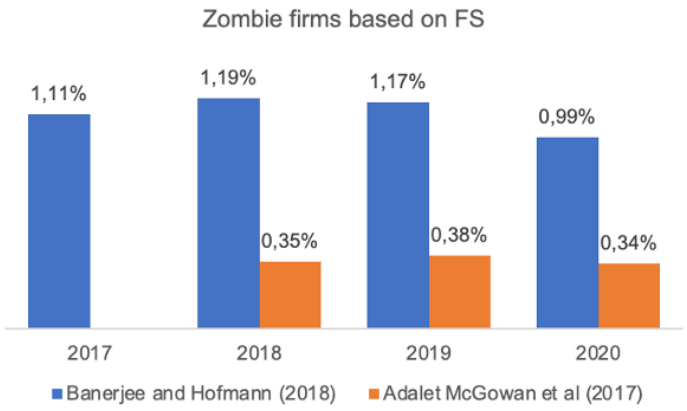

Figure 3. Share of zombie

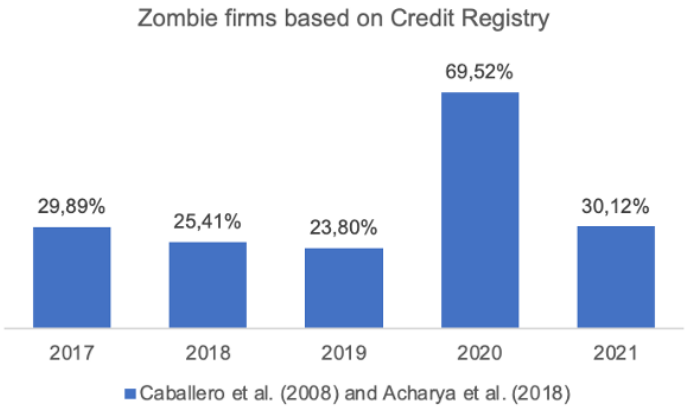

Figure 4. Share of zombie

3.2 Zombie definition

In our paper we used several definitions of zombie firms. Figure 3 represents the dynamics of zombie firms based on firm-level data (financial statement). Here zombie share is the ratio of zombie firms to all firms with non-zero assets. Zombie firms are defined as in [5] – interest coverage ratio (ICR) less than 1 for at least two consecutive years. Zombie firms are defined as in [10] – ICR less than 1 for three consecutive years and firm is at least 10 years old. If we compare our results with other foreign studies, we can see that in Russia there is much lower share of zombie rather than in other countries. It can be explained by the poor quality of firm-level data from financial statement. So we construct additional measures of zombie firms using other sources of information.

Figure 4 represents the dynamics of zombie firms based on firm-bank level data (credit registry). Here zombie firms are defined as in [6] and [1] – firms with "subsidized" credits. We indicate these credits as credits with rates below those for the most creditworthy companies (here credits form the highest quality group). As a first approximation we can use this definition, but obviously it should be modified in some ways. Firstly, credit quality group could not be a good measure of firm creditworthy. Also, according to Laeven, Schepens and Schnabel (VoxEU, [7]) in defining zombies, it is important to differentiate between crisis and normal times. As we see on the graph, the share of zombies sharply increased in 2020 when there were a lot of credits with subsidized rates.

4 Results

Here we provide preliminary regression results. We want to estimate how the speed of leveraging depends on the corporate zombification and pandemic period.

$$\Delta Leverage_{i,t} = \beta_1 Zombie_{i,t-1} + \beta_2 Pandemic_t + \beta_3 Zombie_{i,t-1} \times Pandemic_t + \\ + \beta_4 Controls_{i,t-1} + \alpha_i + \gamma_s + \delta_r + \epsilon_{i,t} \quad (1)$$

where $Controls_{i,t-1}$ - firm age, firm size, macro controls (GDP growth rate, key rate, HHI by bank concentration), α_i - firm-fixed effect, γ_s - industry-fixed effect, δ_r - regional fixed effect. The industry-fixed effect is estimated at the 9 broad groups by NACE2 sector classification. The regional fixed effect is estimated at the 8 federal districts. In this specifications we use less conservative definition of zombie firms as in [5].

Table 4 depicts our first results. Column (1) indicates that the average zombie firm increased its leverage annually by 2.2 percentage points relative to non-zombie firms. After we add macro controls in our model this effect became statistically insignificant.

In further research we are going to modify our initial regression, use other definition of zombie firms and to assess the effect of zombification on Russian economy.

	(1)	(2)	(3)
Zombie	0.022*	-0.009	-0.009
	(0.012)	(0.013)	(0.013)
Pandemic	-0.168***	-0.369***	-0.371***
	(0.005)	(0.013)	(0.013)
Zombie × Pandemic	-0.170***	-0.153***	-0.153***
	(0.015)	(0.015)	(0.015)
Firm Age			
From 1 to 3 years	0.270***	0.246***	0.247***
	(0.013)	(0.013)	(0.013)
From 3 to 5 years	0.396***	0.354***	0.355***
	(0.018)	(0.018)	(0.018)
From 5 to 10 years	0.506***	0.441***	0.442***
	(0.023)	(0.023)	(0.023)
More than 10 years	0.531***	0.435***	0.437***
	(0.028)	(0.029)	(0.029)
Firm size			
Small	-0.102***	-0.124***	-0.124***
	(0.019)	(0.019)	(0.019)
Micro	-0.106***	-0.184***	-0.184***
	(0.021)	(0.022)	(0.022)
Medium	-0.004	-0.006	-0.006
	(0.018)	(0.018)	(0.018)
Key Rate		-0.076***	-0.077***
		(0.004)	(0.004)
GDP growth Yoy		-0.011***	-0.011***
		(0.000)	(0.000)
HHI			-0.058
			(0.050)
Constant	15.975***	17.780***	17.792***
	(0.025)	(0.058)	(0.059)
Observations	518,533	518,533	518,514
R_a^2	0.5	0.5	0.5

Standard errors in parentheses

* p<0.1, ** p<0.05, *** p<0.01

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