

Naudé, Wim

Working Paper

Entrepreneurial Recovery from COVID-19: Decentralization, Democratization, Demand, Distribution, and Demography

IZA Discussion Papers, No. 13436

Provided in Cooperation with:

IZA – Institute of Labor Economics

Suggested Citation: Naudé, Wim (2020) : Entrepreneurial Recovery from COVID-19: Decentralization, Democratization, Demand, Distribution, and Demography, IZA Discussion Papers, No. 13436, Institute of Labor Economics (IZA), Bonn

This Version is available at:

<https://hdl.handle.net/10419/223878>

Standard-Nutzungsbedingungen:

Die Dokumente auf EconStor dürfen zu eigenen wissenschaftlichen Zwecken und zum Privatgebrauch gespeichert und kopiert werden.

Sie dürfen die Dokumente nicht für öffentliche oder kommerzielle Zwecke vervielfältigen, öffentlich ausstellen, öffentlich zugänglich machen, vertreiben oder anderweitig nutzen.

Sofern die Verfasser die Dokumente unter Open-Content-Lizenzen (insbesondere CC-Lizenzen) zur Verfügung gestellt haben sollten, gelten abweichend von diesen Nutzungsbedingungen die in der dort genannten Lizenz gewährten Nutzungsrechte.

Terms of use:

Documents in EconStor may be saved and copied for your personal and scholarly purposes.

You are not to copy documents for public or commercial purposes, to exhibit the documents publicly, to make them publicly available on the internet, or to distribute or otherwise use the documents in public.

If the documents have been made available under an Open Content Licence (especially Creative Commons Licences), you may exercise further usage rights as specified in the indicated licence.

DISCUSSION PAPER SERIES

IZA DP No. 13436

**Entrepreneurial Recovery from COVID-19:
Decentralization, Democratization,
Demand, Distribution, and Demography**

Wim Naudé

JULY 2020

DISCUSSION PAPER SERIES

IZA DP No. 13436

Entrepreneurial Recovery from COVID-19: Decentralization, Democratization, Demand, Distribution, and Demography

Wim Naudé

RWTH Aachen University, IZA, Maastricht School of Management and University of Leiden

JULY 2020

Any opinions expressed in this paper are those of the author(s) and not those of IZA. Research published in this series may include views on policy, but IZA takes no institutional policy positions. The IZA research network is committed to the IZA Guiding Principles of Research Integrity.

The IZA Institute of Labor Economics is an independent economic research institute that conducts research in labor economics and offers evidence-based policy advice on labor market issues. Supported by the Deutsche Post Foundation, IZA runs the world's largest network of economists, whose research aims to provide answers to the global labor market challenges of our time. Our key objective is to build bridges between academic research, policymakers and society.

IZA Discussion Papers often represent preliminary work and are circulated to encourage discussion. Citation of such a paper should account for its provisional character. A revised version may be available directly from the author.

ISSN: 2365-9793

IZA – Institute of Labor Economics

Schaumburg-Lippe-Straße 5–9
53113 Bonn, Germany

Phone: +49-228-3894-0
Email: publications@iza.org

www.iza.org

ABSTRACT

Entrepreneurial Recovery from COVID-19: Decentralization, Democratization, Demand, Distribution, and Demography

Entrepreneurship, as reflected in the start-up of new firms, the growth and market exit of existing firms, and the flow of venture capital, has been severely curtailed by the lockdown and social distancing measures taken by governments around the world in the fight against COVID-19. This paper, after documenting preliminary evidence on these declines, argues that there is a strong possibility that the unintended damage to entrepreneurship, innovation and growth could be persistent. This requires that short-term economic and business rescue packages be complemented by measures aimed at the longer-term, and that these be based on at least five principles. These 5 principles (5Ds) refer to decentralization, democratization, demand, distribution and demography.

JEL Classification: I18, L26, L53, M13

Keywords: entrepreneurship, innovation, COVID-19, public policy, economic growth, development

Corresponding author:

Wim Naudé
Technology and Innovation Management (TIM)
RWTH Aachen University
Kackertstraße 7
52072 Aachen
Germany
E-mail: naude@time.rwth-aachen.de

1 Introduction

Non-pharmaceutical interventions (NPIs) against the SARS-CoV-2 virus that causes COVID-19 disease, such as lockdowns and social distancing, have caused sharp, unprecedented declines in global economic activity, including in trade, investment and production (Brown & Rocha, 2020). The world economy has been forecast by the IMF to shrink by 4,9 percent in 2020, amounting to an estimated loss of around US\$ 12 trillion (IMF, 2020), while the OECD forecast an even worse, 6 percent, shrinkage (Boone, 2020).

Entrepreneurship, as reflected in the start-up of new firms and the growth of existing firms, particularly SMEs¹, have been severely curtailed. For example, Sedlacek & Sterk (2020) present early evidence from the USA, comparing COVID-19 deaths per state with high-propensity business applications² (a measure of start-ups) between 2019 and 2020, finding significant declines and a strong significant association between the decline in business applications and COVID-19 deaths. For instance, in New York state, business applications declined by 50 percent in March-April 2020 compared to the same period in 2019. Risk-finance for innovative start-ups, as reflected in the volumes of venture capital funding, is set for a substantial drop: Gauthier et al. (2020), based on China’s experience, conclude that venture capital funding in 2020 will decline by \$28 billion.

The prospects for firm survival across the world have also noticeably worsened: a survey of 5,800 USA firms by Bartik et al. (2020) found that 75 percent of these firms only had two months liquidity at hand. Djankov (2020) calculated that in Europe, the “the median firm runs out of liquidity in two to five months”. In the Netherlands, a survey³ found that 56 percent of SMEs expect to exit from the market if the crisis continued for more than 6 months. And taking World Bank data covering 15,000 firms in 34 developing countries, Bosio et al. (2020) estimate that the median developing country firm could, in the absence of any financial assistance, survive only between 1.5 and 4.5 months. So far, data on actual firm exits tend to confirm the precarious position most SMEs are in, for example Fairlie (2020), referring to the USA’s Current Population Survey (CPS) note that the number of

¹SMEs are worse affected than large firms, as they tend to be over-represented in sectors such as hospitality, travel and personal services that are hardest hit by lockdowns, and they have less recourse to liquidity to tie them over (OECD, 2020).

²High-propensity business applications are defined by the US Census as new business applications that “have a high propensity of turning into businesses with payroll. The identification of high-propensity applications is based on the characteristics of applications revealed on the IRS Form SS-4 that are associated with a high rate of business formation”. From <https://www.census.gov/library/visualizations/interactive/bfs-by-state.html>

³See <https://tinyurl.com/ybmdsw8e>

“active business owners” in the country declined by 22 percent between February and April 2020.

The impacts of the pandemic on start-up and SME activities are both shorter-term, as well as more longer-term. The shorter-term effects are through the business cycle impact of the lockdowns and containment policies adopted by virtually all countries (albeit with varying degrees of stringency - see Hale et al. (2020)). This has had the effect of reversing economic growth across many countries, breaking supply-chains and inducing a contraction in aggregate demand. As a result, as was mentioned, the rate of insolvencies is rising, and the rate of new start-up formation (entry) is declining. To the extent that start-ups and SMEs are important for innovation, new job creation and productivity growth, the COVID-19 pandemic is likely to cause a simultaneous massive loss in value creation, commercialization of new ideas and jobs.

Over the longer-term the pandemic can lead to a permanent reduction in the rate of start-ups, the growth prospects of SMEs, and hence jobs created and innovation (Fairlie, 2020). Whether and how significant this permanent reduction will be, depends partly on whether a country experiences a V-shape, U-shaped or L-shaped recovery after the crisis (and on whether mitigation policies are successful). For example, in the case of the USA, a country that experienced a U-shaped recovery after the global financial crisis (2009-2010) start-up rates and other indicators of entrepreneurship have not yet recovered to the pre-2006 rates⁴. As the Economic Innovation Group (Economic Innovation Group, 2019) describes it, “the financial crisis coincided with a collapse in the rate at which the U.S. economy produces new firms, and the startup rate remains one of the few economic indicators that has barely recovered in the years since”. Whereas the USA did not manage a good recovery after the financial crisis, many other countries did manage to do so (Carlsson-Szlezak et al., 2020). The question for each country is thus what kind of recovery will follow after the COVID-19 pandemic? Will it be V-shaped, U-shaped, or L-shaped, or perhaps as *The Economist*⁵ warns, “neither v-shaped, u-shaped or even w-shaped, but ‘more like a bathtub’”?

While the pattern of recovery is uncertain⁶, there is more certainty that the economic impact

⁴According to the US Census Bureau, high-propensity business applications in the US declined by 5,4 percent in the first quarter of 2020, from a level that was already around 20 percent lower than in 2006, just before the global financial crisis. See : <https://www.census.gov/library/visualizations/interactive/bfs-by-state.html>

⁵See *The Economist*, 11 April 2020 at <https://www.economist.com/briefing/2020/04/11/the-changes-covid-19-is-forcing-on-to-business>

⁶For the USA, Gregory et al. (2020) produce estimates based on a labor-market search model that suggests a L-shaped recovery.

of the crisis will be worse than that of the global financial crisis (Brown & Rocha, 2020; IMF, 2020; OECD, 2020). In countries where the economic recovery will indeed be sluggish and “bathtub” shaped, longer-term, even permanent reductions in entrepreneurship will be highly likely, just as the consequences in general for labor markets will be persistent (Gregory et al., 2020). It will intensify the economic stagnation that has already set in within most advanced economies, and whose beginnings can be traced back the 1970s (Decker et al., 2016; Hopenhayn et al., 2018).

The economic and social consequences of such a deepened stagnation could be extremely consequential. For one, the permanent decline in entrepreneurship and innovation will leave a society more vulnerable than ever to shocks, including to future pandemics (Munoz et al., 2020; Naudé, 2020b). Two, with economic growth and productivity stagnating, zero-sum politics are more likely to intensify (Thiel, 2011). This could lead to further uncertainty, increasing conflict, and giving impetus to de-globalization, nationalism and the further erosion of democracy. In the latter regard, COVID-19 has broken out just as democracy has been experiencing its worst setback since the end of the Cold War. As Freedom House⁷ reports, a “shift in the global order is challenging long-standing democracies, from within and without. A crisis of confidence in these societies has intensified, with many citizens expressing doubts that democracy still serves their interests. Of the 41 countries that were consistently ranked Free from 1985 to 2005, 22 have registered net score declines in the last five years”. The fact that the pandemic is likely to worsen inequalities between and within countries will be fuel on the fire.

It is not clear at this stage that the world will be able to avoid such a negative scenario. It is however possible to envisage a number of broad principles that would need to underpin efforts to mitigate the economic disaster and facilitate both the short and the longer-term recovery of entrepreneurship and business. This paper will focus on these broad principles, as consideration of these are typically neglected when the crisis is acute and forgotten once the acute phase has passed. During the 2007-2010 global financial crisis, as now, the immediate and short-term concern was to make liquidity available and prevent systemic economic collapse. While this was necessary, many of the underlying causes of the crisis back then were never fully addressed, and indeed, a combination of “too-big-to-fail” banks, regulatory capture and rising inequality have continued to cast a shadow of uncertainty over the global economy – as is witnessed for instance in a growing number of scholars and authors who since the global financial crisis took up a narrative of capitalism-in-crisis - see e.g. Collier (2018); Milanovic (2020) and Srnicek (2016). As Stephens (2018) remarked “Now, as then,

⁷See <https://freedomhouse.org/report/freedom-world/2019/democracy-retreat>.

profit is privatized, and risk nationalized. Missing is the competition that keeps capitalism honest”.

If the COVID-19 pandemic may offer, as some have hoped, a historical opportunity to improve capitalism (and democracy), then unlike during the previous crisis it will be necessary to see the wood for the trees, and to contextualize the short-term bailouts and mitigation finance from an entrepreneurship point of view. Five broad principles (or goals) that will provide this contextualization, and that will if adhered to perhaps help to “keep capitalism honest”, are to decentralize, to democratize, not to neglect demand, to (re-) distribute, and to nurture the youth demographic. To perhaps belabor the point: if the global financial crisis of a decade ago is anything to go by, and the nature of the COVID-19 impacts considered, then the danger exist that the world may end up with more centralised and “bigger government”, who are moreover in a pact with “big corporations”, all the while with inequality rising, growth stagnating, and democracy beating a further retreat.

The principles encapsulated in these 5D’s are discussed in the rest of this paper.

2 Decentralize

The optimal outcome from an entrepreneurship and business point of view is for lockdown measures to be ended and for business to resume as before the outbreak of the pandemic. For this to happen, the virus needs to be contained. This in turn, requires gathering and analysis of information and rapid and flexible response to new information. In such a situation, decentralization of decision-making has distinct advantages. As Rajan (2020) points out “there are important reasons to favor a carefully managed decentralization. Not only do members of smaller political entities tend to face similar problems; they also typically demonstrate greater social and political solidarity, which makes it easier for them to engage with one another and find solutions.” Decentralization of responses means there is no single point of failure as in the case of a very centralized approach (Rossello & Dewitte, 2020). Decentralization is also more aligned with entrepreneurial support measures aimed at fostering innovative new start-ups in certain geographically clustered areas where the ecosystem is more conducive (Lerner, 2020).

These advantages of decentralized decision-making for the fight against the virus, also holds for supporting entrepreneurs and businesses and mitigating the economic consequences of lockdowns and social distancing measures. Therefore, a first principle for entrepreneurship

and business recovery from COVID-19 is for countries to adopt as far as possible decentralized approaches in fighting the virus and providing entrepreneurial emergency support.

The benefits of decentralization in the fight against COVID-19 is for example to be seen in the gathering of information and obtaining better understanding of the nature of the virus. As Aubrecht et al. (2020, p.1) argues “the decision to implement public health interventions may be most efficient if done through a decentralized decision-making process because of an information advantage in localized jurisdictions.” The information advantage of localized jurisdictions is important as at the time of writing, it is not known precisely how deadly the virus is, how fast it is spreading, who are more susceptible, how many people are infected, and whether one can build up immunity (Li et al., 2020; Jelnov, 2020).

Decentralized data collection across heterogeneous communities, and the analysis of this data by distributed and diverse teams of scientists offers the best approach towards making scientific and medical progress and evaluate what works best and what works not so well in terms of pharmaceutical and NPI (Aubrecht et al., 2020). In this respect, a decentralized approach can benefit by learning from the spatial heterogeneity of the virus’ impacts; see e.g. Kuebart & Stabler (2020) for the case of Germany, Iacobucci (2020) for England and Wales and Desmet & Wacziarg (2020) for the case of the USA. The latter for instance notes that by April 2020 around 72 percent of counties in the USA did not record a single death due to COVID-19 – further emphasizing the spatial heterogeneity in impact and the need for decentralized management.

It is expected that in future, as countries start to ease the stringency of lockdowns, that the focus will increasingly be on localized hot-spots within countries, rather than the countries themselves. Gathering local data and understanding better what works best and under what circumstances, will be required to avoid lock-in of sub-optimal policies. Here, contact-tracing apps and large-scale testing will increasingly play a role in what can be termed “smart” exit strategies (Eichenbaum et al., 2020). Decisions regarding contact-tracing apps have illustrated the importance of decentralized technological solutions, so as to avoid data privacy violations and the danger of increased government surveillance (Harari, 2020; Ienca & Vayena, 2020). The *DP-3T protocol* is an example of how “decentralized privacy-preserving tracing” can be done⁸. Decentralizing the gathering and storing of data through an interoperable app, and moreover having this managed on the regional health authority level rather than on central government level, is an approach that is more consistent with the principle

⁸See GitHub: <https://tinyurl.com/ybbq6n5b>

of minimization of the European Union’s General Data Protection Regulation⁹ (GDPR) (Rossello & Dewitte, 2020).

Similar to the health impact, the economic impact has been very heterogeneous (Jinjarak et al., 2020; Kitsos, 2020). Effective mitigation policies will therefore need to tailor or match assistance with the depth and nature of the impact. Channeling financial assistance for instance through decentralized institutions, such as local or state governments, or the banking sector with its distributed branch system (see section 4 below) may be more optimal. The USA’s \$669 billion Paycheck Protection Program to small businesses (part of an overall \$2 trillion economic stimulus) provides a case in point. This program has already run into difficulties in identifying and distributing the money to those eligible (Cowley, 2020).

Important though in the decentralized data-gathering, learning and distribution of financial assistance, are transparency and data sharing, including open evaluation of results and experiences. In this respect decentralization of information gathering and centralization of data and scientific results are perfectly compatible. For example, since the outbreak a number of efforts with global reach have been established for gathering and sharing data for scientists and medical use. These include the World Health Organization’s (WHO) Global Research on Coronavirus disease database and the COVID-19 Open Research Dataset (CORD-19) (Naudé, 2020a).

In sum, in contact-tracing, in easing containment and lockdown measures, in gathering data, and distributing resources to entrepreneurship, decentralization is superior to centralized approaches. This is not to rule out any role for centralized approaches. There are some functions that will benefit from being centrally coordinated. For example, Rajan (2020) refers to the “bidding war” that erupted in the USA between different States for buying medical equipment from China, arguing for the central coordination of purchases of such supplies. And Aubrecht et al. (2020) recommends the centralized purchasing of medical and personal protective equipment so as to obtain scale economies and to reduce the possibility that localities will hoard supplies. Carinci (2020) analyzing Italy’s initial experience with the outbreak, concluded that while the decentralized nature of the country’s governance and healthcare was overall an advantage, it suffered due to a lack of communications and collaboration between regions and the center. In effect, plans were not shared across levels of government. For Carinci (2020, p.1) avoiding the latter does not mean re-centralization, but

⁹On 8th April 2020 the European Commission recommended that “In accordance with the principle of data minimization, public health authorities and research institutions should process personal data only where adequate, relevant and limited to what is necessary, and should apply appropriate safeguards such as pseudonymisation, aggregation, encryption and decentralization”.

rather the “better integration of decentralised competence.” The upshot is that harnessing the benefits of decentralization requires efficient and robust local governments.

3 Democratize

A myth that has arisen is that autocratic regimes may be better at fighting the crisis. Advocates of this view often point to China’s handling of the outbreak (Beauchamp, 2020). This is however exactly a myth. Democratic countries may be expected to be better at handling a pandemic crisis because they are superior to autocratic countries in that they have better flows of information, they tend to be more decentralized (see section 2) and moreover in that they are more likely to error-correct. In handling and recovering from a shock such as COVID-19, characterized by information gaps (see section 2) a trial-and-error process is vital, and will far outperform a top-down autocratic response.

There is another reason why democratic countries may fight a crisis such as the pandemic better than autocracies, and this is because democracies are more likely to promote and have tolerance for individualism and idiosyncratic behaviour. These types of behaviors are precisely what is required in a situation of high uncertainty to illustrate what works and what not, especially in terms of economic adjustments to lockdown and social distancing measures. Countries tolerating individualism and idiosyncratic behaviour are more likely to see innovative solutions to doing business under restrictions, and hence potentially fewer business failures or rising unemployment than had they been under autocratic rule. Diverse approaches, experimentation and entrepreneurial innovation tend to flourish more in countries where people are more individualistic.

The empirical evidence suggests both that indeed democracies will do better in a pandemic in terms of health outcomes, and second, that democracies will do better in terms of economic recovery. First, Frey et al. (2020) present evidence on the relationship between the stringency of lockdown measures and mobility within a country, finding that “even though autocracies have introduced more stringent lockdowns, democracies have been more effective in reducing travel and the movement of people in their countries”. An example is Germany, where the severity of lockdown measures was relatively moderate but in spite of which the country did not suffer from any excess deaths since the outbreak (He, 2020).

Secondly, Doucouliagos & Ulubasoglu (2008, p.61) concluded from a meta-regression analysis of 483 estimates from 84 studies on the relationship between democracy and growth, that

“democracy has robust, significant, and positive indirect effects through higher human capital, lower inflation, lower political instability, and higher levels of economic freedom”. These are precisely the conditions that scholars have identified as being associated with high-growth entrepreneurship (see e.g. Henrekson (2007)). Moreover, high-growth entrepreneurship is more likely to lead to the innovative outcomes, such as new ways of restarting businesses or finding a vaccine against the coronavirus, that are ultimately needed to win the fight against COVID-19 (Frey et al., 2020). It is much more likely that in the foreseeable future such a vaccine will be developed in a democratic country.

In both handling the health crisis caused by COVID-19 disease and the economic consequences of lockdowns aimed at curbing the spread of the disease, countries will be more effective if there is a high level of trust in government (Fukuyama, 2020; Rothstein, 2020). In autocratic regimes this trust is largely missing.

In conclusion, given the benefits for democracy as outlined here, it should be noted as Frey et al. (2020) points out, that democracy is on the retreat in the world. It would be important, for the sake of a more resilient and more innovative world, to reverse this trend.

4 Demand

The lockdown measures against COVID-19 has meant that shops closed, production plants ceased activity, and global value chains ground almost to a halt. As such, COVID-19 resulted in a huge supply-side shock. Fearing that supplies would dwindle, consumers in many countries stocked up on basic items, and supermarkets experienced runs. Similarly, fearing that supplies of critical items would run out, many countries instituted prohibitions of exports of medicines and medical equipment. The supply-side shocks of lockdown measures were significant.

However, COVID-19 delivered not only a supply-side shock to the economy. If it was only a supply shock, then the optimal policy to deal with it would be to provide widespread social insurance. But it is more: it also resulted in a demand-side shock, as for instance Brinca et al. (2020) and Rio-Chanona et al. (2020) discuss. This has been termed a Keynesian supply-side shock, and its “basic intuition is simple: when workers lose their income, due to the shock, they reduce their spending, causing a contraction in demand” (Guerrieri et al., 2020, p.2). The contraction in demand could even outweigh the supply contraction, for instance estimates for the USA suggest that the lockdown policies will result in a decline in average

consumption demand of 22 percent in the first year (Eichenbaum et al., 2020). Roughly similar magnitudes have been found elsewhere, for example Andersen et al. (2020) using customer transaction data from Denmark’s largest bank, estimates a drop of consumption demand of 27 percent in this country.

Entrepreneurial exits are important ways in which the supply shock translates into a demand shock, as when firms exit the market, their workers lose their jobs and incomes. This has far-reaching effects: as Saez & Zucman (2020, p.1) point out “The death of a business has long-term costs: the links between entrepreneurs, workers, and customers are destroyed and often need to be rebuilt from scratch; laid off workers need to find new jobs”. In addition to the job market effects of firms exiting the market, there are also the effects of jobs that would have been created by start-ups that now are lost. Sedlacek & Sterk (2020) calculates that COVID-19 could result in more than 1,5 million start-up job losses in the USA, and if the crisis lasts one year, the cumulative number of job losses between 2020 and 2030 from having fewer start-ups could exceed more than 10 million. OECD (2020, p.3) stresses the potential longer-term and persistent negative impacts due to reduced start-ups, reporting calculations that “a 20 percent decline in the number of new firms – a drop similar to the one experienced during the global financial crisis – leads to an employment loss of 0,7 percent of aggregate employment 3 years after the shock, and still of 0,5 percent 14 years after”.

Support for entrepreneurship should therefore in particular address large declines in consumer demand and limit entrepreneurial exits in the face of this. The question is, how could governments best support demand and prevent the (unnecessary)¹⁰ closure of businesses?

The first obvious step is to relax the stringency of lockdown measures. The longer blunt and blanket lockdown measures are in place, the larger the economic costs, and the larger will be the number of business failures and reduction in start-ups. Thus, the sooner lockdown measures can be relaxed, or phased out in favor of “smart” lockdown measures, i.e. measures that rely on contact-tracing apps and large-scale diagnostic testing, the smaller will be the contraction in entrepreneurship. In section 6 below it will be in addition argued that optimal lockdown policies in developing countries should be different from those in advance economies.

One important caveat should be noted though, and that is that if people continue to feel unsafe, they will self-isolate, and this will continue to hamper firm growth and survival.

¹⁰Note that the pandemic will also accelerate the closure of unproductive, unprofitable firms. The concern is however that productive, profitable firms with high growth prospects will also be forced out of businesses, given that they will be liquidity constrained.

Chen et al. (2020) found that “the heterogeneous impact of COVID-19 is mostly due to observed mobility instead of the adoption of de jure NPIs”, in other words, non-pharmaceutical interventions (NPIs) alone do not explain the spread of COVID-19, but the way in which the population self-isolate and restrict their mobility out of their own accord, is important too (Montenovo et al., 2020). Hence, Aum et al. (2020, p.1) stressed that “the lifting of lockdowns in the US and UK may lead to only modest recoveries in employment unless COVID-19 infection rates fall”.

The upshot is that lifting lockdowns without having brought down COVID-19 infections is not the optimal strategy to boost the recovery of business – lifting of lockdowns need to be done the “smart” way, through massive testing and contact-tracing, and on a decentralized level, where authorities are closer to the information and can respond in a more flexible manner, for instance if a localized quarantine is warranted or not (see section 2). Ultimately, reducing the threat of COVID-19 will require investments in health infrastructure, including in testing facilities and facilities for producing and distributing an eventual vaccine (Amanat & Krammer, 2020; Farzanegan et al., 2020).

A second step to support entrepreneurship in the face of supply and demand shocks is through expansionary government consumption to make up for the aggregate demand shortfall. During a strict lockdown this would however be less effective, because people cannot go out to spend, and not all consumption can shift online. What would be more effective potentially would be to assist firms with respect to liquidity, in particular so that they can continue to pay wages and rent, which would reduce bankruptcies and unemployment. And indeed, this has been the mitigating response taken by most governments, for example through direct liquidity transfers, deferral of taxation, and wage, see e.g. Dube (2020) and Guerrieri et al. (2020). Kuckertz et al. (2020) summarizes the measures taken by around 40 countries to provide support to businesses, including SMEs. They note that the bulk of support are short-term and tend to be in the form of low interest loans, payment delays, tax relief, and wage subsidies. So far, the demand expansion measures adopted have been relatively modest as share of GDP - around 2-3 percent - the exceptions being Germany and the USA where discretionary fiscal support so far amounts to respectively 10,1 percent and 9,1 percent of their 2019 GDP (Anderson et al., 2020). Djankov (2020) calculated that in Europe, “to keep European firms afloat for the remainder of the year, assuming that governments already cover the wage bill” would cost “about €750 billion, beyond the additional health costs and the additional resources needed for job retention and household incomes.” This is around 4 percent of the EU’s total 2019 GDP of €18 trillion.

There are two important caveats to note in this regard. The first is that, as Saez & Zucman (2020, p.2) pointed out, “business loans help businesses but do not compensate them for their losses. Postponing tax payments helps with liquidity but is not well targeted”. Government financial assistance is also often wrongly targeted, or due to administrative hurdles, ends up largely in the hands of large companies¹¹, with SMEs and start-ups struggling to get access to support. A case in point is the Netherlands, where it has been reported that government support to large companies totalled more than €11 billion, compared to €650 million for SMEs, and the distribution to SMEs moreover being very slow (Staal & Woutersen, 2020). Moreover, while such support may help firms over the short-term to cover their costs, their debt will rise, which may only postpone their problems (Balloch et al., 2020). The second caveat in this regard is that, in combination with mistaken beliefs that centralized and autocratic approaches work best (see sections 2 and 3) that centralised “big government” will be “back”; while government support and coordination is very necessary in the midst of the crisis, the danger is, as *The Economist* (26th March 2020)¹² point out in that “the long term, a vast and lasting expansion of the state together with dramatically higher public debt is likely to lead to a lumbering, less dynamic kind of capitalism”. This is another way in which the short-term recovery funding to large incumbent corporations will over the longer-term stifle entrepreneurship.

A third step to support entrepreneurship against the supply-induced demand shortfall, is to resort to innovative financial support. The measures mentioned in the previous paragraph, are typical measures taken during supply-side shocks, as for instance during the global financial crisis. The COVID-19 crisis is however different, and fairly unique in living human memory in having created both a global demand shortfall due to a global contraction in supply. Therefore, innovation in support is required so as to complement demand-side measures with social insurance policies (Guerrieri et al., 2020). Saez & Zucman (2020) argues for such innovation in social insurance policies and proposes that government should act as the consumer “of last resort”. They point out that this could be an effective and desirable way of providing insurance and keeping businesses afloat, due to three particular features of the pandemic. The first feature is that the pandemic is an external shock that is unrelated to how a business have been managed; a second is that it is temporary, and a third is, as is discussed next in section 5, that the impact will differ across businesses so that not all business will have to be helped or assisted in equal measure (those in the hospitality and travel industries for instance are worse affected).

¹¹This is why *The Economist* (4th April 2020) describes the current financial support packages of governments as “the biggest corporate rescue in history”.

¹²See <https://www.economist.com/leaders/2020/03/26/the-state-in-the-time-of-covid-19>.

5 Distribution

The pandemic will have adverse distributional consequences, both for disparity between individuals and countries, and in terms of worsening market concentration. Furceri et al. (2020) shows that the Gini-coefficient, a measure of income inequality, has tended to worsen on average by 1,5 percent after a pandemics in the past. As for the future, Palomino et al. (2020) estimates that income inequality in European countries will increase between 2 and 21 percent.

What would drive these adverse distributional outcomes? A first determinant is the extent to which a sector is directly threatened by COVID-19. Entrepreneurs and workers in sectors reliant on close human interaction, e.g. hairdressers, dentists and restaurants are being more affected than those in other sectors (Glover et al., 2020).

A second determinant is firm size: small and medium enterprises (SMEs) suffer more, due to having fewer resources, and having less voice and influence to lobby government. In section 4 it was already mentioned that the bulk of recovery funding from governments are for large corporate firms. Thus, it is very likely, and reminiscent of the outcomes of the global financial crisis, that the pandemic could lead to even greater market concentration and dominance by large firms. Outcomes from past pandemics also suggests that this may be the case. In the 14th century for instance, the Black Death boosted the market dominance and wealth of a few well-positioned incumbents. As Russell & Parker (2020) describe, after the Black Death market concentration increased and the influence of big business on government grew, an outcome also likely in the present crisis, since “while small companies rely upon government support to prevent them collapsing, many others – mainly the much larger ones involved in home delivery – are profiting handsomely from the new trading conditions”. Competition policy, anti-trust measures have already been gathering increasing attention due to possible adverse impacts of what has been termed “platform capitalism” on entrepreneurial start-ups. Following the pandemic, this will gain additional urgency, not only as the large digital platform firms will be bigger and more dominant in their markets, but also because the decimation of small businesses and start-ups would leave fewer possible competitors standing. The proposals for taxing and regulating global digital platforms (see e.g. digital service tax, digital services acts) that accompanied the €1.85 trillion recovery plan that the EU approved on 27th May 2020, are necessary first steps to re-distribute business opportunities¹³.

A third determinant is the extent to which entrepreneurs and their workers could move

¹³See <https://tinyurl.com/ya18rs5t>

online, and work or do business from home (Montenovo et al., 2020). Not all workers in all places could with similar ease move to work from home, and not all entrepreneurs can in equal measure move their businesses online. Those with the ability, either due to a region or country's ICT infrastructure, and/or due to the type of sector wherein they worked, could more easily switch to remote working from home, and thus faced less risk of losing their business or job. Empirical evidence from the USA for instance indeed confirm that in states where more people were employed in information technology intensive sectors, working from home became more prevalent, and job losses were lower than in states where this was not the case (Brynjolfsson et al., 2020).

A fourth determinant is the susceptibility of a sector to automation. COVID-19 is expected to accelerate existing trends towards the automation of economic activities and tasks, through being less vulnerable to infection, because home-working is becoming more prevalent and likely to remain so in future, and due to the use of automation technologies in surveillance and contact-tracing apps (Bloom et al., 2020).

The four determinants discussed above – sector, firm size, and ability to work from home, and susceptibility to automation – will also mean that different groups will be differently affected to the extent that they are under or over-represented in the kind of businesses and sectors most adversely affected. Fairlie (2020) using CPS data from the USA, report in this regard that whereas the total decline in business ownership in the USA between February and April was 22 percent, for African American businesses the decline was much worse, namely by 41 percent. Alon et al. (2020) found that women, in particular working mothers, were more adversely affected, possibly permanently. Montenovo et al. (2020, p.1) finds, using USA CPS data, that “pre-epidemic sorting into occupations with more potential for remote work [...] explain a large share of gaps in recent unemployment for key racial, ethnic, age, and education sub-populations.” Due to such sorting, inequalities may end up higher after COVID-19 (Bloom et al., 2020). Preliminary evidence shows that areas in the UK and USA with higher initial inequality and poverty were also the areas worst affected by COVID-19 in terms of health impacts (Desmet & Wacziarg, 2020; Kitsos, 2020).

Whereas moderate inequality could be an incentive for risk-taking and entrepreneurship, high levels of inequality is on balance, bad for entrepreneurship and innovation. High inequality lead to changes and declines in consumption demand which will affect the size of the market and entrepreneurial opportunities; higher inequality is also associated with greater social instability and uncertainty, which in turn depresses entrepreneurial investment. Key literature documenting the evidence include Zweimueller (2000) – see also Doucouliagos (2017) for an

overview. High inequality can lead to reductions in social mobility – and effect the ability of entrepreneurship to offer a pathway out of poverty. In this regard, Marinoni & Voorheis (2019) confirms that with high- and rising-income inequality in the USA, entrepreneurship has indeed become weaker as a vehicle for social mobility.

So, recovery of entrepreneurship after COVID-19 will benefit from re-distributive measures. One such measure that could have positive re-distributive outcomes could be special support for start-ups, particularly start-ups in the sectors and of the groups most negatively impacted. So far, as Brown & Rocha (2020) noted with concern, most research on and assistance for businesses has been about either large firms or SMEs, with the nascent start-ups neglected. They also note that the reduction in venture capital (risk finance) on which many high-growth start-ups depend, have declined significantly – for example by 60 percent in China – and that there are very few initiatives to address this. Kuckertz et al. (2020) discuss the neglect of support to start-ups in most countries’ financial assistance packages, with specific reference to the case of Germany, in more depth. They point out that only in a quarter of around 40 countries surveyed announced specific support measures for start-ups¹⁴.

Related “re-distributive” policies could include raising innovation spending and the productivity of innovation – which could raise labor productivity growth – a prerequisite for sustainable growth in wages – and business competitiveness. In the West there is significant scope for investment in innovation. As van Reenen (2019, p.126) stressed “the United States spends roughly 240 billion less per year on R&D than it did at its peak”. Naudé & Nagler (2018) documented a similar decline in innovation in Germany, where most innovation today is done by a few large firms. More generally, Erixon & Weigl (2016) documents the decline in innovation in West. To the extent that the decline in innovation in the West is the result from the growing market concentration and market dominance by superstar firms, and their accompanying “defensive” innovation¹⁵ strategies, competition policy, anti-trust measures, digital taxes and digital service regulation would open markets for new firm entry, which would be good for boosting innovation (see also Lerner (2020)). It will also help to “keep capitalism honest” (Stephens, 2018). Furthermore, policies to invest and innovate more in digital infrastructures (shown by the COVID-19 pandemic to be inadequate in many countries and regions) will reduce digital gaps, and can moreover contribute towards putting future economic growth on a more sustainable trajectory (Piller, 2020).

¹⁴Of the countries that do provide some support to start-ups, the OECD (2020) note and describe the initiatives of France, Germany and the UK

¹⁵See e.g. Akcigit & Ates (2019) for a discussion on the use and abuse of patents and other defensive innovation strategies by large incumbent firms.

6 Demography

While the virus that causes COVID-19 disproportionately affects older people, the economic losses disproportionately affects younger people (Belot et al., 2020). Young entrepreneurs in particular are very vulnerable. Therefore, recovery from COVID-19 will require a focus on youth entrepreneurship and youth job creation, to limit the extent to which a “lockdown generation”, typified by structurally high youth unemployment and poverty rates, will emerge (see e.g. ILO (2020)).

There are a number of channels through which COVID-19 will have a disproportionate effect on the youth and young entrepreneurs. The first is that lockdown measures, by slowing down the spread of the disease, generates benefits that “accrue disproportionately to older households, who face a much higher risk of serious illness or death conditional on becoming infected. At the same time, the costs of reduced economic activity are disproportionately born by younger households, who bear the brunt of lower employment” (Glover et al., 2020, p.23). The monetary benefits of protection against COVID-19 has been calculated by Greenstone & Nigam (2020, p.1), using an extended epidemiological model, and who finds that “the mortality benefits of social distancing are about \$8 trillion or \$60,000 per US household”. Moreover, their analysis shows the differential demographic impact most clearly, “90 percent of the monetized benefits are projected to accrue to people age 50 or older”.

Secondly, lockdown and social distancing measured has caused youth unemployment (in the USA approaching 15 percent even before the crisis) to increase disproportionately, the main reason being that younger people are more intensively employed in industries such as hospitality and entertainment, and in informal sectors – all sectors that are the worst affected. The ILO (2020) found for instance that young unemployment, and in particular rates of unemployed young women, soared since the beginning of lockdowns, for instance in Canada the unemployment rate for young men rose to 27,1 percent, and for young women to 28,4 percent. One undesirable consequence of this that young people (between 18 and 25 years) who are affected by an epidemic have been found to have subsequently much less trust in governments, political leaders, and in elections (Aksoy et al., 2020). As was pointed out (section 3) trust is an important requirement for government policies to curb the spread of the virus to be effective.

A third channel is that lockdown measures interrupts the schooling and education of the young due to school closures and the move to home schooling. The negative impact on their human capital formation can have severely negative impacts on their later job and

wage prospects (Corral & Gatti, 2020). According to Azevedo et al. (2020, p.17-18), basing their calculations of data from 157 countries, “globally, a school shutdown of 5 months could generate learning losses that have a present value of \$10 trillion”. The added danger is that the closure of schools will reinforce social and economic inequalities and exclusion, because youth from more well-off households may be less affected, for instance in having access to private internet and laptops (Azevedo et al., 2020; Corral & Gatti, 2020).

Finally, demography and distribution coincide further, and this time on a global level, where the difference in demography between countries will further worsen the already negative impact of COVID-19 on the distribution of income and wealth between countries. Developing countries, especially those in Sub-Saharan Africa, have much younger population demographics than the high-income countries of Europe and even the USA. As such, if developing countries are applying the same stringent lockdown measures as in the high-income countries, then the global costs of reduced economic activity will be disproportionately born by these countries. The World Bank estimates that as a result of the contractions in GDP due to the pandemic, global poverty will increase with between 71 and 100 million people pushed into extreme poverty, with the bulk – 49 million – in Sub-Saharan Africa, also the content with the largest proportion of youth (Mahler et al., 2020).

Younger entrepreneurs already find it more difficult to start up a new firm, facing more difficulties to access finance, having on average less collateral than older people, and furthermore lacking experience and knowledge. Azoulay et al. (2018) reports from the case of the USA for instance that younger entrepreneurs are more likely to fail: 53 percent of entrepreneurial start-ups with owners younger than 30 fails in the USA, compared to 45,6 percent of start-ups with owners older than 30. Furthermore, in all categories of high-growth firms older entrepreneurs’ firms perform better. In the last category, the 0.1 percent top of firms in terms of growth, those of older entrepreneurs are twice as prevalent.

The effects of COVID-19 pandemic will thus be tilting the odds even further against younger entrepreneurs by reducing their chances of gaining work experience, interrupting and delaying their, education and limiting their labor market options. The consequence will not only be to depress rates of youth and young entrepreneurship, but to generally depress the entrepreneurial dynamics in countries and to put pressure on government fiscal systems. This will be worse in countries with an ageing population profile. Liang et al. (2014) found evidence that countries with older populations tend to be less entrepreneurial and that middle-aged persons in such countries are less likely to start a new firm. The ILO (2018, p.3) pointed out that unless the engagement, productivity and impact of young people in the global econ-

omy are improved, that many countries would face difficulties fiscally to “compensate for the rapidly expanding pool of retirees, putting pressure on both the pension system and the labour market as a whole.” The impact of COVID-19 on the prospects of young people in the economy, not least in light of the stress on financial and fiscal systems, will thus be a contributing cause of future turbulence in pension systems and labour markets.

Finally, it may very well be that countries that can harness their young entrepreneurs the best may face the better prospects of economic recovery. Pugsley & Sahin (2015) shows that countries with more young entrepreneurs are better able to deal with and recover from recessions. Young entrepreneurs are also typically better at building new firms using high-tech (Braguinsky et al., 2012) which given the impetus and opportunities that the pandemic has created for digital entrepreneurship, will help countries to accelerate their digital transformation.

The policy implications are clear, in suggesting special support during and after the pandemic for youth entrepreneurship¹⁶. Such support would include ensuring that young entrepreneurs are not crowded out from the allocation of financial mitigation measures (as mentioned in section 4), that financial assistance is indeed targeted to the sectors and businesses that most need it, and that education and youth apprenticeship programs are extended. In addition to financial mitigation measures, the discussion in the previous paragraphs also suggest that smart lockdowns would enable countries and young people to reduce the economic costs of the pandemic.

For developing countries, where young people constitute a larger share of the total population, the potential economic cost savings could be highly significant. Alon et al. (2020) argued in this respect that if developing countries should use “age-specific lockdown policies”, rather than blanket lockdowns, that it would save “more lives per unit of lost output than in advanced economies” and that this is worth “ten times as much as under blanket lockdowns in developing economies. The reason is that age-specific policies allow governments to isolate only those with the highest fatality risk, and to provide them with larger transfers than under blanket lockdowns. This is particularly attractive in developing countries, since older individuals reflect such a small share of the total population there” (p.10). A challenge to the effectiveness of such “age-specific lockdowns” is that it is not known what the consequences

¹⁶Please note that such special support for youth entrepreneurship should not be mistaken for ageism. As Morrow-Howell et al. (2020) discuss, COVID-19 has wreaked havoc with the lives of many older people, from reducing their likelihood to re-enter labor markets if they lost their job, to reducing their retirement savings, to lasting emotional impacts. As Belot et al. (2020) implies, support for young people may be essential so as to provide better incentives for them to comply with their governments’ NPIs, which will be in the interest of the entire population.

of reduced personal contact between younger and older people will be (Belot et al., 2020).

7 Conclusion

The impacts of the COVID-19 pandemic on entrepreneurship and innovation will be both short-term and long-term. Over the short-term, a reduction in start-up rate, an increase in firm exits, and rising market concentration will characterize business dynamics. How long this will persist and cause further secular declines in entrepreneurship and innovation in advanced economies will depend on the nature of the measures taken during and after the crisis to support the business sector and promote entrepreneurship. The danger is that the temporary COVID-19 shock will lead to the permanent decline in entrepreneurship and innovation, which will leave society more vulnerable than ever to shocks, including to future pandemics.

The possible long-term impact of the COVID-19 crisis on the world economy, and particularly on entrepreneurship and innovation, is unjustly neglected. This is regrettable, particularly given that the historical evidence points to the persistent effect of pandemics. Jorda et al. (2020) studied the macro-economic impact of major pandemics¹⁷ in Europe over the past 500 years. They found that the after-effects of such pandemics lasts up to 40 years, and moreover that “pandemics are followed by sustained periods – over multiple decades – with depressed investment opportunities, possibly due to excess capital per unit of surviving labour, and/or heightened desires to save, possibly due to an increase in precautionary saving or a rebuilding of depleted wealth” (Jorda et al., 2020, p.14).

Given the prospects of depressed investment, and the consequences of economic growth and productivity stagnating, zero-sum politics are more likely to intensify, potentially leading to further uncertainty, increasing conflict and giving impetus to de-globalization, nationalism and further erosion of democracy. A vicious circle of reduced innovation, stagnation, further shocks and permanently depressed entrepreneurship rates could ensue.

This paper has argued that if the world wants to use the COVID-19 pandemic as a historical opportunity to improve capitalism and to reverse the erosion of democratic institutions, then the mistakes made during and after the global financial crisis (2007-2010) need to be avoided. For this, it is necessary to see the wood for the trees: while there is, appropri-

¹⁷Measured as pandemics with more than 100,000 fatalities.

ately, much discussion and debate about the short-term mitigation measures and emergency support to limit the economic damages of lockdowns and social distancing, there is unfortunately much less concern for the longer-term and structural impacts, in particular the adverse distributional consequences of the health pandemic, of the economic lockdowns and of the business recovery measures taken. How entrepreneurship, and especially the start-up sector will recover, will be a determining factor in this regard - will innovative start-ups and small businesses recover or will they be permanently shackled in a stagnating and divided world economy, dominated by an alliance of big government and big business? To start the debate as to how to best promote entrepreneurship to “keep capitalism honest” this paper proposed five principles to keep in mind, namely to decentralize, to democratize, not to neglect demand, to (re-) distribute, and to nurture the youth demographic.

Acknowledgements

I am grateful to the participants of the *Forum on the Entrepreneurial Recovery from Covid-19*, organized by the Kauffman Foundation, the OECD and the Swedish Entrepreneurship Forum on 27 May 2020, and of the Oxford Green Templeton College Entrepreneurship Week session on *The Impact of COVID-19 on Entrepreneurship* on 23 June 2020, for helpful comments and suggestions. I am also grateful to Martin Cameron for comment and discussions on an earlier draft. The usual disclaimer applies.

References

- Akcigit, U. & Ates, S. (2019). Ten Facts on Declining Business Dynamism and Lessons from Endogenous Growth Theory. *CEPR Discussion Paper no. 13668, Centre for Economic Policy Research.*
- Aksoy, C. G., Eichengreen, B., & Saka, O. (2020). The Political Scar of Epidemics. *NBER Working Paper No. 2740, National Bureau of Economic Research.*
- Alon, T., Kim, M., Lagakos, D., & VanVuren, M. (2020). How Should Policy Responses to the COVID-19 Pandemic Differ in the Developing World? *NBER Working Paper No. 27273, National Bureau of Economic Research.*
- Amanat, F. & Krammer, F. (2020). SARS-CoV-2 Vaccines: Status Report. *Immunity, 52(4), 583–589.*
- Andersen, A., Hansen, E., Johannesen, N., & Sheridan, A. (2020). Consumer Responses to the COVID-19 Crisis: Evidence from Bank Account Transaction Data. *CEBI Working Paper Series 18/20. University of Copenhagen.*
- Anderson, R., Heesterbeek, H., Klinkenberg, D., & Hollingsworth, T. (2020). How will country-based mitigation measures influence the course of the COVID-19 epidemic? *The Lancet, 395, 931–934.*
- Aubrecht, P., Essink, J., Kovac, M., & Vandenberghe, A. (2020). Centralized and Decentralized Responses to COVID-19 in Federal Systems: US and EU Comparisons. *Law & Economics of Covid-19 Working Paper 04/2020. Erasmus University Rotterdam and University of Ljubljana.*
- Aum, S., Lee, S., & Shin, Y. (2020). COVID-19 Doesn't Need Lockdowns to Destroy Jobs: The Effect of Local Outbreaks in Korea. *NBER Working Paper No. 27264, National Bureau of Economic Research.*
- Azevedo, J., Hasan, A., Goldemberg, D., Iqbal, S., & Geven, K. (2020). Simulating the Potential Impacts of COVID-10 School Closures on Schooling and Learning Outcomes: a Set of Global Estimates. *Washington DC: The World Bank.*
- Azoulay, P., Jones, B., Kim, J., & Miranda, J. (2018). Age and High-Growth Entrepreneurship. *NBER Working Paper Series no. 24489. National Bureau for Economic Research.*

- Balloch, C., Djankov, S., Gonzalez-Uribe, J., & Vayanos, D. (2020). A Restart Procedure to Deal with COVID-19. *In Djankov, S. Panizza, U. eds. COVID-19 in Developing Economies, London: Centre for Economic Policy Research. pp. 266–276.*
- Bartik, A., Bertrand, M., Cullen, Z., Glaeser, E., Luca, M., & Stanton, C. (2020). How Are Small Businesses Adjusting to COVID-19? Early Evidence from a Survey. *NBER Working Paper No. 26989, National Bureau of Economic Research.*
- Beauchamp, Z. (2020). The Myth of Authoritarian Coronavirus Supremacy. *Vox, 26th March.*
- Belot, M., Choi, S., Tripodi, E., van den Broek-Altenburg, E., Jamison, J., & Papageorge, N. (2020). Unequal Consequences of COVID-19 across Age and Income: Representative Evidence from Six Countries. *IZA DP No. 13366, IZA Institute of Labor Economics, Bonn.*
- Bloom, N., Bunn, P., Chen, S., Mizen, P., & Smietanka, P. (2020). The Economic Impact of Coronavirus on UK Businesses: Early Evidence from the Decision Maker Panel. *VOX CEPR Policy Portal, 27th March.*
- Boone, L. (2020). Oecd Economic Outlook: The World Economy on a Tightrope. *Paris, OECD, 11 June.*
- Bosio, E., Jolevski, F., Lemoine, J., & Ramalho, R. (2020). Survival of Firms in Developing Economies during Economic Crisis. *In Djankov, S. Panizza, U. eds. COVID-19 in Developing Economies, London: Centre for Economic Policy Research. pp. 157–174.*
- Braguinsky, S., Klepper, S., & Ohyama, S. (2012). High-Tech Entrepreneurship. *Journal of Law and Economics, 55, 869–900.*
- Brinca, P., Duarte, J., & e Castro, M. F. (2020). Measuring Sectoral Supply and Demand Shocks during Covid-19. *Covid Economics, (Issue 20), 147–171.*
- Brown, R. & Rocha, A. (2020). Entrepreneurial Uncertainty During the Covid-19 Crisis: Mapping the Temporal Dynamics of Entrepreneurial Finance. *Journal of Business Venturing Insights, 14.*
- Brynjolfsson, E., Horton, J., Ozimek, A., Rock, D., Sharma, G., & TuYe, H.-Y. (2020). COVID-19 and Remote Work: An Early Look at US Data. *NBER Working Paper No. 27344, National Bureau of Economic Research.*

- Carinci, F. (2020). Covid-19: Preparedness, Decentralisation, and the Hunt for Patient Zero: Lessons from the Italian Outbreak. *British Medical Journal*, 368(bmj.m799).
- Carlsson-Szlezak, P., Reeves, M., & Swartz, P. (2020). Understanding the Economic Shock of Coronavirus. *Harvard Business Review*, 27 March.
- Chen, J., Wu, L., J.Zhang, Zhang, L., Gong, D., Zhao, Y., Hu, S., Wang, Y., Hu, X., Zheng, B., Zhang, K., Wu, H., Dong, Z., Xu, Y., Zhu, Y., Chen, X., L.Yu, & Yu, H. (2020). Deep Learning-Based Model for Detecting 2019 Novel Coronavirus Pneumonia on High-Resolution Computed Tomography: A Prospective Study. *medRxiv*, 1 March(<https://doi.org/10.1101/2020.02.25.20021568>).
- Collier, P. (2018). The Future of Capitalism. *London: Allen Lane*.
- Corral, P. & Gatti, R. (2020). Accumulation Interrupted: COVID-19 and Human Capital Among the Young. In *Djankov, S. Panizza, U. eds. COVID-19 in Developing Economies, London: Centre for Economic Policy Research*, (pp. 286 –303).
- Cowley, S. (2020). Banks Warn of Overwhelming Demand and Messy Start for Small Business Loans. *The New York Times*, 2 April.
- Decker, R., Haltiwanger, J., Jarmin, R., & Miranda, J. (2016). Declining Business Dynamism: What we Know and the Way Forward. *American Economic Review, Papers and Proceedings*, 106(5), 203–207.
- Desmet, K. & Wacziarg, R. (2020). Understanding Spatial Variation in COVID-19 across the United States. *NBER Working Paper No. 27329, National Bureau of Economic Research*.
- Djankov, S. (2020). Europe’s Pandemic Price Tag to Keep Firms Afloat. *Testimony before the members of the Committee on Economic and Monetary Affairs of the European Parliament*, 30 April.
- Doucouliafos, C. (2017). Dont Listen to the Rich: Inequality is Bad for Everyone. *The Conversation*, 6 August.
- Doucouliafos, C. & Ulubasoglu, M. A. (2008). Democracy and Economic Growth: A Meta?Analysis. *American Journal of Political Science*, 52(2), 61–83.
- Dube, A. (2020). Filling the Holes in Family and Business Budgets: Unemployment Benefits and Work Sharing in the Time of Pandemics. *Policy Brief 24: Economics for Inclusive Prosperity*, March.

- Economic Innovation Group (2019). 2016 was best year for business formation since the recession, but hold the fireworks,. *Blog 10 January*, at : <https://eig.org>.
- Eichenbaum, M., Rebelo, S., & Trabandt, M. (2020). The Macroeconomics of Epidemics. *NBER Working Paper No. 26882, National Bureau of Economic Research*.
- Erixon, F. & Weigl, B. (2016). The Innovation Illusion. *New Haven: Yale University Press*.
- Fairlie, R. (2020). The Impact of Covid-19 on Small Business Owners: Evidence of Early-Stage Losses from the April 2020 Current Population Survey. *NBER Working Paper No. 27309, National Bureau of Economic Research*.
- Farzanegan, M., Feizi, M., & Gholipour, H. (2020). Globalization and Outbreak of COVID-19: An Empirical Analysis. *CESifo Working Paper No. 8315*.
- Frey, C., Presidente, G., & Chen, C. (2020). Covid-19 and the Future of Democracy. *VOX CEPR Policy Portal*, 20 May.
- Fukuyama, F. (2020). The Thing that Determines a Countrys Resistance to the Coronavirus. *The Atlantic*, 30 March.
- Furceri, D., P.Loungani, J.D.Ostry, & Pizzuto, P. (2020). COVID-19 will Raise Inequality if Past Pandemics are a Guide. *VoxEU.org*, 8 March.
- Gauthier, J., Penzel, M., & Morelix, A. (2020). This is what COVID-19 did to start-ups in China. *World Economic Forum*, 7 May.
- Glover, A., Heathcote, J., Krueger, D., & Rios-Rull, J.-V. (2020). Health versus Wealth: On the Distributional Effects of Controlling a Pandemic. *Covid Economics*, Issue 6(17 April).
- Greenstone, M. & Nigam, V. (2020). Does Social Distancing Matter? *Becker Friedman Institute for Economics Working Paper, 2020-26, University of Chicago*.
- Gregory, V., Menzio, G., & Wiczer, D. (2020). Pandemic Recession: L or V-Shaped? *NBER Working Paper No. 27105, National Bureau of Economic Research*.
- Guerrieri, V., Lorenzoni, G., Straub, L., & Werning, I. (2020). Macroeconomic Implications of COVID-19: Can Negative Supply Shocks Cause Demand Shortages? *NBER Working Paper No. 26918, National Bureau of Economic Research*.
- Hale, T., Angrist, N., Kira, B., Petherick, A., Phillips, T., & Webster, S. (2020). Variation in Government Responses to COVID-19. *BSG-WP-2020/032, Version 6.0. Oxford University*.

- Harari, Y. (2020). The World After Coronavirus. *Financial Times*, 20 March.
- He, E. (2020). The Results of Europes Lockdown Experiment Are In. *Bloomberg*, 20th May.
- Henrekson, M. (2007). Entrepreneurship and Institutions. *Comparative Labor Law and Policy Journal*, (28), 717–742.
- Hopenhayn, H., Neira, J., & Singhania, R. (2018). From Population Growth to Firm Demographics: Implications from Concentration, Entrepreneurship and the Labor Share. *NBER Working Paper no. 25382*.
- Iacobucci, G. (2020). Covid-19: Deprived Areas have the Highest Death Rates in England and Wales. *British Medical Journal*, 369(m1810).
- Ienca, M. & Vayena, E. (2020). On the Responsible Use of Digital Data to Tackle the COVID-19 Pandemic. *Nature Medicine*, 27th March(<https://doi.org/10.1038/s41591-020-0832-5>).
- ILO (2018). World Employment and Social Outlook - Trends 2018. *Geneva: International Labour Organisation*.
- ILO (2020). ILO Monitor: Covid-19 and the World of Work. 4th ed. *International Labor Organization, Geneva*, 27th May.
- IMF (2020). World Economic Outlook Update, june. *International Monetary Fund. Washington DC*.
- Jelnov, P. (2020). Confronting COVID-19 Myths: Morbidity and Mortality. *GLO Discussion Paper No. 516, Global Labor Organization (GLO), Essen*.
- Jinjarak, Y., Ahmed, R., Nair-Desai, S., Xin, W., & Aizenman, J. (2020). Accounting for Global COVID-19 Diffusion Patterns, January-April. *NBER Working Paper No. 27185, National Bureau of Economic Research*.
- Jorda, O., Singh, S., & Taylor, M. (2020). Longer-Run Economic Consequences of Pandemics. *Covid Economics*, Issue 1(3 April).
- Kitsos, T. (2020). The Uneven Spatial Footprint of the Coronavirus (COVID-19) Shutdown. *City REDI Blog*, 21 April.
- Kuckertz, A., Braendle, L., Gaudig, A., Hinderer, S., Reyes, C., Prochotta, A., Steinbrink, K., & Berger, E. (2020). Startups in Times of Crisis - A Rapid Response to the COVID-19 Pandemic. *Journal of Business Venturing Insights*, 13(e00169).

- Kuebart, A. & Stabler, M. (2020). Infectious Diseases as Socio-Spatial Processes: The COVID-19 Outbreak in Germany. *Tijdschrift voor Economische en Sociale Geografie*.
- Lerner, J. (2020). Government Incentives for Entrepreneurship. *NBER Working Paper No. 26884, National Bureau of Economic Research*.
- Li, R., Pei, S., Chen, B., Song, Y., Zhang, T., Yang, W., & Shaman, J. (2020). Substantial Undocumented Infection Facilitates the Rapid Dissemination of Novel Coronavirus (SARS-CoV2). *Science*, 16 March(DOI: 10.1126/science.abb3221).
- Liang, J., Wang, H., & Lazear, E. (2014). Demographics and Entrepreneurship. *NBER Working Paper no. 20506. National Bureau of Economic Research*.
- Mahler, D., Lakner, C., Aguilar, C., & Wu, H. (2020). Updated Estimates of the Impact of COVID-19 on Global Poverty. *World Bank Blogs*, 8 June.
- Marinoni, A. & Voorheis, J. (2019). Who Gains from Creative Destruction? Evidence from High-Quality Entrepreneurship in the United States. *CES Working Paper no. 19-19, Washington DC*.
- Milanovic, B. (2020). *Capitalism, Alone: The Future of the System that Rules the World. Cambridge MA: Harvard University Press*.
- Montenovo, L., Jiang, X., Rojas, F., Schmutte, I., Simon, K., Weinberg, B., & Wing, C. (2020). Determinants of Disparities in Covid-19 Job Losses. *NBER Working Paper No. 27132, National Bureau of Economic Research*.
- Morrow-Howell, N., Galucia, N., & Swinford, E. (2020). Recovering from the COVID-19 Pandemic: A Focus on Older Adults. *Journal of Aging and Social Policy*, 32(4-5), 526–535.
- Munoz, P., Naudé, W., Williams, T., & Rodrigo, F. (2020). Reorienting Entrepreneurial Support Infrastructure to Tackle a Social Crisis: A Rapid Response. *Journal of Business Venturing Insights*, 14(Nov).
- Naudé, W. (2020a). Artificial Intelligence vs. COVID-19: Limitations, Constraints and Pitfalls. *AI & Society*, April(DOI :10.1007/s00146-020-00978-0).
- Naudé, W. (2020b). From the Entrepreneurial to the Ossified Economy: Evidence, Explanations and a New Perspective. *GLO Discussion Paper 539, Global Labor Organization, Essen*.

- Naudé, W. & Nagler, P. (2018). Technological Innovation, Entrepreneurship and Productivity in Germany, 1871-2015. *SPRU Working Paper Series (SWPS), 2018-02. Science Policy Research Unit, University of Sussex.*
- OECD (2020). Start-ups in the Time of COVID-19: Facing the Challenges, Seizing the Opportunities. *Paris: OECD*, 13 May.
- Palomino, J., Rodriguez, J., & Sebastian, R. (2020). Wage Inequality and Poverty Effects of Lockdown and Social Distancing in Europe. *Covid Economics*, Issue 25., 186229.
- Piller, F. (2020). Ten Propositions on the Future of Digital Business Models for Industry 4.0 in the Post-Corona Economy. *Available at SSRN: <https://ssrn.com/abstract=3617816> or <http://dx.doi.org/10.2139/ssrn.3617816>*, 29 May.
- Pugsley, B. & Sahin, A. (2015). Grown-Up Business Cycles. *Center for Economic Studies Working Paper no. CES-WP-15-33. US Census Bureau.*
- Rajan, R. (2020). Which Post-Pandemic Government? *Project Syndicate*, 22 May.
- Rio-Chanona, R., Mealy, M., Pichler, P., Lafond, A., & Farmer, J. (2020). Supply and Demand Shocks in the COVID-19 Pandemic: An Industry and Occupation Perspective. *Covid Economics*, Issue 6(17 April), 65–70.
- Rossello, S. & Dewitte, P. (2020). Anonymization by Decentralization: The Case of Covid-19 Contact-Tracing Apps. *European Law Blog*, 25 May.
- Rothstein, B. (2020). Trust is the Key to Fighting the Pandemic. *Scientific American*, 24 March.
- Russell, E. & Parker, M. (2020). How Pandemics Past and Present Fuel the Rise of Mega-Corporations. *The Conversation*, 3 June.
- Saez, E. & Zucman, G. (2020). Keeping Business Alive: The Government as Buyer of Last Resort. *Mimeo*, 15 March.
- Sedlacek, P. & Sterk, V. (2020). Startups and Employment Following the COVID-19 Pandemic: A Calculator. *CEPR Discussion Paper No. DP14671.*
- Srnicek, N. (2016). Platform Capitalism. *London: Polity.*
- Staal, T. & Woutersen, E. (2020). Banken Weigerden Duizenden Kleine Bedrijven Steun. *De Groene Amsterdammer*, 24 juni.

- Stephens, P. (2018). Populism is the True Legacy of the Global Financial Crisis. *Financial Times*, 30 Aug.
- Thiel, P. (2011). The End of the Future. *National Review*, 3 October.
- van Reenen, J. (2019). Can Innovation Policy Restore Inclusive Prosperity in America? *In Maintaining the Strength of American Capitalism, The Economic Strategy Group*, (pp. 116–134).
- Zweimueller, J. (2000). Schumpeterian Entrepreneurs Meet Engel’s Law: The Impact of Inequality on Innovation-Driven Growth. *Journal of Economic Growth*, 5, 185 – 206.