Resources, Institutions, and Cultures behind Firm Survival and Growth during COVID-19

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Motivation

- The COVID-19 outbreak, starting in late 2019, was declared by the World Health Organization as a global pandemic on March 11, 2020.
- Since then, the virus has quickly spread around the world and claimed more than 2.6 million lives worldwide as of March 31, 2021 (www.who.int). While the pandemic has extracted huge loss of human lives, the loss in economic terms is also tremendous.
- Hence, the once-in-a-life time COVID-19 shock has attracted unprecedented attention from scholars of all disciplines, and deservedly so.

Motivation

- Scholars have acted quickly to point out that the pandemic has adversely affected firm operating performance and stock returns around the world (Alfaro et al. 2020; Al-Awadhi et al. 2020; Ashraf 2020b; Ramelli and Wagner 2020).
- While this emerging literature on corporate immunity has paid most attention to listed firms in the United States, some studies have examined the effects of firm/country characteristics on listed firms in a cross-country setting (Ding et al. 2021).
- Despite this emerging literature, on a *worldwide* basis, much remains unknown.

Research Question

- How are firm survival and growth affected by firms' access to resources around the world?
- Do a country's institutions and culture affect firm survival and growth during the pandemic?
- If so, how? How do firms behave differently during normal times and during the pandemic times?

Key Findings

- Firm size, state ownership and subsidiary status consistently play a useful role in weathering the negative pandemic shock.
- State ownership and parent-company affiliations seem to better protect firm growth during the pandemic times versus normal times.
- Government COVID policy stringency plays an important role in the relations between firm characteristics and firm survival and growth, and larger firms and firms with parent companies tend to be less harmed by stringent COVID policy.
- Individualistic and uncertainty avoidance culture are much better equipped to weather the negative shock of the pandemic.

Literature Review- Organizational Resources

- During COVID-19, firms that possess valuable resources are more likely to survive and grow (Albuquerque, Koskinen, Yang, & Zhang, 2020; Ahlstrom & Wang, 2021; Ding, Levine, Lin, & Xie, 2021).
- Business models can adjust well to social distancing or remote work are less negatively affected by the pandemic (Pagano et al., 2020). Conversely, firms less equipped to work remotely suffer bigger declines in sales, employment, and stock returns (Bretscher et al., 2020; Papanikolaou & Schmidt, 2020).
- Affiliated firms which have parent companies may benefit from having more cushioning during the pandemic (Bansal et al., 2020). Family-controlled firms, which may be able to dip deeper into family resources during crises, may have more resiliency than nonfamily-controlled firms (Amore, Quarato, & Pelucco, 2021). Firms with hedge-fund ownership may be more immune to the pandemic (Ding et al., 2021).

Literature Review- Organizational Resources

- Firm's financial flexibility—such as high cash holdings, low debt ratio, and high profitability help—minimize firms' exposure from the pandemic-induced stock market shock (Ding et al., 2021; Fahlenbrach et al., 2020)
- Firms with better financial resources tend to weather the pandemic storm better (Carletti et al. 2020; Chundakkadan et al., 2020).

- ***Hypothesis 1***. *The stronger the organizational resources, the higher the likelihood of firm survival and the stronger the growth during COVID-19.*

Literature Review- Organizational Resources

- During normal times, some organizational resources may play an insignificant role, e.g., state ownership has been linked to inefficiency due to soft-budget constraint during normal times (Cull et al., 2015; Megginson et al., 2014).
- During the pandemic, state ownership and its inherent political connections and soft-budget constraint can be a particularly useful organizational resource.

- ***Hypothesis 2.*** *A firm's organizational resources play a more prominent role during the pandemic than during normal times.*

Literature Review-Country Institutions

- Pre-COVID research has shown that democracy and institutional quality affects stock market returns, firm behavior, and performance (Beck et al., 2005; Hooper, Sim, & Uppal, 2009; Xie & Li, 2018).
- Dimensions of governance quality generally viewed as market-supporting institutional features (North, 1990). These dimensions may directly impact a country's responses to COVID, which in turn may affect firm survival and growth.

- ***Hypothesis 3.*** *The higher the governance quality of the formal national institutions in a country, (a) the higher the likelihood of firm survival and (b) the stronger the growth during COVID-19.*

Literature Review-National Culture

- Firms in more individualistic countries suffer smaller stock market declines (Fernandez-Perez et al., 2021). It seems reasonable to suggest that more proactive adaptation and stronger self-reliance—traits of individualism—may contribute to firm survival and growth during COVID.
- Long-term orientation is commonly linked with smaller stock market declines, as long-term oriented investors can better understand the transient nature of the pandemic, and, therefore, are unlikely to overreact (Hofstede, 2020; Zaremba et al., 2021).

- ***Hypothesis 4.*** *The higher the levels of individualism and long-term orientation in a country's national culture, the higher the likelihood of firm survival and the stronger the growth during COVID-19.*

Literature Review-National Culture

- In high uncertainty avoidance countries, individuals and firm managers are more likely to experience higher level of stress, anxiety, and frustration (Dheer et al., 2021). Such sentiments could hurt firm survival and growth by adversely affecting employee morale, reducing worker efforts, and increasing quit rates. High uncertainty avoidance has been linked to larger stock market declines during the pandemic (Ashraf, 2020a; Fernandez-Perez et al., 2021).
- On the other hand, people in high uncertainty avoidance countries are likely more risk averse. As such, they may take extra precautions at work during the pandemic, possibly leading to lower firm closure rate and fewer job losses.

Literature Review-National Culture

- In general, high uncertainty avoidance could lead to better thought-out and fewer impulsive decisions in coping with the pandemic.
- In sum, the impact of uncertainty avoidance on firm survival and growth may be ambiguous, leading to the following competing hypotheses.

- ***Hypothesis 5A***. *The higher the level of uncertainty avoidance, the higher the likelihood of firm survival and growth during the pandemic.*
- ***Hypothesis 5B***. *The higher the level of uncertainty avoidance, the lower the likelihood of firm survival and growth during the pandemic.*

Contribution

- First, we conduct one of the first comprehensive cross-country studies concerning the impact of organizational resources, country-wide institutions, and national cultures on the survival and growth of firms during the pandemic.
- Second, we concentrate on small and medium-sized enterprises (SMEs), whereas most of the aforementioned COVID studies deal with larger (often listed) firms.
- Third, our study covers a significantly longer time period into the pandemic than the aforementioned studies. We capture the medium-term impact of the pandemic.

Data

- The first firm-level dataset is the World Bank Enterprise Surveys (WBES).
- The second firm-level dataset is the World Bank Enterprise Follow-up Surveys on COVID-19 (WBES-COVID).
- We merge WBES-COVID with WBES by the unique firm id to combine all firm-level information.
- Macro data are from WDI, Country governance is from WGI; Culture data are from Hofstede Insights.
- COVID cases and policies are from Center for Systems Science and Engineering at Johns Hopkins University, and Oxford COVID-19 Government Response Tracker, respectively.
- 18,770 firm-observations from 36 countries.

Key Definition

- *Survival*: Dummy variable that equals to one for firms that were never temporarily or permanently closed since the COVID-19 pandemic was declared, and zero otherwise
- *Sales growth*: The percentage of the sales changes compared to the same month one year ago.
- *Employment growth*: The percentage of the permanent full-time workers changes since December 2019.

Summary Statistics by Country

Table 2. Firm Survival, Growth, WGI and Culture's Distribution by Country in Pandemic Times.

Country	Obs.	Survival $_{t}$ %	Sales growth $_{t}$ %	Employment growth $_{t}$ %	Ave. WGI index $_{t-1}$	Individualism $_{t-1}$	Long-term orientation $_{t-1}$	Uncertainty avoidance $_{t-1}$
Albania	369	35.80	-45.87	-8.00	-0.08	20	61	71
Belarus	589	89.43	-15.75	-3.51	-0.45	25	81	95
Bulgaria	765	72.62	-24.38	-5.99	0.28	30	69	85
Chad	147	15.69	-41.54	-4.23	-1.36			
Croatia	397	71.51	-17.32	-0.79	0.46	33	58	80
Cyprus	224	49.03	-36.09	-1.48	0.83			
Czech	500	76.75	-13.40	-3.45	0.93	58	70	74
El Salvador	711	32.12	-56.04	-12.27	-0.29	19	20	94
Estonia	354	83.08	-7.67	-4.15	1.24	60	82	60
Georgia	600	39.18	-47.93	-8.37	0.45	41	38	85
Greece	585	68.28	-28.50	-0.89	0.39	35	45	100
Guatemala	331	29.63	-47.55	-19.63	-0.62	6		98
Guinea	149	53.85	-55.10	-23.36	-0.87			
Honduras	318	15.00	-54.95	-21.46	-0.67	20		50
Hungary	795	88.13	-12.91	-2.95	0.42	80	58	82
Italy	752	41.49	-37.22	-3.02	0.56	76	61	75
Jordan	569	3.65	-52.29	-11.51	-0.10	30	16	65
Latvia	334	90.00	0.61	-9.83	0.86	70	69	63
Lebanon	506	34.10	0.00	0.00	-0.90	40	14	50
Lithuania	352	56.40	-12.55	-5.28	0.96	60	82	65
Malta	241	70.10	-28.25	-4.89	0.87	59	47	96
Moldova	337	47.94	-53.48	-8.88	-0.31	27	71	95

Country	Obs.	Survival $_{t}$ %	Sales growth $_{t}$ %	Employment growth $_{t}$ %	Ave. WGI index $_{t-1}$	Individualism $_{t-1}$	Long-term orientation $_{t-1}$	Uncertainty avoidance $_{t-1}$
Mongolia	347	52.13	-35.83	-15.44	0.01			
Morocco	1082	27.10	-44.98	-5.71	-0.29	46	14	68
Nicaragua	326	70.11	-40.58	-16.95	-0.98			
Niger	148	70.77	-53.68	-6.18	-0.75			
North Macedonia	350	67.25	-27.97	-5.84	-0.03	22	62	87
Poland	1289	79.66	-15.28	-3.67	0.65	60	38	93
Portugal	1062	71.11	-20.55	-1.87	1.07	27	28	99
Romania	795	75.20	-17.90	-5.87	0.24	30	52	90
Russia	1318	35.60	-24.29	0.00	-0.58	39	81	95
Slovak Republic	427	63.30	-15.06	-4.75	0.71	52	77	51
Slovenia	399	64.49	-15.94	-4.09	0.99	27	49	88
Togo	143	72.34	-47.00	-6.53	-0.74			
Zambia	572	64.91	-45.71	-9.87	-0.45	35	30	50
Zimbabwe	587	19.73	-49.33	-5.93	-1.20			

Methodology

$$Y_{ick} = \alpha + \beta\ Organizational\ Resources_{ick} + \gamma\ Country\ Controls_{c} + v_{k} + \varepsilon_{i}$$

- The subscripts *i*, *c*, *k* represent firm, country, and industry.
- *Y*, represents three dependent variables, namely, *Survival*, *Sales growth*, and *Employment growth*.
- ***Organization resources****: Ln (firm size), Ln (firm age), State, Foreign, Subsidiary, Public , Exporter, Finance obstacle*
- ***Country Controls***: *Ln (GDP per capita), COVID policy stringency, COVID spread*.
- We control industry fixed effects, v_k, to absorb unobserved industry-level variables that may affect firm survival and growth during the COVID-19 pandemic.
- To mitigate heteroscedasticity problems, we cluster standard errors at the country-industry level.

Results

Table 4. The Effects of Organizational Resources on Firm Survival and Growth during Pandemic Times.

	Survival $_t$	Sales growth $_t$	Employment growth $_t$
	(1)	(2)	(3)
Ln (firm size)$_{t-1}$	0.0312***	3.1278***	0.5234**
	(5.40)	(5.81)	(2.47)
Ln (firm age)$_{t-1}$	0.0252**	-1.0980*	0.1601
	(2.57)	(-1.70)	(0.37)
State $_{t-1}$	0.0334	6.5769***	4.3241***
	(0.90)	(3.97)	(3.57)
Foreign $_{t-1}$	-0.0170	-0.3435	0.2141
	(-0.97)	(-0.28)	(0.31)
Subsidiary $_{t-1}$	0.0408**	2.6517**	1.4571**
	(2.32)	(2.47)	(2.09)
Public $_{t-1}$	0.0343	0.2907	-0.3163
	(1.56)	(0.30)	(-0.47)
Exporter $_{t-1}$	-0.0070	-1.5788*	0.5836
	(-0.43)	(-1.75)	(1.08)
Finance obstacle $_{t-1}$	-0.0181***	-1.2419***	-0.2898
	(-3.34)	(-4.34)	(-1.54)
Control variables:			
COVID policy stringency $_t$	-0.0074***	-0.3386***	-0.0358
	(-9.11)	(-8.35)	(-1.55)
COVID spread $_t$	-0.0047	0.1630	0.0998
	(-0.89)	(0.48)	(0.66)
Ln (GDP per capita)$_{t-1}$	0.0769***	8.8320***	2.5024***
	(3.84)	(10.59)	(5.56)
Industry fixed effects	YES	YES	YES
Observations	12891	11929	10499
Adj. R-squared	0.18	0.23	0.03

Effects of Firm Characteristics

Several firm characteristics play as important role in firm survival and growth during the pandemic.

- Larger firms are much less likely to face closure. Large firms are also more likely to grow their revenues and employment during the pandemic.
- Firms with less financial obstacles are more likely to survive or grow their revenues.
- State ownership is associated with higher sales and employment growth rates during the pandemic.
- Firms with parent companies are significantly more likely to survive and grow during the pandemic.

Effects of Country Characteristics

- *Ln (GDP per capita)* is and positively related to firm survival and growth. Consistent with Ding et al. (2021), the results suggest that firms from relatively high-income countries are much more likely to survive the pandemic and even thrive.
- Moreover, the association of COVID policy stringency with firm closure and revenue loss are both statistically and economically significant.

Results

Table 5. The Effects of Organizational Resources on Firm Survival and Growth: Public versus Private Firms.

	Public Firms			Private Firms		
	Survival $_t$	Sales growth $_t$	Employment growth $_t$	Survival $_t$	Sales growth $_t$	Employment growth $_t$
	(1)	(2)	(3)	(4)	(5)	(6)
Ln (firm size)$_{t-1}$	0.0297*	3.5227***	0.5327	0.0327***	3.1697***	0.5552**
	(1.72)	(3.28)	(0.91)	(5.45)	(5.89)	(2.47)
Ln (firm age)$_{t-1}$	0.0413*	-3.1588*	-0.2742	0.0245**	-0.9126	0.2340
	(1.89)	(-1.81)	(-0.30)	(2.42)	(-1.44)	(0.52)
State $_{t-1}$	-0.0044	7.9032***	3.0933**	-0.0118	6.6542**	6.3565***
	(-0.09)	(3.83)	(2.01)	(-0.21)	(2.27)	(5.08)
Foreign $_{t-1}$	0.0069	-0.9630	0.7626	-0.0219	-0.4995	0.0535
	(0.15)	(-0.40)	(0.48)	(-1.24)	(-0.35)	(0.07)
Subsidiary $_{t-1}$	0.0524	5.7328***	4.1467***	0.0375*	2.2089*	1.0765
	(1.61)	(2.73)	(3.28)	(1.95)	(1.94)	(1.51)
Exporter $_{t-1}$	0.0113	-2.0531	-0.3248	-0.0069	-1.4894	0.6783
	(0.20)	(-1.04)	(-0.24)	(-0.44)	(-1.56)	(1.18)
Finance obstacle $_{t-1}$	-0.0141	-0.6567	-0.0453	-0.0182***	-1.2765***	-0.3071*
	(-1.29)	(-1.01)	(-0.08)	(-3.17)	(-4.18)	(-1.66)
Control variables:						
COVID policy stringency $_t$	-0.0067***	-0.2844***	-0.0443	-0.0074***	-0.3417***	-0.0355
	(-6.64)	(-4.59)	(-1.17)	(-8.94)	(-8.38)	(-1.48)
COVID spread $_t$	0.0145*	-0.0702	0.2265	-0.0053	0.2399	0.1014
	(1.67)	(-0.15)	(0.96)	(-1.02)	(0.65)	(0.65)
Ln (GDP per capita)$_{t-1}$	0.0171	7.0255***	2.1721**	0.0809***	8.9456***	2.5255***
	(0.70)	(5.45)	(2.60)	(3.92)	(10.34)	(5.50)
Industry fixed effects	YES	YES	YES	YES	YES	YES
Observations	890	849	767	12001	11080	9732
Adj. R-squared	0.20	0.24	0.05	0.18	0.22	0.03

The effects of firm/country characteristics during normal versus pandemic times

- An advantage of our study over the extant literature on corporate immunity is that we employ the pre-pandemic WBES with the WBES-COVID surveys.
- We are able to combine both datasets via a firm's unique identifier. The combined dataset contains firm-level information for both the pre-pandemic period ("normal times") and the pandemic period ("pandemic times").
- This allows us to examine if, what, and how firm/country characteristics affect firm growth differently in normal versus pandemic times.

Results

Table 6. The Effects of Organizational Resources on Sales and Employment Growth: Pandemic versus Normal Times

	Sales growth			Employment growth		
	Pandemic	Normal	Coeff Diff	Pandemic	Normal	Coeff Diff
	(1)	(2)	(3)=(1)-(2)	(4)	(5)	(6)=(4)-(5)
Ln (firm size)$_{t-1}$	3.1278***	1.0827***	2.0451***	0.5234**	1.1785***	-0.6551***
	(5.81)	(4.71)	(3.49)	(2.47)	(7.95)	(-2.53)
Ln (firm age)$_{t-1}$	-1.0980*	-4.5082***	3.4102***	0.1601	-3.4317***	3.5918***
	(-1.70)	(-11.43)	(4.51)	(0.37)	(-14.40)	(7.27)
State $_{t-1}$	6.5769***	2.3038	4.2731*	4.3241***	-1.9807**	6.3048***
	(3.97)	(1.05)	(1.55)	(3.57)	(-2.08)	(4.09)
Foreign $_{t-1}$	-0.3435	0.3119	-0.6554	0.2141	-0.7795**	0.9936*
	(-0.28)	(0.49)	(-0.47)	(0.31)	(-2.22)	(1.28)
Subsidiary $_{t-1}$	2.6517**	-0.9311	3.5828***	1.4571**	-0.1105	1.5676**
	(2.47)	(-1.53)	(2.90)	(2.09)	(-0.27)	(1.94)
Public $_{t-1}$	0.2907	-1.7378**	2.0285**	-0.3163	-0.6793	0.3630
	(0.30)	(-2.36)	(1.67)	(-0.47)	(-1.47)	(0.44)
Exporter $_{t-1}$	-1.5788*	0.7032	-2.2820**	0.5836	0.2390	0.3446
	(-1.75)	(1.39)	(-2.21)	(1.08)	(0.83)	(0.56)
Finance obstacle $_{t-1}$	-1.2419***	-0.7897***	-0.4522	-0.2898	-0.4789***	0.1891
	(-4.34)	(-3.59)	(-1.25)	(-1.54)	(-4.41)	(0.87)
Control variables:						
COVID policy stringency $_{t}$	-0.3386***			-0.0358		
	(-8.35)			(-1.55)		
COVID spread $_{t}$	0.1630			0.0998		
	(0.48)			(0.66)		
Ln (GDP per capita)$_{t-1}$	8.8320***	0.2877	8.5443***	2.5024***	0.1959	2.3065***
	(10.59)	(0.64)	(9.02)	(5.56)	(0.69)	(4.33)
Industry fixed effects	YES	YES		YES	YES	
Observations	11929	14387		10499	16476	
Adj. R-squared	0.23	0.02		0.03	0.04	

The effects of country culture and governance

- COVID-19 again highlights the importance of country-level formal and informal institutions in handling the crisis.
- We investigate how a country's culture (i.e., informal institutions) and governance (i.e., formal institutions) affect firms' survival and growth during the pandemic.
- During the pandemic, some of the formal institutions would stop to work due to the stay-at-home restrictions, among others. Then informal institutions would loom large to shape organizational choices (North, 1990; Peng, 2003).

The effects of governance quality

We employ the WGI to assess the effects of country governance quality

All six dimensions of a country's governance quality, namely, corruption control, government effectiveness, political stability, regulatory quality, rule of law, and voice and accountability.

Following standard practice, we also use the average value of the above six measures, Average WGI index, to proxy a country's overall governance quality (Kaufman, Kraay and Mastruzzi 2011).

Results

Table 7. The Effects of Country Institutions on Firm Survival and Growth During Pandemic Times.

	Survival $_t$	Sales growth $_t$	Employment growth $_t$
	(1)	(2)	(3)
	Panel A: Control of corruption		
Control of corruption $_{t-1}$	0.0059	-3.3423*	-0.1893
	(0.13)	(-1.89)	(-0.20)
	Panel B: Government effectiveness		
Government effectiveness $_{t-1}$	-0.0183	-1.4819	-0.9787
	(-0.32)	(-0.60)	(-0.82)
	Panel C: Political stability		
Political stability $_{t-1}$	0.1439***	-0.5091	-1.9617
	(4.87)	(-0.20)	(-1.20)
	Panel D: Regulatory quality		
Regulatory quality $_{t-1}$	0.0521	-3.6425**	-3.1329***
	(1.60)	(-2.19)	(-2.75)
	Panel E: Rule of law		
Rule of law $_{t-1}$	0.0147	-1.5839	0.2716
	(0.31)	(-0.87)	(0.29)
	Panel F: Voice and accountability		
Voice and accountability $_{t-1}$	0.0804***	-3.1844**	-1.7126**
	(3.18)	(-2.60)	(-1.97)
	Panel G: Average WGI index		
Average WGI index $_{t-1}$	0.0809**	-3.7266*	-1.9952
	(1.98)	(-1.78)	(-1.40)
Firm controls	YES	YES	YES
Industry fixed effects	YES	YES	YES
Country controls	YES	YES	YES

The effects of country culture

- We focus on three of Hofstede's (2001) six culture dimensions: individualism, uncertainty avoidance, and long-term orientation.
- These three dimensions have been found to be more impactful than other culture dimensions on firm behaviors and outcomes during the COVID-19 pandemic (Ashraf, 2020; Fernandez-Perez et al. 2020; Gorodnichenko and Roland, 2020; Kaczmarek et al. 2020; Zaremba et al. 2021).
- We add the three culture dimension measures to our baseline model (Eq. (1)), rerun the regressions, and report the results in Table 8.

Results

Table 8. The Effects of Culture on Firm Survival and Growth During Pandemic Times.

	Survival $_t$	Sales growth $_t$	Employment growth $_t$
	(1)	(2)	(3)
Individualism $_{t-1}$	0.0030**	0.0989	0.0059
	(2.19)	(1.65)	(0.29)
Long-term orientation $_{t-1}$	0.0002	0.1013**	-0.0312*
	(0.20)	(2.19)	(-1.80)
Uncertainty avoidance $_{t-1}$	0.0058***	0.1282	0.0242
	(4.86)	(1.47)	(0.93)
COVID policy stringency $_t$	-0.0090***	-0.3995***	-0.0384
	(-7.63)	(-5.95)	(-1.37)
COVID spread $_t$	0.0006	-0.2052	0.1116
	(0.11)	(-0.31)	(0.68)
Ln (GDP per capita)$_{t-1}$	0.0022	7.9187***	2.4860***
	(0.07)	(5.47)	(5.61)
Firm controls	YES	YES	YES
Industry fixed effects	YES	YES	YES
Observations	11157	10273	8921
Adj. R-squared	0.18	0.23	0.02

Conclusions

- Firm size, state ownership and subsidiary status consistently play a useful role in weathering the negative pandemic shock.
- State ownership and parent-company affiliations seem to better protect firm growth during the pandemic times versus normal times.
- Government COVID policy stringency plays an important role in the relations between firm characteristics and firm survival and growth, and larger firms and firms with parent companies tend to be less harmed by stringent COVID policy.
- Individualistic and uncertainty avoidance culture are much better equipped to weather the negative shock of the pandemic.
- In conclusion, organizational immunity during COVID-19 is likely driven by organizational resources, country institutions, and national culture—with various combinations.