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Survival of firms in developing economies during economic crisis

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Abstract: With lockdown measures in place worldwide, cash-flow represents a significant concern for firms across multiple sectors. This chapter estimates the survival time of more than 11,000 firms in 34 low- and lower-middle-income economies. Under the assumptions that firms have no incoming revenues, the median survival time across industries ranges from 6 to 28 weeks. Once collapsed export demand is taken into account, the median survival time falls to between 6 and 18 weeks.

Economists traditionally explain the closure of firms during recessions with Schumpeter's (1934) creative destruction theory, where during downturns small and less efficient firms are the ones to exit the market. In times of extreme economic distress, however, firms in every country are reeling from the inability to do business as usual. To make things worse, many sectors see collapsed demand and economic uncertainty stretching months, if not years. In the pandemic, governments rightly focus on dealing with the health aspects first, and only then on the recovery of the economy once the immediate danger of the pandemic is over.

But businesses worldwide are rapidly running out of cash. In the US, firms have cash reserves to last anywhere between three weeks and six months. Restaurants, for example, have less than a month of cash on hand (Didier et al., 2020). Analysis done on 12 high- and middle-income countries across Africa, Central Asia, Europe, Latin America, and the Middle East shows that the median survival time of small firms across industries ranges within 8 to 19 weeks (Bosio et al., 2020).

This breathing period is extended with government programs already in place to support worker retention through subsidizing jobs, freezing interest payments on loans, and extending new bank credit. This extension differs across industries – it helps labor-intensive sectors more, and firms with established lines of credit benefit more as well. Still, other payments – like rent and cost of materials – are weighing on businesses. Exporters are unable to ship goods due to disrupted transport links. Even when transport is possible, new trade restrictions may apply or demand has simply collapsed.

In this chapter we apply the hypotheses in our earlier work (Bosio et al., 2020) to low- and lower-middle-income countries. In a scenario fashioned after the current pandemic period – where firms have no revenues due to a lockdown or collapsed demand – the median firm in a low-income country has retained earnings and other sources of financing to last 6 (in retail) to 28 weeks (in manufacturing). In middle-income countries, the median survival time range from 7 (in retail) to 11 weeks (in manufacturing). Once collapsed export demand is taken into account (Baldwin 2020a), the median survival time falls to 6 to 18 weeks in low-income countries, while for lower-middle income countries remain roughly the same.

Across countries, the median Uzbek firm is the most liquidity constrained, while the median Gambian firm has the most breathing space. The former has 6 weeks buffer in retained earnings and other sources of financing, the latter 15 weeks.

Countries and firms covered in the analysis

The calculations use data for 15,150 businesses from the World Bank's Enterprise Surveys conducted in 34 economies that have had a survey completed in the last five years, and that have a sample size that allows for sectoral breakdowns.

The World Bank Enterprise Surveys are establishment-level surveys conducted on a stratified random sample of small (5-19 employees), medium (20-99 employees), and large establishments (over 100 employees). The questionnaire includes a wide range of topics, from infrastructure to management practices, labor, and performance. The survey is administered to businesses with at least 1 percent private ownership, that are not cooperatives, and were in full operation for the entirety of the last completed fiscal year. The sector of coverage includes all manufacturing (ISIC 3.1 Rev 15-37); Wholesale and retail trade, repair of motor vehicles, motorcycles and personal and household goods (50-52); Hotels and restaurants (55); Transport, storage and communications (60-64); and Computer related activities (72). The sample contains a total of 15,150 interviews with top managers or owners; and more than two-thirds of sampled firms (11,013) submitted income statement and balance sheet data (Table 1). Exporters account for between 8% (Guinea) to 44% (Morocco) of the sample.

Table 1: Sample Details

Country	Income Group	Survey Year	Last Completed Fiscal Year	Survey Sample Size	Number of Firms with Full Income Statement Data	Number of Exporters in the Sample
Benin	Low	2016	2015	136	122	44
Bolivia	Lower-middle	2017	2016	361	225	53
Cambodia	Lower-middle	2016	2015	373	367	58
Cameroon	Lower-middle	2016	2015	344	257	75
Chad	Low	2018	2017	132	60	24
Côte d'Ivoire	Lower-middle	2016	2015	351	218	63
Egypt	Lower-middle	2016	2015	1,797	1,429	394
El Salvador	Lower-middle	2016	2015	708	438	196
Eswatini	Lower-middle	2016	2015	131	78	38
The Gambia	Low	2018	2017	133	117	25
Guinea	Low	2016	2015	137	40	11
Honduras	Lower-middle	2016	2015	320	188	53
Kenya	Lower-middle	2018	2017	978	725	304
Kyrgyz Republic	Lower-middle	2019	2018	349	232	79
Lao PDR	Lower-middle	2018	2017	327	152	45
Lesotho	Lower-middle	2016	2015	138	71	36
Liberia	Low	2017	2016	131	117	14
Mali	Low	2016	2015	161	88	54
Moldova	Lower-middle	2019	2018	331	270	99
Mongolia	Lower-middle	2019	2018	360	336	29
Morocco	Lower-middle	2019	2018	788	521	345

Mozambique	Low	2018	2017	595	550	123
Myanmar	Lower-middle	2016	2015	598	560	58
Nicaragua	Lower-middle	2016	2015	329	272	51
Niger	Low	2017	2016	122	49	30
Rwanda	Low	2019	2018	360	355	123
Sierra Leone	Low	2017	2016	132	115	14
Tajikistan	Low	2019	2018	326	137	45
Togo	Low	2016	2015	144	108	58
Ukraine	Lower-middle	2019	2018	1,305	688	417
Uzbekistan	Lower-middle	2019	2018	1,215	806	209
West Bank and Gaza	Lower-middle	2019	2018	348	277	79
Zambia	Lower-middle	2019	2018	594	519	125
Zimbabwe	Lower-middle	2016	2015	596	526	98
Total				15,150	11,013	3,469

Firms that export are defined as any establishment that has sales through direct or indirect exports. We assign exporter status to companies based on their response to the following questions: "In the last completed fiscal year, what percentage of this establishment's sales were: (a) National sales, (b) Indirect exports (sold domestically to third party that exports products), (c) Direct exports?" In cases where the respondent answers affirmatively to option (b) or (c), the exporter designation is applied.

How to estimate survival time

As direct measures of cash-on-hand or cash accessible with ease are not available, we make several assumptions. In all cases, our assumptions are conservative: they serve to increase survival times. The reason for this choice is to have a lower bound on the possibility of firms resorting to bankruptcy.

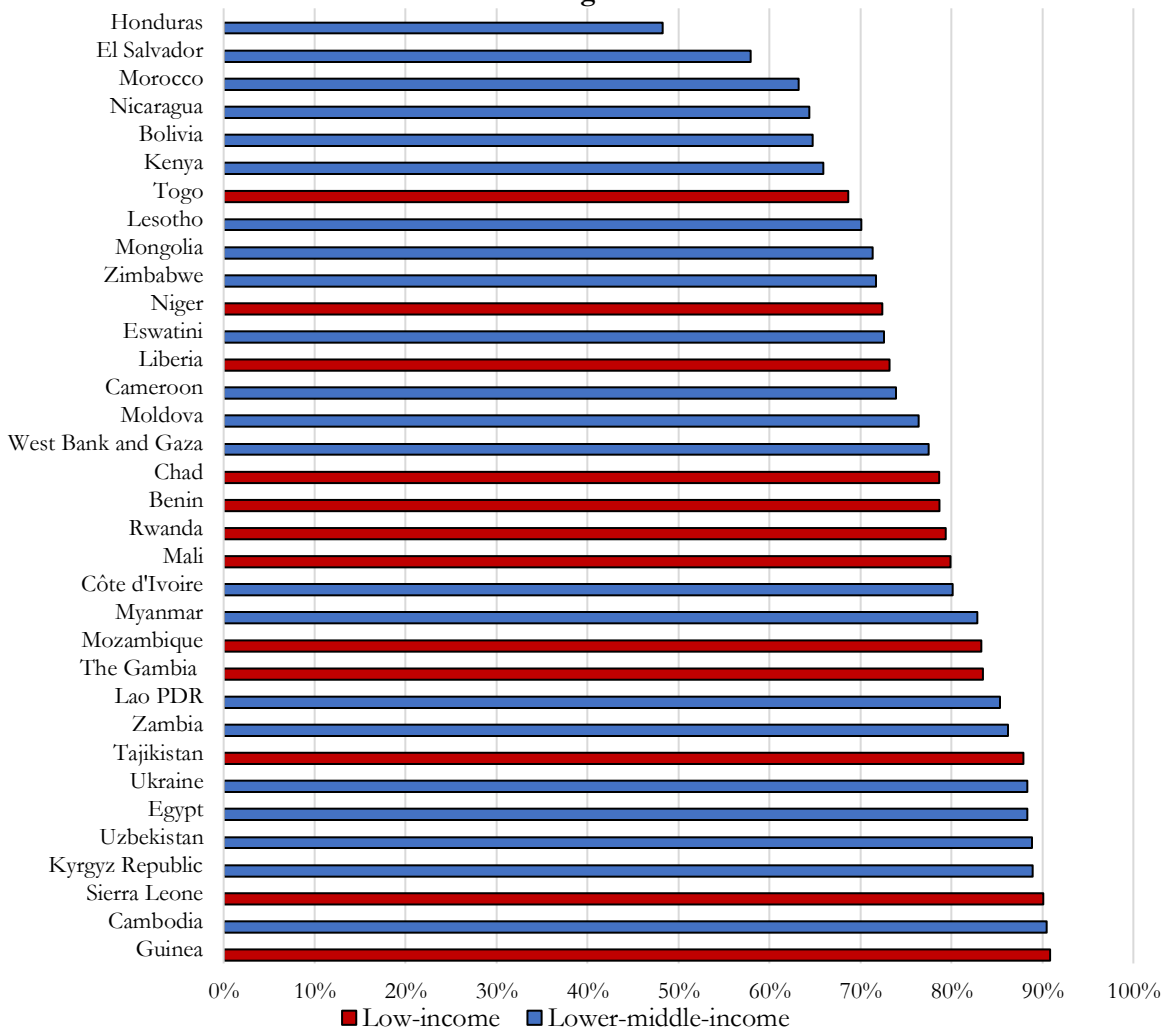
To calculate the survival time of firms, we take net retained earnings for the past year as the numerator (assuming that all such earnings have been saved and are liquid and available for businesses to use). We expand the numerator with the availability of firms to 'tap' credit. In particular, we keep the ratio of retained earnings to external financing (as reported for the previous year) constant and assume that the same amount of external financing is available throughout periods of economic distress.

Next, we assume that wages and other employee expenses are covered fully by government crisis-response programs. As a result, the denominator represents only fixed costs such as rent, machinery maintenance, and cost of materials. As profits are given in the data as 'gross profit margin', we reduce it by subtracting the statutory corporate income tax rate, 15% dividends, and 10% depreciation expenses.

The channels through which businesses finance their working capital indicates the reliance on profits. In Guinea, for example, approximately 91% of the day-to-day operations of an average firm are financed through retained earnings. Firms in Cambodia, Sierra Leone, and the Kyrgyz Republic also finance their operations out of retained earnings. In contrast, firms in Honduras and

El Salvador rely substantially on external financing (Figure 1). On average, retained earnings finance about three-quarters of working capital.

Figure 1: Percent of Working Capital Financed Through Retained Earnings on Average



Note: Data is extracted from the World Bank Enterprise Surveys. Number of Observations: 15,150

We use these data to expand the numerator, by taking the ratio of internal to external financing of working capital as constant over the period of extreme economic distress. In reality, financing may dry up if banks are unwilling to lend. Alternatively, government-sponsored programs may expand access to external finance.

The data is aggregated into three sectors (manufacturing, retail, other services) and we apply an outlier drop of any firm that has a survival time of over 260 weeks.

Can productive firms die?

The literature on firm survival in distress rests on two hypotheses: first, that firm survival occurs primarily on the basis of productivity differentials, i.e. small and less efficient firms, as well as younger firms, have lower chances of surviving than their more efficient counterparts (Jovanovic, 1982; Hopenhayn, 1992; Melitz, 2003; Melitz and Ottaviano, 2008); and second, that during economic downturns the collapse in aggregate demand raises competitive pressures and thus makes productivity differentials an even bigger factor in determining exit patterns (Hall, 1995; Caballero and Hammour, 1994; Gomes at al., 2001).

The empirical studies, however, suggest a different pattern. Some papers find that the "creative destruction" effect is weaker than expected. Barlevy (2003), for instance, shows that during times of economic distress this effect may not hold in presence of credit constraints, because efficient firms may be hurt disproportionally due to their higher financial needs. Ouyang (2009) provides evidence that times of economic distress destroy high-productivity firms during their infancy. A number of studies also suggest that labor market regulations and policies governing firm dynamics can be particularly relevant in distorting the process of firm selection in presence of negative shocks, because they allow relatively inefficient firms to survive (Foster et al., 2008).

A second strand of the literature is based on an observation that times of extreme economic distress create a hostile business environment (Cefis and Marsili, 2019). During such periods, a collapse in consumer expenditures often goes along with an increase in uncertainty, which makes economic transactions more difficult to accomplish (Bloom, 2014). Firms' relationships with buyers and suppliers become less reliable (Accetturo and Giunta, 2019). Financial institutions lack sufficient information to correctly evaluate credit merit, with the consequent rise of credit constraints (Djankov et al., 2007, Ivashina and Scharfstein 2010).

A third strand of the literature looks at systemic financial distress. If governments take no action during periods of severe economic downturns, significant sections of the economy may remain distressed for a long period of time, resulting in large, socially unacceptable losses in output and employment. This realization has led to the search for arrangements that would automatically trigger orderly processes to resolve systemic financial distress, as in Mexico during the 1996-1998 crisis (Mulás, 2001) or Indonesia and Thailand during the East Asia crisis (Claessens et al., 2001a).

In a systemic crisis, the government's first role is to define rules that lead to efficient private restructuring efforts. Creditor profiles are important, as in the case of Indonesia where corporate sector debt was largely owed to foreign investors (Claessens et al., 2000). Some studies have shown that acquisitions by foreigners usually end up in fire sales, resulting in a net transfer of wealth from the crisis economies (Pulvino 1998). Even high-productivity companies lose value and end up liquidated or sold piecemeal. In the event that these private initiatives prove insufficient for acceptably resolving distress, the government's second role lies in providing direct assistance to keep firms operating as going concerns (Claessens et al., 2001b).

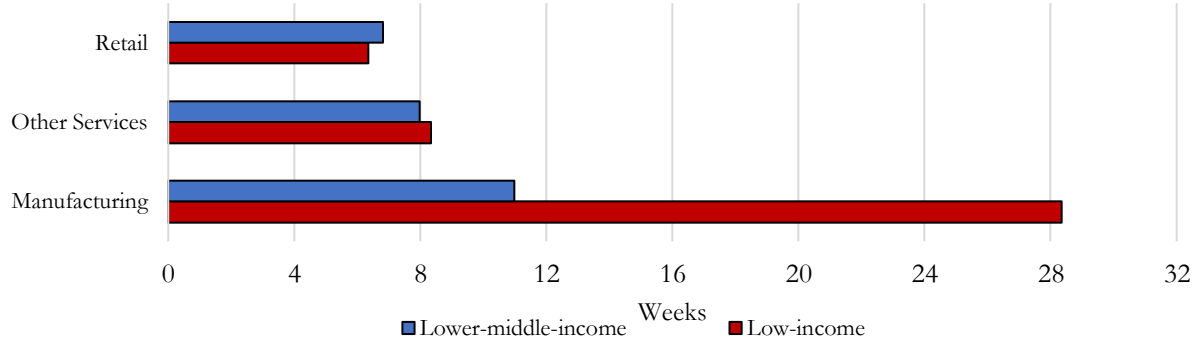
The previous literature leaves us with two testable hypotheses: either economic distress periods are associated with mass exit of inefficient firms and hence beneficial for long-term productivity and economic growth; or such periods result in indiscriminate exit of firms due to collapsed demand and increased uncertainty, resulting in deleterious long-term effects. We take these two hypotheses to the data in the next section.

How long can firms last

Retailers have the shortest survival time, whereby the median business runs out of savings in about six weeks and a half of no revenues (Figure 2). Firms in the manufacturing sector have higher survival times on average, between 11 (lower-middle-income) and 28 weeks (low-income). This is because their profit margins (and hence retained earnings) tend to be higher. It is perhaps counterintuitive that firms in low-income countries have more reserves in the manufacturing sectors.

Three reasons may explain this result. First, by assumption, the government pays salaries throughout the distress period. As firms in low-income countries are more labor intensive, they can draw on retained earnings longer. A simple calculation, using the same approach as used by Dewenter and Malatesta (2001), reveals that low income economies have a much higher employees-to-sales ratio in U.S. deflated dollars relative to lower-medium income economies. Second, competition among manufacturing firms is more intense in lower-middle income countries than in low-income countries. 77 percent of firms in low income economies have 5 or more competitors, while the same figure is slightly higher to nearly 80 percent in lower-middle economies. Such competition may serve to reduce retained earnings. Third, government owned firms tend to have excess employment (Boycko, Shleifer, and Vishny, 1996). Firms with some government ownership make up about 2 percent in low income economies, while less than 1 percent in lower-middle economies.

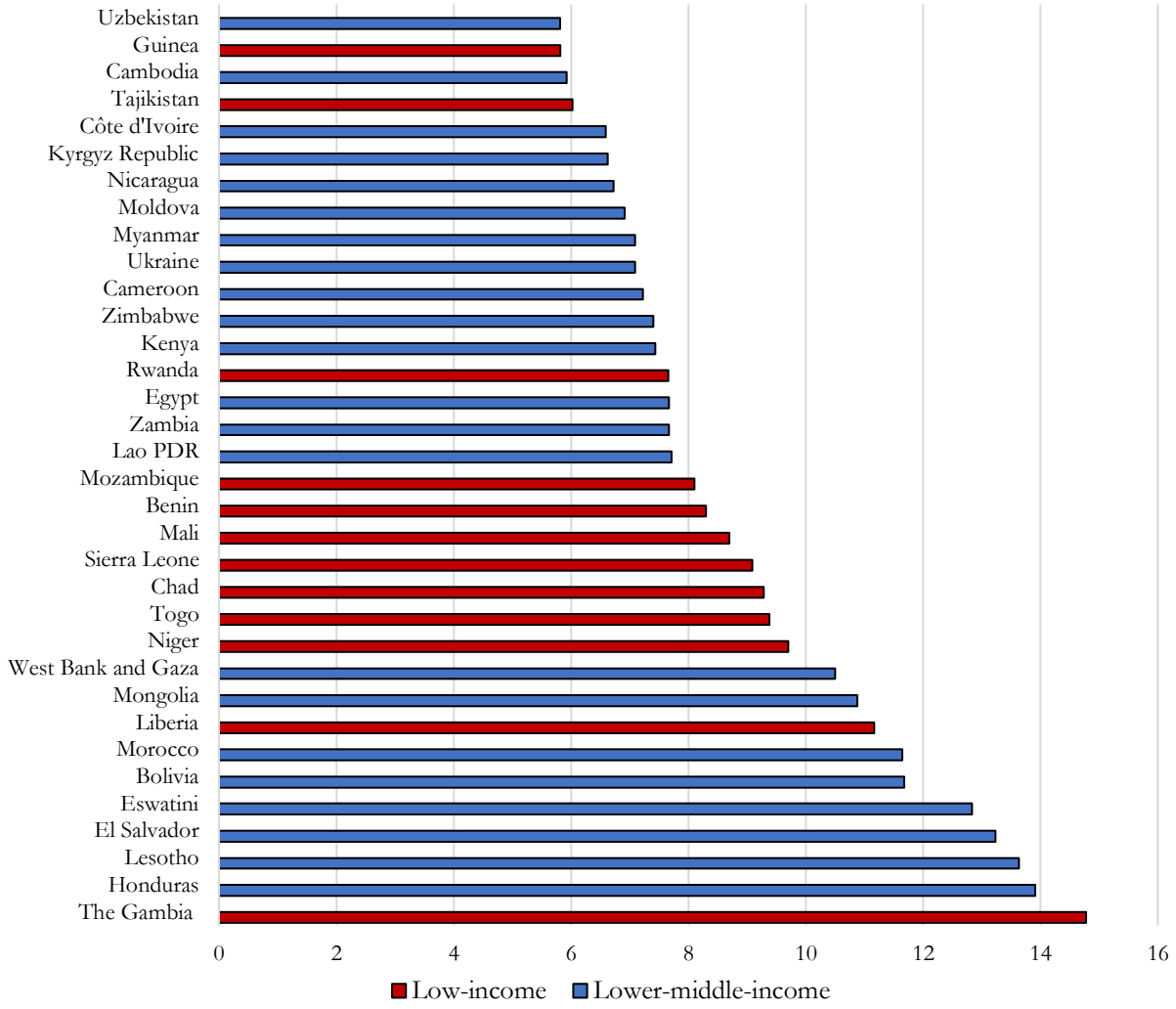
Figure 2: Median Survival Time based on Fixed Costs by Sector



Note: Data is extracted from the World Bank Enterprise Surveys. Number of Observations: 10,267

Figure 3 shows the median survival time by country, which ranges between six (Uzbekistan) and 15 weeks (The Gambia). Cambodian, Guinean, and Tajik firms are as cash-constrained as Uzbek firms (also at six weeks) and have a survival time that is less than half that of the median Honduran and Lesothan firms (14 weeks). The median business in Chad, Mali, Sierra Leone, and Togo can last nine weeks, one week longer than the median business in, for example, Egypt and Mozambique (eight weeks).

Figure 3: Median Survival Time based on Fixed Costs by Country



Note: Data is extracted from the World Bank Enterprise Surveys. Number of Observations: 10,267

The median survival time has significant variation across countries within a given sector. For example, the median manufacturing Myanmar firm has a survival time of 7 weeks, whereas the median firm in the same sector in Liberia can last 36 weeks. Substantial variation is also present across sectors within a given country.

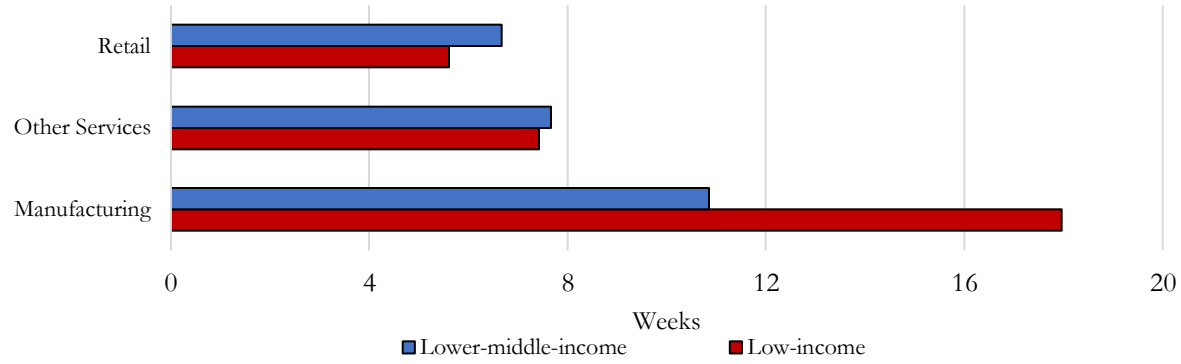
The mean survival time is longer, suggesting heterogeneity among firms and the likelihood that some firms can persist even in extreme economic hardship. In lower-middle-income countries, services firms can survive a total lack of revenues for 13 weeks, while businesses in manufacturing sectors can survive on average for up to 24 weeks.

The differences across countries between the average and median survival time persist. While the median business in Togo is estimated to run out of cash in nine weeks, businesses on average have the means to survive for about 20 weeks, or more than twice as long. Results for other countries

are more similar: in Tajikistan the average firm will run out of cash in about seven weeks, close to the median value of six weeks.

Finally, we redo the analysis shown in Figures 2 and 3, this time assuming that exporters lose access to their external financing. Such financing is likely to be related to receipts in foreign currency or is in the form of letters of trade credit (Javorcik, 2020). Figure 4 shows that manufacturers in low-income countries are most adversely affected by the collapse of export demand, with survival times reduced from 28 to 18 weeks. Conversely, retailers and the provision of other services are mildly affected and remain the two sectors where firms are estimated to run out of working capital the fastest.

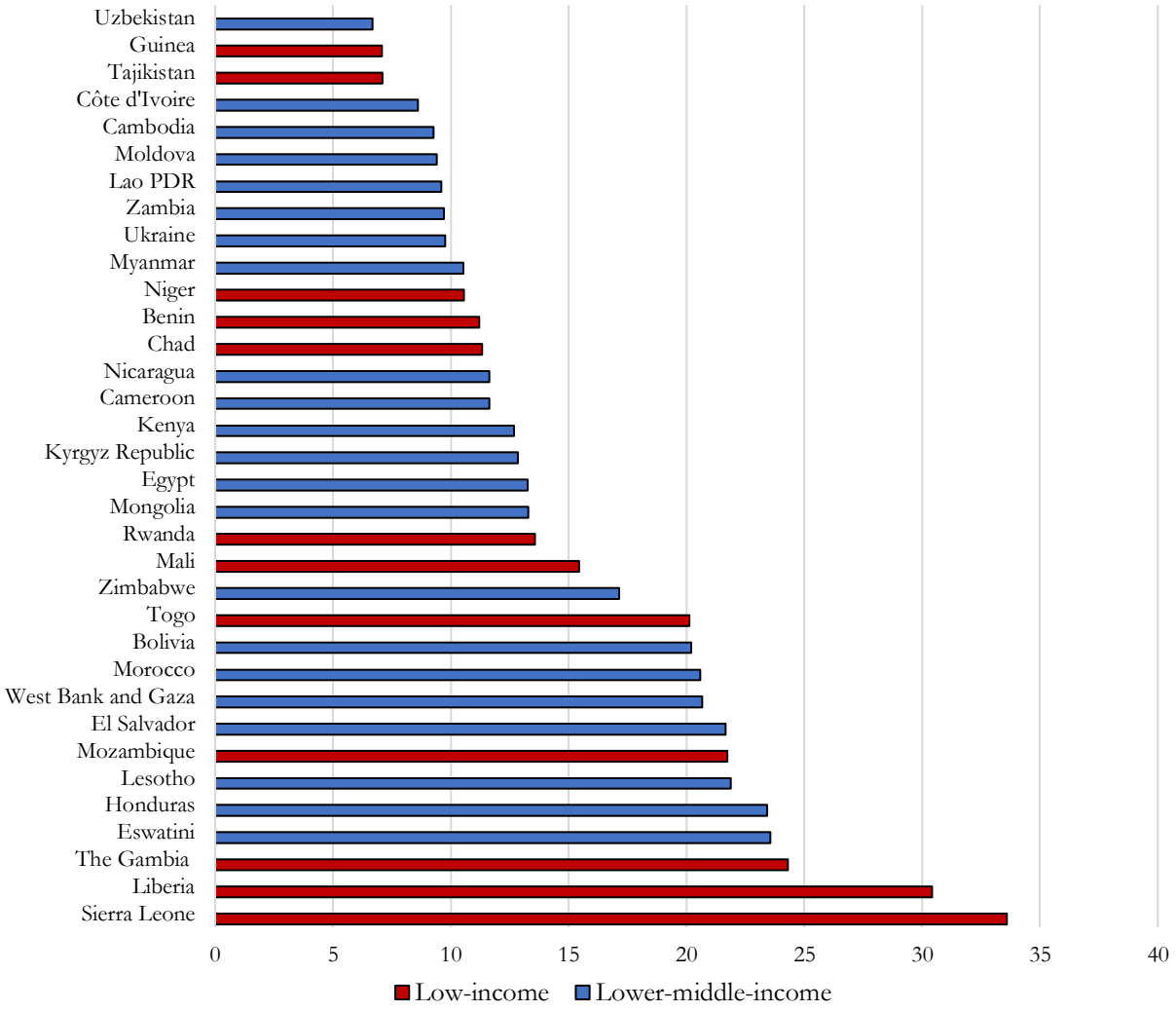
Figure 4: Median Survival Time (adjusted for exporters) based on Fixed Costs by Sector



Note: Data is extracted from the World Bank Enterprise Surveys. Number of Observations: 10,358

Firms in Bolivia and Morocco are the most negatively affected by the hypothetical loss in external financing. Both countries see a reduction of their median survival time by close to one month, going from approximately four months (12 weeks), down to 8 weeks (Figure 5). Guinea, which has the lowest trade exposure of about 8% (and has among the highest proportion of working capital financed through retained earnings, at 91%) maintains a median survival time of six weeks under this scenario. Niger and Lesotho each see a reduction of their median survival time by more than two weeks relative to the baseline scenario in Figure 3.

Figure 5: Mean Survival Time based on Fixed Costs by Country



Note: Data is extracted from the World Bank Enterprise Surveys. Number of Observations: 10,267

Previous analyses have shown that exporters are among the most productive firms in any economy (Wagner 2007). As exports are among the most affected sectors of the economy during economic distress periods that involve health concerns, productive firms are, in effect, subjected to financial strain beyond that of the median firm. The Schumpeter (1934) theory of creative destruction no longer holds. Government policies for retaining jobs and rescuing firms are needed (Baldwin 2020b).

What can governments do?

Previous crises have taught us that when facing economic disasters, governments and central banks need to do as much as they can early on to mitigate the effects. How far a country falls and how fast it recovers depends on the policy response (Reinhart and Reinhart, 2018). The results in this chapter suggest that significant government response is warranted to prevent mass insolvency.

The primary action is to suspend bankruptcy procedures, which often dictate that illiquid firms' assets get transferred to their secured creditors, mostly banks. A number of countries have already taken action. For example, in France bankruptcy law normally gives 45 days from the moment a debtor can no longer pay its debts to filing for bankruptcy. The new ordinance says that the firms will have three months after the end of the state of emergency (i.e. as things now stand, until September 2020) to file for bankruptcy if needed. The German parliament passed a temporary suspension of the firms' obligation to file for bankruptcy. The suspension is valid until September 2020, with an extension to March 2021 – a one-year delay so firms can stand on their feet.

However, these measures are only relevant for countries where the practice of insolvency is established – about half of the countries in this sample. In others, the risk is a surge in foreclosure proceedings both in and outside of courts. Here a response can proceed in two steps.

First, governments, with the support of central banks, need to establish clear moratoriums on loan payments. Some countries from our sample have already taken this step. The Uzbek central bank has suggested that banks defer loan payments for firms in sectors affected by COVID-19. El Salvador adopted a 3-month deferral on specific loans for firms affected by the pandemic (vehicle credit, credit card, and mortgages). Microlenders in Egypt have been instructed to consider delays on a case-by-case basis, of up to 50 percent of the value of monthly installments for affected clients.

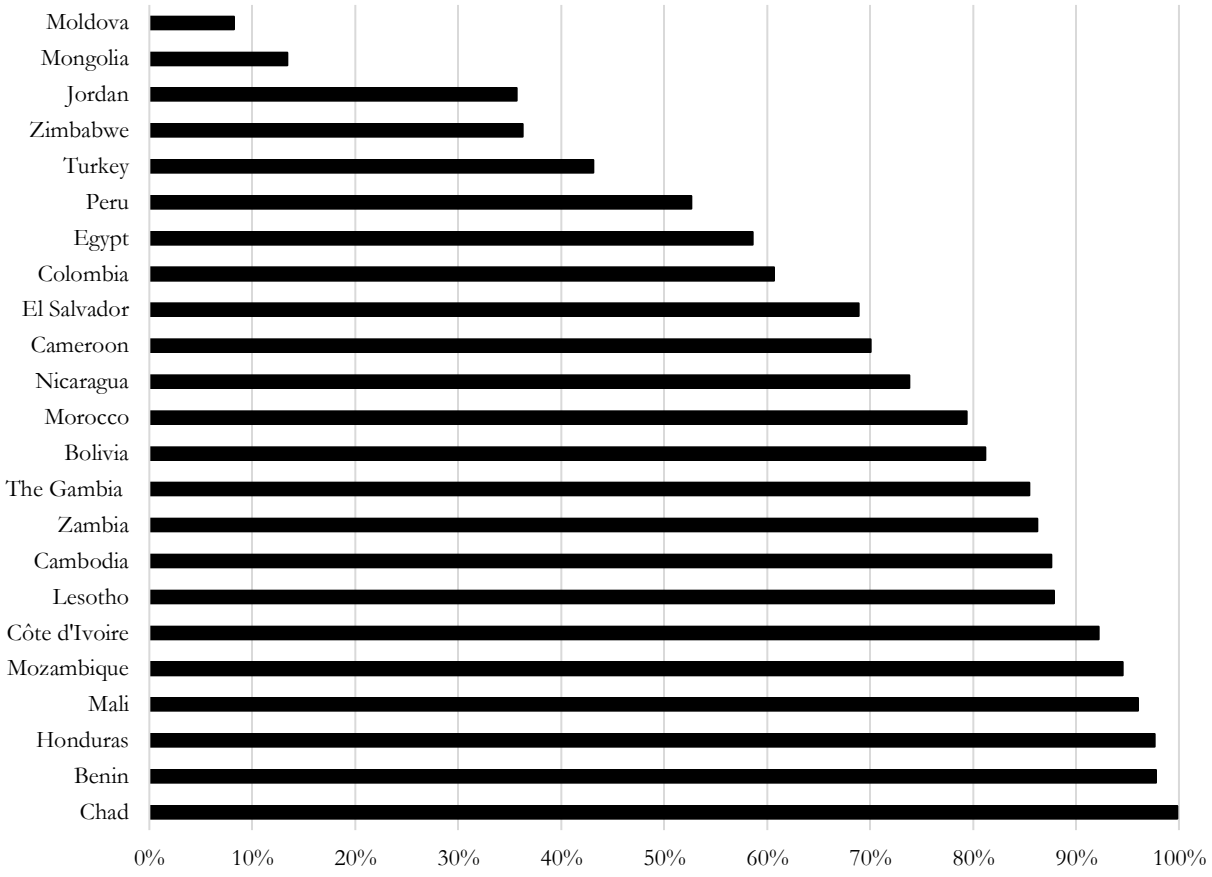
The Central Bank of West African States (BCEAO) has set up a framework for banks and microfinance institutions to accommodate demands from firms with repayment difficulties. The framework recommends renewable 3-month postponement periods for debt service filing, without the need to classify such postponed claims as non-performing.

Second, governments need to establish and incentivize out-of-court workout frameworks. Workouts are non-statutory agreements between a debtor and creditors with the aim of easing the debtor's debt burden so that it can maintain its business activities (World Bank, 2017). Out-of-court workouts have no judicial participation. These informal restructuring processes allow for flexible and confidential alternatives to insolvency and debt enforcement and can save viable firms by giving them much-needed breathing space. Yet, private banks need to be incentivized, especially in countries where foreclosure is the main outcome to illiquidity. One option is tax incentives.

In our sample, as of mid-May 2020, Cambodia is the only country that has issued new guidelines to financial institutions on loan restructuring for borrowers experiencing financial difficulties. These guidelines are limited to priority sectors: tourism, garment, and construction, among others.

Then comes the biggest challenge for policy makers: how to deal with informality. Informality is huge in low- and middle-income countries, accounting for an average of 70% of all workers aged 15-64 in the 23 countries from our sample where the data is available. In Benin, Chad, Côte d'Ivoire, Honduras, Mali, and Mozambique, more than 90% of jobs are in the informal sector (Figure 6).

Figure 6: Share of Informal Jobs (aged 15-64)



Note: Data is extracted from the World Bank's JOIN database using the latest available year for each country.

Finding policy solutions to address informality during crisis is one of the biggest challenges globally for poor and emerging countries. This is because workers in informal businesses are not able to take advantage of the various job retention schemes governments offer. Neither are these workers able to claim temporary unemployment benefits. Furthermore, business owners have no recourse to credit guarantees or small-business grants, also popular as crisis response. India, where over half the GDP is produced by the informal sector, symbolizes this challenge. For these countries, transactions are largely outside the fiscal reach of the government, both in terms of taxes and transfers (Ray et al., 2020).

Some governments are considering programs that provide access to crisis assistance in return for firms turning formal, but research shows that this transformation is unlikely to happen (Bruhn, 2012). Instead, governments should view informal businesses as providing subsistence livelihoods to poorer households. To improve their well-being during the crisis, these are best reached through standard cash transfer programs. Countries with existing cash-transfer programs can immediately broaden eligibility and increase the size of the benefit. India is doing just that (Dhingra, 2020).

Some countries from our sample are working on finding solutions. Côte d'Ivoire has established a fund of 100 billion FCFA (167 million USD) to support its informal sector after the health crisis (modalities are pending as of mid-May 2020). The government of Egypt has set a payment of 500 Egyptian pounds (31 USD) a month for three months for workers in the informal sector.

Conclusions

We use firm-level data to produce estimates of the liquidity available to firms under different scenarios of economic distress. We demonstrate that the variation of this survival time is significant across sectors and countries. In all cases, however, the evidence suggests that urgent government action is needed if firms are to survive this unexpected economic downturn.

Perhaps more importantly, our analysis does not find support for the Schumpeterian view that economic crises cleanse the private sector from inefficient firms. In all our hypothetical scenarios, firms suffer untimely death regardless of age, size and productivity levels. We posit that extreme economic distress caused by a hypothetical pandemic is responsible for this result.

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