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COVID-19 and finance: Agendas for future research

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ABSTRACT

This paper highlights the enormous economic and social impact of COVID-19 with respect to articles that have either prognosticated such a large-scale event, and its economic consequences, or have assessed the impacts of other epidemics and pandemics. A consideration of possible impacts of COVID-19 on financial markets and institutions, either directly or indirectly, is briefly outlined by drawing on a variety of literatures. A consideration of the characteristics of COVID-19, along with what research suggests have been the impacts of other past events that in some ways roughly parallel COVID-19, points toward avenues of future investigation.

1. Introduction

We are all now tragically familiar with the ongoing enormous costs in lives of the COVID-19 pandemic. We are all additionally fearful of the eventual economic impact of the crisis, including the impact on financial markets. At the time of writing this article this pandemic is ongoing, with the eventual scale of the disaster still unknown. However, it is reasonable to expect a great deal of interest in the very near future on the role of pandemics in finance.

This brief article is anticipatory, sketching the scant research, yet, on pandemics and finance, as well as suggesting partial parallels with other more-explored areas of financial economics research. Recent academic articles, along with assessing the impacts of past epidemics and pandemics, also eerily prognosticate large-scale events such as COVID-19, and its economic consequences. A consideration of possible impacts of COVID-19 on financial markets and institutions, either directly or indirectly, is briefly outlined by drawing on a variety of literatures. Examining what research suggests have been the impacts of past events that in some ways roughly parallel COVID-19, alongside a consideration of how COVID-19 may be different, suggests avenues of future investigation

2. Economic impact of pandemics

An obvious way that pandemics can impact financial systems is through their enormous economic costs. There have been a number of articles that address the costs of pandemics, both in terms of the costs of past pandemics such as the HIV/AIDS crisis or estimates of the cost of future pandemics. Articles on these costs often regard ex post the costs of pandemics and epidemics. For instance, Haacker (2004) discusses the economic costs of the HIV/AIDS pandemic, while Santaeulalia-Llopis (2008) focuses on the

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impact of the HIV/AIDS pandemic on development. Yach, Stuckler, and Brownell (2006) discusses the costs of global growth of obesity and diabetes.

Other papers, many much more closely related to the COVID-19 crisis, have warned us to anticipate the economic costs of possible future pandemics and epidemics. Particularly prescient is Bloom, Cadarette, and Sevilla (2018). They closely delineate the economic concerns that are now in the forefront with COVID-19: costs to the health system, both public and private, of medical treatment of the infected and of outbreak control; the strain to health systems of being unable to concomitantly deal with more routine health issues during outbreaks; loss to employment productivity; social distancing disrupting economic activity; impact of tourism; impact on foreign direct investment.

This concern is echoed by Fan, Jamison, and Summers (2018). They note very recently "an unmet need for greater investment in preparedness against major epidemics and pandemics." They estimate the expected annual losses from pandemic risk to be annually approximately 500 billion US dollars, or 0.6% of global income. In light of the costs of COVID-19, this seemingly large sum now seems greatly underestimated.[1] Other works that highlight the need for economic risk management vis-à-vis the potential likelihood of future pandemics include Bloom and Canning (2004); Lewis (2001); Madhav et al. (2017); Tam, Khan, and Legido-Quigley (2016); Yach, Stuckler, and Brownell (2006) and many others.

We should also note articles that observe the number of "close calls," in which contagious disease outbreaks have occurred that were contained to a level far less than their potentiality. Particularly interesting is Thomas (2018), who describes the recent lethal outbreak of the highly contagious respiratory disease Nipah in the Kerala area of India. In this case, a larger global health issue was averted by a remarkably fast response from public health workers.[2] Particularly striking is a report from Global Preparedness Monitoring Board of the World Health Organization Global-Preparedness-Monitoring-Board (2019) as recent as September 2019, that asserts directly that the world is imminent danger of a global pandemic and yet little or no preparation is being undertaken. According to Global-Preparedness-Monitoring-Board (2019), during 2011–2018, the World Health Organization tracked 1,483 epidemic events in 172 countries.

3. Impact of COVID-19 on banking and insurance

Banks of course by their nature are vulnerable in times of economic downturns, because of the likelihood of nonperforming loans and the possibility in extreme cases of bank runs. To this point, Leoni (2013) find the spread of HIV in developing countries is associated with large increases in deposit turnover. They attribute this to the need to pay for individual treatments forcing large-scale withdrawals of deposits.

Lagoarde-Segot and Leoni (2013) develop a theoretical model that shows that the likelihood of a collapse of the banking industry of a developing country increases, as the joint prevalence of large pandemics increases. Much of the group lending of microfinance institutions and banks' lending to the poor will be pressured during epidemics because all members of the group will be pressured by the aggregate shock (Skoufias, 2003). Rural financial institutions will be subject to bank runs during floods or crop failures (Binswanger and Rosenzweig, 1986). It remains to be seen how COVID-19 will change the practices of financial institutions.

More generally, how long will banks, all around the world, maintain a more conservative lending policy post COVID-19? Have there been studies on bank reactions to macroeconomic shocks (Bongini et al., 2019) that are of the magnitude of COVID-19?

Literature has considered whether "black swans" have a global impact (Wang et al., 2019). But COVID-19 is a globally impacting phenomenon. There is also the question of whether events of the magnitude of COVID-19 are insurable. Another question is whether COVID-19 should be regarded as a black swan, or an unforeseeable event with extreme consequences? The answer seems to be "no." When you have a host of academic articles, discussed above, suggesting the possibility of pandemics and predicting enormous economic losses as a result of pandemics; as well as numerous real-world epidemics and health crises that could have become global pandemics, it should be regarded as something other than totally unexpected.

Clearly pandemics such as COVID-19 are foreseeable; and so it is highly beneficial such events are insurable. Tamura and Sawada (2009) discuss the possibility of such insurance in the context of avian flu epidemics in Vietnam. Of course, such insurance, at least at the private level, is generally only available to those that are financially included. The bottom of the pyramid will be likely left out. Sawada and Shimizutani (2008) note that in the aftermath of severe crises, those with personal collateral readily recover financially, while those without means of collateral do not.

4. Impact of COVID-19 on governments and publics

Will COVID-19 lead to a long-term change in spending behaviors around the world? Haacker (2004), for instance, notes a permanent change in consumer behavior stemming from the HIV/AIDs epidemic. Obviously, a world-wide downturn in spending and domestic demands will present an enormous challenge for the global economy.

Is there then a role for governments to insure against the financial impacts of pandemics? A strong role for the public sector is indicated in cases where the private sector is unwilling to insure (see how many pandemic exclusion clauses are in the fine print of

[1] They also point out that this estimate falls within the Intergovernmental Panel on Climate Change's estimates of the range of losses from global warming (0.2–2% of global income).

[2] This was not the only outbreak of Nipah. See Bloom, Cadarette, and Sevilla (2018) for a listing of other recent contagious disease outbreaks, including Middle East Respiratory Syndrome corona virus (MERS), Zika, Severe Acute Respiratory Syndrome (SARS), Rift Valley fever, and others.

insurance contracts). There may be less concern for the public sector crowding out private insurance (see Cummins, 2006). But is the problem too big?[3]

Cavallo et al. (2013) find that only extremely large disasters have a negative effect on output in both the short and the long runs. However, they note that their results stem from a few cases where radical political revolutions followed the disasters. How much of COVID-19's lasting effects on economic output will be driven by a catalyzing of political change?

Is COVID-19 different enough from other natural disasters to be a special case? Or should we expect as in other cases of disasters, economic output will return to normal? Certainly, there is the potential for COVID-19 to impact the institutional nature of healthcare and public support; impact attitudes toward governments; and impact demands for effective public action. How will states manage the potentiality of natural disasters (Ghesquiere and Mahul, 2010)? It is likely that increasingly control and preparations for pandemics will be seen as a public good (Kölle, 2015; Yamey, Ogbuoji, and McDade, 2018).

Another question is how will COVID-19 impact social trust? The fact that pandemics such as COVID-19 affect differently differing portions of the economic spectrum and different ages will have ramifications. Noy (2009) observes that developing countries suffer more from natural disasters. As noted by Bjørnskov (2008), social fractionalization undermines social trust. Less social trust leads to additional transaction costs throughout the financial system (Fukuyama, 1995). What will be the impacts on popular support for social and economic globalization?

5. Impact of pandemics on financial markets

While there is limited prior literature on how epidemics, let alone pandemics, impact financial markets, imperfect parallels can be drawn from other forms of natural disasters. Markets react to natural disaster such as earthquakes and volcanos; as well as air disasters; and more recently acts of terrorism. While, for instance, the COVID-19 has been devastating to airline industry around the world, with respect to air crash disasters, Bosch, Eckard, and Singal (1998) suggest some airlines, post air crashes, will benefit from customers shifting airlines. This is unlikely to occur with COVID-19 which is depressing air travel globally amongst all airlines. Certainly, COVID-19 will impact some industries more than others. But COVID-19 also will also enormously affect domestic demands generally across almost every country.

The degree of overlap of other disasters providing insight into the potential impact of COVID-19 on the financial markets has much to do with levels of spillover associated with other previous events. As COVID-19's impact will blanket the globe, it is useful to compare the COVID-19 situation to past events that, although more localized, have led to spillovers that have established general impacts. Research on the impact of terrorist events on the financial markets might provide some sort of parallel, as terrorist events, while localized in their initial manifestation are by their nature designed to create a widespread change in public mood.

Karolyi (2006) discusses the "spillover effects" of terrorist attacks and whether research on this topic suggests a broad-based or "systematic" contribution of potential terrorism to overall risk. His conclusion is that the evidence is quite limited, but there have been few tests that have examined volatility or beta risks with asset-pricing models. Some papers suggest that the downturn in markets with respect to terrorist events is rather mild, with downturns only very short (Brounen and Derwall, 2010). Choudhry (2005) investigated, post September 11, a small number of US firms in a variety of different industries to see if this terrorist event affected a shift in market betas, with mixed findings. Hon, Strauss, and Yong (2004) find that the September 11 terrorist attacks led to an increase in correlations amongst global markets, with this effect varying by global region. A number of other papers present a mixed picture of how much terrorist acts have spilled over into changes in the nature of financial markets (e.g., Chesney, Reshetar, and Karaman, 2011; Choudhry, 2005; Corbet, Gurdgiev, and Meegan, 2018; Nikkinen and Vähämaa, 2010).[4]

COVID-19 is perhaps a unique outcome in terms of its global scope as a pandemic, at least since the influenza pandemic of 1918. But, as discussed above, a disaster on the scale of COVID-19 was not an extremely unlikely possibility. It is interesting to compare the COVID-19 outcome (thus far) to an imagined nuclear conflict. Nuclear conflict, unless one considers dubiously a very localized impact, is not survivable by anyone on Earth. Consequently, a threat of nuclear war, apart from signaling economically impacting international tensions, is widely seen as having almost no impact on market prices. The reason seems to be not because of its low probability, but because in the event of a non-survivable event other outcomes are irrelevant.

According to Epstein (2019) (following US Social Security Administration data), the probability of a 35 year-old man in the US dying within the next year is under 0.2%. For a 35-year-old woman, chances are about 0.1%. These probabilities increase only very gradually with age. Even a 50-year old man runs a mere 0.5% risk, a 50-year old woman just 0.3%. In comparison, what are the odds that there might be a global nuclear conflagration in the next year? The answer might be that we don't have enough data to form such an estimation. Nuclear wars, seen as probability tail events, are seen as not survivable by most people. In other words, the answer to a question of "how will nuclear war affect my 401k?", is that it doesn't matter because, absent life on earth, a defined contribution plan has no utility. COVID-19 on the other hand is creating economic destruction on an unprecedented scale (witness the $2.2 trillion bailout package in the US versus the $750 billion package during the global financial crisis). But, unlike global nuclear conflict, COVID-19 is survivable and the value of financial markets will remain extremely relevant. It seems very likely that the next time there is a sudden appearance of a contagious respiratory illness, there will concomitantly be a substantial global financial market reaction. Certainly COVID-19 will shape future investigations of tail risk and financial markets (e.g., Kwon, 2019).

[3] See Michel-Kerjan (2010) for a critical analysis of the US federal flood insurance program.

[4] See also cyberattacks (e.g., Caporale et al. (2020).

6. Impact of COVID-19 on financing and costs of capital

An issue that will likely be considered by researchers is how COVID-19 will potentially permanently change firm financing. As discussed above, COVID-19 highlights the possibility, or indeed the likelihood, of contagious disease events that will have tremendous negative impacts on global domestic demand. This is a game changer from financial markets neglecting to price the potentiality of horrific tail-risk events that would not be survivable anyway. COVID-19 and others like it are globally damaging to the world economy to a rarely precedented extent. But they are survivable. We should expect now that there will be a long-term impact on firm financing and firm costs of capital.

Elnahas, Kim, and Kim (2018) find that firms located in more disaster-prone areas adapt to be less levered. Consistent with a trade-off view of capital structure (Kraus and Litzenberger, 1973), they attribute this finding to firms being impacted in disastrous areas with respect to operating disruption, increased costs of capital, and tightened financial flexibility. While firms are often seen as persistent in their capital structure policy, they often respond to macroeconomic shocks (Huang, Gao, and Chen, 2018).

COVID-19 clearly suggests a previous underpricing of equity risk. Will this lead to firms adopting less leverage? Will there be a very long-term shifting in costs of equity? Lee and McKibbin (2004) find a 200-basis point increase in the country risk premium for China and Hong Kong following SARS. While the impact of country-risk premiums on costs of equity will vary with firm exposures to various markets, certainly, an increase of two percent points in a country risk premium (likely much higher for COVID-19) would lead to a significant increase in the cost of equity capital, with a concomitant underfunding of global pensions. But the findings of increased country risk of Lee and McKibbin (2004) for China and Hong Kong are based on China and Hong Kong being particular risk areas for SARS. With a genuine pandemic like COVID-19 however the exposure is global rather than in select countries.

7. Conclusions

The COVID-19 crisis is informing investors, policy makers and the public at large that natural disasters can inflict economic damage on a previously unprecedented scale. Unlike events such as global nuclear war, which is not survivable and so of no relevant cost, or events such as climate change that are much slower moving, or localized disasters that create spillover and market reactions, the COVID-19 pandemic is causing a direct global destructive economic impact that is present in every area of the globe. All parties must now face what has already been obvious to many that such phenomenon are imminently possible and indeed likely. How will this effect costs of capital; pension planning; insurance; the role of governments protecting financial systems; social trust and concomitant transaction costs; and political stability in societies? No doubt these questions and many others will be grappled with by financial academics for many years to come.

Supplementary materials

Supplementary material associated with this article can be found, in the online version, at doi:10.1016/j.frl.2020.101512.

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