Covid-19 and Economic Analysis:
a Review of the Debate

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Contents

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1) Introduction

This newsletter aims at providing an overview of relevant, covid-19 related economic issues as discussed in the current literature. It therefore draws as much on traditional working papers as on (respected) online publications, blogs, etc.

This issue reviews research linking the evolution of the pandemic to macroeconomic outcomes, with a view to frame in a rigorous context the relevant normative issues. Attention is also devoted to works discussing the most appropriate policy responses, highlighting the role of fiscal and monetary policies.

In this issue, special attention is devoted on the possible role of fintech and on the effects of the pandemic shock on global value chains.

2) Understanding the economic consequences of Covid-19

A strand of papers merging epidemiological ("SIR") and macroeconomic models ("SIR-macro"), discussed in the previous newsletters, focused mostly on the economic costs due to the necessary containment measures where government inaction is generally associated with a smaller output loss (Alvarez et al., 2020, Eichenbaum et al., 2020, Glover el al., 2020, Jones et al., 2020, Kaplan et al., 2020). While Krueger et al.(2020) contend with a theory of the "Swedish solution" (built on the same type of models) that a government intervention might not be necessary, the above mentioned papers recommend the government to act in order to avoid the "infection externality" as individuals do not internalize the impact of their action on others. Relatedly, Bethume and Korinek (2020) estimate for the United States that private agents perceive the cost of an additional infection to be around $80k whereas the true social cost is more than three times higher, around $286k. The results found in Farboodi et al. (2020) can be taken as a summary of this literature recommending to the government three main features for the optimal policy: (i) it imposes immediate social distancing; (ii) it keeps it in place for a long time or until treatment is found; (iii) it is never extremely restrictive, letting infections grow until the susceptible population is sufficiently small that the number of infected people starts to shrink.

Bodenstein et al. (2020) **offer a complementary argument to that strand of papers**, arguing that the **output loss in absence of policy** interventions might be **bigger than what commonly assumed**. The reason they set forth in a standard two-sector growth model with an epidemiological ("SIR") block is that the infection might **incapacitate "core" industries producing core inputs** or essential services (e.g. health care services, food, distribution services, transportation, sanitation, and energy supply) used by all other industries. To smooth the trough in economic activity, they argue in favor of a generalized social distancing (at least 8 months to avoid a relapse), better if skewed towards the non-active population and workers in the non-core sector, and targeted toward occupations with tasks that can be performed from home. This should keep the infection rate among the workers in core industries, hence their output loss, low. Other than the assumption of teamwork ("minimum scale requirement", think of doctors and nurses) in core industries, key to the results is the assumption of low substitutability between core inputs and other inputs. A similar assumption is also key in Guerrieri et al., 2020, one of the most quoted theoretical accounting of the Covid-19 shock depicted as a "Keynesian supply shock" where aggregate demand contracts more than the initial supply shock (see the previous newsletter).

If heterogeneity across sectors is key to understand the Covid-19, heterogeneity in the labor market status seems likewise important but not so much analyzed in the theoretical economic literature using epidemiological models yet. A first attempt in this direction is offered by Kapička and Rupert (2020). Incorporating aspects of an epidemiological SIR model into a standard Mortensen-Pissarides (1994) model of a frictional labor market, they find **a segmentation of the labor market** during the pandemic **between recovered and not yet infected individuals**. Wages fall during the early phases of the pandemic, and then rise as the pandemic progresses. The unemployment rate increases among those not yet infected, decreases among those recovered, and increases overall. Characterizing the efficient allocation, they find that it is **optimal to move approximately one quarter of workers out of employment**. Quarantine itself is not enough **requiring also a tax on the creation of vacancies**. Garibaldi et al. (2020) lay the theoretical foundations to use the Mortensen-Pissarides (1994) search and matching model in the context of the epidemiological SIR models, thus accounting for economic incentives in determining the transitions. Coibionet al. (2020) offer a noteworthy empirical assessment of the labor market. Using new ongoing **large-scale surveys of U.S.**

households, they find **20 million lost jobs** by April 6th, **and a decline of 7 percentage points in the labor force participation, implying a small increase in the unemployment rate** of 2 percentage points (as those losing jobs are not actively looking to find new ones).

All above-mentioned contributions converge in identifying work flexibility as a necessary ingredient of the policy responses aimed at mitigating the hurdles and strains imposed by the COVID-19 crisis. Angelici &Profeta (2020) run a randomized control trial on 310 employees of an Italian company to examine the effects of smart-working on productivity. Interestingly, not only the treated group (those who are given access to smart-working) are reported to rank better according to several productivity measures, but also take fewer days of leave. The authors suggest that the increased work flexibility induced by the smart-working option may also reduce the gender gaps in the labour markets.

Furthermore, gender might also be a relevant factor. There are several reasons to expect the Covid-19 shock would weigh more heavily on women's income, jobs and well-being conditions. Their disproportionate role in caring about children or performing domestic tasks, and their larger participation in activities that are most exposed to health and economic risks (i.e. retail, accommodation services, food and beverage service activities, or the garment manufacturing industry) might contribute to these disparities (Queisser et al., 2020). The point is supported by evidence from Alon et al. (2020), who investigated the differences between the "typical" and the Covid recession. While male employment concentrates in "cyclical sectors" (as construction, manufacturing, trade, transportation, and utilities) and are therefore exposed to larger unemployment risk in the "typical" recession, women appear more vulnerable today because they are employed in less "telecommutable" occupations. Single parent (typically women) households are also particularly vulnerable to the COVID-19 shock due to the closure of schools and childcare institutions. Concerning the household time allocation, Jessen & Waights (2020) study the role of day-care facilities using data on German families with very young kids in 2012-13. The time spent in paid jobs by mothers, as well as their involvement in housework, is found to be more sensitive to the availability of day-care facilities than for fathers.

Moving from empirics to theory, some economists kept working with the purely epidemiological SIR models adding various degrees of heterogeneity. Ichino et al. (2020) provides a comprehensive exercise of this type for Italy (with a focus on the opposing cases of Lombardy and Veneto) with a multitude of age groups and productive sectors, using the fraction of the labor force that cannot work as a proxy for the fall in GDP. Based on an efficiency criterion restricting to policies not dominated by other feasible ones, they provide the frontier of efficient policies trading off the GDP loss (at 1 year) and the total number of deaths. Other than focusing on the infection/death risk specific to each productive sectors, they emphasize the importance of **differentiating the "Phase-2" policies by age** initially allowing only young individuals in the 20-49 age bracket to go back to work. Rampini (2020) also stresses the importance of age differentiation in a simple SIR model with two age groups. A sequential approach in which the less affected younger group (0-50) is released earlier and the more affected older group (50+) is released later can reduce mortality by 40%, the demand on the health care system by 75%, and the drop in economic activity by 80%.[2] Considering a purely demographic perspective of Covid-19, Goldstein and Lee (2020) note that **the age-patterns of Covid-19 mortality** exhibit the **typical rate of increase of mortality** (i.e. the risk of death increases by about 10% per year). Under this perspective, with a death toll of 2 million people in the United States (slightly less than the estimate of an uncontrolled epidemic by Ferguson et al., 2020) in a matter of three months, there would be a "temporary aging" of about 30 years. That is, for example, in the uncontrolled epidemic a 30 years old individual would temporarily experience the mortality rate of someone close to 60.[3]

Chang and Velasco (2020) **offer a critique of the current use of SIR models for policy evaluation**, in the spirit of Lucas (1983). Von Thadden (2020) instead criticizes the SIR models as being impractical for short- and medium-run policy and sketches a way to solve two problems of these models: (i) transmission does not simply depend on the number of infectious individuals, but also on the composition of this group, which is influenced by policy; (ii) the available data are inadequate. Avery et al. (2020) provide a critical view of models

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[2] Mortality is reduced because by the time restrictions are lifted for the more vulnerable population a sizable part of the population has recovered reducing the infectiousness of the pandemic.

[3] According to the mortality metrics used by the authors, Covid-19 will be smaller in scale than the Spanish Flu, but equal in overall magnitude to the HIV-epidemic or the opioid crisis. Unlike these, with Covid-19 deaths will be concentrated into the span of a few months rather than spread out over decades (HIV spans into years 1985-2013, the opioid crisis into 1999-2018).

of the spread of Covid-19 so far influential in policy decisions with the goal of providing a foundation for economists.

While the Covid-19 crisis bears huge uncertainty (Baker et al. 2020, see previous newsletters), **it is also likely to bring about more income inequality**. Leveraging on a survey on US households in Feb-March 2020 Hanspal et al. (2020) find that the **greatest losses in net incomes** are concentrated among households in the **bottom of the distribution**; by contrast, the largest **losses in financial wealth** occur at the **top**. Households with the largest income losses are more likely to report both a decrease in expected total expenditure and an increase in desired working hours; those reporting big wealth losses report less significant effects on spending. These results suggest an obvious **fall in aggregate consumption** but also an **increase of labor supply in the coming years**, as households are trying to make up for the lost income. This could **put downward pressure on wages** and further aggravate the economic situation for those in the bottom of the distribution.

3) Normative policy analysis: optimizing the (alleged) health-output trade-off

Most epidemiological-macroeconomic models highlighted in the previous section have a health-output tradeoff stemming from the assumption of an economic value to individuals' life, which ultimately requires political decisions**.** An unavoidable "grim calculus" according to The Economist (2020) where the social welfare maximization problem must incorporate the constraint that the Covid-19 average transmission rate stays below one (Budish, 2020). Nonetheless, positions divide into those reinforcing this type of calculus venturing into questions such as 'What fraction of consumption everyone is willing to give up to avoid the new mortality risk induced by Covid-19?' (Hall et al, 2020); and those who challenge the very existence of health-output trade-off (Saraceno, 2020: "There is no Trade-off. Saving Lives is Good for the Economy").

Rotman (2020) **highlights that it is possible to both stop Covid-19 and restart the economy.** On one hand, 'just' saving lives has huge economic benefits: Greenstone et al. (2020) show that even **moderate social distancing would save 1.7 million lives** which, according to the **typical value assigned to a life**, i.e., "value of a statistical life", would translated into roughly $8 trillion or **about one third of US GDP**. On the other hand, massive increase in testing can quickly get the economy back into gear. All those who test positive should isolate themselves; those who test negative can return to work, traveling, and socializing, but they should be tested every two weeks or so (see also the special chapter in the newsletter nr 2). The Nobel laureate Paul Romer calls the $2 trillion legislation passed by Congress "palliative care" for the economy whilst putting $100 billion into testing would "be far better off".

Certainly, there is not only a short-term health-output trade-off but also a longer-term health cost of the lockdown-induced downturn. Janke et al. (2020) estimate that a 1% fall in employment leads to a 2% increase in the prevalence of chronic illness. Banks et al. (2020) review the relevant literature, according to which the **health effects of recessions are particularly severe for children and those with** preexisting **poor mental health**.

4) Policy levers to mitigate the economic fallout

The debate on policies to tackle the emergency. What is the best way to help firms during the lockdown? As documented in previous Newsletters, there is a **debate on whether loans or outright transfers are most appropriate**. In two recent and related contributions, Hubbard and Strain propose a **nuanced approach** distinguishing the type of measure by firm size. Hubbard and Strain (2020a) argue that **grants are the most appropriate tool for small firms**, **especially in the service sector**. Indeed, **these firms likely confront a permanent revenue loss**, whereas manufacturing firms are in principle able to recover much of the missed sales (which the locked-down consumers might have simply postponed). In order **to implement the grants**, the authors devise a **two-step scheme, relying on the intermediation of the banking system**. Banks would extend loans to their business clients for an amount equal to (an estimate of) their lost revenues, and the loans would be fully repaid by the Government at the end of the period, conditional on businesses not laying off any workers over that same period. The advantage over using a government facility is one of information: banks have already both well-ingrained relationships with businesses and knowledge about them.

For larger firms, whose liquidity problems should be attenuated by greater internal resources and access to financial markets, Hubbard and Strain (2020b) develop a **loan provision scheme**. Financial help should be provided in a form which avoids debt overhang (unlike loans or loans guarantee), and keeps private control (unlike standard equity with voting rights for the Treasury). At the same time, public financial help should compensate the taxpayers for the costs and risks they take. Hence, **the authors suggest the use of preferred stock with fixed dividend payouts**. Indeed, preferred stock underwritten by the State **avoids adding to debt burdens**, **but** their holders don't have voting rights, which **avoid State control**. A similar preferred stock structure was also used in the US with Capital Purchase Program under the Troubled Asset Relief Program (TARP) during the global financial crisis.

According to the "Business continuity insurance" scheme proposed by Hanson et al. (2020), **financial help** to firms should come from the start in the form of **public grants**. In exchange, firms would be required to: (i) gradually **repay** most of these benefits over time **via a special corporate tax surcharge** (quite like in the Boot et al. (2020) post-bail out scheme); (ii) to temporarily **avoid to pay dividends** and repurchase shares, (iii) to agree on **limitations on executive compensation**.

The best policies looking ahead. Most experts warn that **for many firms the Covid-19 shock created** not only a liquidity problem but **permanent sustainability concerns**. For structurally-hit firms loans are often not a solution (the increase in debt may actually contribute to aggravate their situation). If firm viability is the underlying issue, relying on guarantees is likely to only postpone the fiscal costs: **when firms will start going bankruptcy**, it might be **necessary to bail them out** in some form or another.

Several contributions discuss **optimal post-crisis bail-out procedures**. Most commentators think that in the event of a public bail-out the **taxpayer should be granted** some fraction of the upside, and that **bailouts should** be aimed at ensuring business continuity, **not to benefit existing debt holders or shareholders**. For example, Becker et al. 2020 suggest **transforming private debt into State-owned preferred stocks** (so that control rights remain in the end of private entrepreneurs); they also suggest that after the restructuring dividend payments should be temporarily ruled-out and that the State should be granted a senior creditor status. In the same vein, Boot et al. (2020) suggest that **"pandemic loans" should come with an option** (to be triggered when the pandemic emergency has passed) for the lender **to convert to an equity or other profit-sharing stake** if the firm needs at a certain point a public transfer. This arrangement can be implemented, for example, by a tax surcharge in addition to normal corporate tax payments (conditional on the firm being successful again in future years). Similar views are shared, among others, by Honohan (2020) and Buiter (2020). They point out that the way in which the likely insolvency and restructuring wave will be handled will have both efficiency and distributive effects.

Ways to handle possible future firm bail-outs are proposed by Gobbi et al. (2020). In particular, they envisage a **State-sponsored vehicle to restructure the debt of medium and large-sized companies**. This vehicle would **purchase from banks the loans granted to meet firms' liquidity needs during the lockdown phase**. As a complementary instrument to speed-up post-crisis recapitalization of the private sector, Gobbi et al. 2020 also suggest to introduce **significant tax incentives**. Notably, both Gobbi et al. (2020) and Boot et al. (2020) suggest that the post-crisis private debt restructuring could also be pursued by a pan-European institution instead of using national tools.

Fiscal policies for the euro area. On April 23, the European Council agreed to work on a **temporary Recovery Fund**, funded through the EU budget, **to finance programmes to relaunch the economies** of the Member States. Even if **several details are still missing** and the political discussion is still ongoing, Benassy-Couréet al. (2020) discuss what should be the activities and the purpose of the Fund; in their view, "*with shared objectives and modalities, it will be easier to find an agreement on the funding*". They suggest that the Fund should **focus on investment projects in health care and cross-border logistics**. It should also **provide equity to impaired firms**, while facilitating and coordinating **restructuring in** those **sectors** characterized by **structural overcapacity**. Finally, the Fund could provide the resources needed for a EU-level equity fund for SMEs, as the one proposed by Boot et al. (2020) and discussed above.

Gros (2020) argues that a EU-wide recovery fund **should be funded by a one-time EU-wide levy on financial assets**, which could raise €300-400 billion. This levy would be non-distortionary, could be implemented through financial intermediaries (which reduces administrative costs), and would avoid the need to issue common debt (which is highly politically controversial). The levy should hit mainly the assets managed by

investment funds and bank deposits, with a tax rate of 0,5%. The main drawback of this proposal, according to the author itself, is that the levy cannot be made progressive as it only involves a subset of household wealth.

Using a common EU tool for the recovery will be crucial to avoid piecemeal interventions by each State. **Member Countries** in the EU **differ in their fiscal space**, **which may jeopardize the Single Market**. This concern is stressed among others, by Panetta (2020), which warns that policy responses "*should not aggravate fragmentation stemming from differences in initial fiscal positions [and]…should not skew the playing field within the European single market. Viable firms should be able to withstand this crisis no matter where in the eurozone they are located. The threat to the single market is clear: uneven fiscal support implies that a firm's location, rather than its business model, will be the decisive factor in determining whether it survives this crisis.*" Several contributions remind that the European response to the Covid-19 crisis should be in line with the targets to reduce carbon emissions and to promote digitalization set by the new Commission before the crisis. One way to obtain this result is to attach green conditions to state aid (Schoenmaker, 2020).

Two recent contributions elaborate on very relevant fiscal policy issues, covered in previous editions of the Newsletter. Shambaugh (2020) argues that – to decide **when to phase-out the fiscal stimulus** currently in place in most Countries – policy makers should use data-based triggers (for example setting thresholds for unemployment). Doing so would reduce decision and implementation lags. Concerning the issue of the **right amount of targeting to attach to the stimulus**, Mankiw (2020) suggests what he calls **"*ex post* targeting"**. In his own words: "*send checks to everybody—say, $2,000 a month. And at some later time, when the dust has settled, determine who lost significant earnings and who did not. For those who lost the most, the money would be considered a grant. But for those who lost little or nothing, the money would be considered a loan, and it would be "clawed back" through the tax system.*"

5) COVID and Fintech: a primer

In 2019, the number of internet users exceeded 4.5bn worldwide,[4] growing 11 fold since the year 2000. **As social interactions are increasingly intermediated by digital devices, demand for digital financial services rises in tune**. Broadly defined, **FinTech is an economic sector that provides financial services though technological innovation**. As such, FinTech originates "new business models, applications, processes or products with an associated material effect on the provision of the financial services" (FSB, 2017). Examples of **Fintech models** can be found in **payments, money management, trading, wealth and asset management, advisory, insurance, regulatory compliance and information management**.[5]

The Covid-19 pandemic might lead to a reshuffle of the financial sector, comparable to those induced by the great depression and the global financial crisis. In fact, the pandemic forces major changes in consumer behavior both in the immediate and in the medium term. On one hand, **social distancing and other invasive health measures increase our reliance on technology.** Enforcement of social distancing measures thus far has made nearly two and a half billion people entirely reliant on technological solutions for their personal interactions and basic needs.[6] As lockdowns are enforced in a growing number of economies, the same applies to a large portion of the world's output. The resulting surge in data traffic has been enormous (in Italy, it jumped by 40 percent relative to normal times) and forced network and service providers to rethink existinginfrastructure. On the other hand, **the COVID-19 pandemic is likely to alter significantly payment habits.** As pandemic-containment measures confine economic interactions to the cyberspace, demand for remotepayment solutions skyrockets (in Italy, e-commerce transactions increased by over 80 percent since march 2020). The impact of the pandemic on payment habits however is likely to outlast social-distancing measures, as lingering fear of contagion and increased acceptance of digital payments might accelerate the shift away from physical payment instruments (Auer et al., 2020). Widespread government social protections measures that rely on digital government-to-person transfers might contribute to the trend. **But other types of financial services will be affected too.** Preference for remote interactions is likely to **boost demand for online banking, investment, insurance and advisory** – amongst many other. Increased use of digital services

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[4] An "Internet User" is defined as anyone currently in capacity to use the Internet. This entails (i) access to an Internet connection point, and (ii) basic knowledge required to use web technology.

[5] The breadth in Fintech initiatives is matched by the heterogeneity across Fintech operators. These span from extremely small start-up companies that strive to find business models in de-bundling the supply of banking services, to extremely large data-rich social, commercial or technological platforms – known as BigTech – that leverage network effects and extremely detailed customer knowledge.

[6] See https://www.economist.com/briefing/2020/03/26/countries-are-using-apps-and-data-networks-to-keep-tabs-on-the-pandemic

provides fuel for Artificial Intelligence (AI) algorithms, which increase in turn firms' capacity to offer individually targeted products and services.

Financial innovators might come out of the pandemic as winners, but that is not granted. On one hand, "fear of missing out" among venture capital investors might give way to "fear of looking stupid", [leading to acontraction in start-up funding](). On the other hand, the market might prove less contestable than it seems. First, as governments rely on incumbents to ensure that financial support reached firms during the lockdown, incumbent themselves will receive extraordinary measures of support. Second, BigTech firms, which already hold significant market shares in areas of contingent economic activity, appear particularly well poised to make their way into the financial sector.

6) Covid and global value chains

The Covid outbreak affects several aspects of international trade, as overviewed in the ebook edited by [Baldwin and Evenett]() (2020). For one thing it is leading to a deep fall in transaction, both at the international level and within-regions. The [WTO]() forecasts that **merchandise trade could fall by between 13% and 32% in 2020**, depending on assumptions about the length and severity of the crisis, with a **steeper fall in sectors with more complex value chains**, particularly automotive and electronics. The [IMF]() predicts **a decline of global trade in goods and services by 11%**, with advanced countries being more severely affected than emerging and developing economies. The [European Commission]() (EC) projects a **9.7% decrease in global trade in goods and services 2020.** For the EU27, the predicted COVID19-related economic contraction results in a **reduction of 9.2% in extra-EU27 exports** of goods and services, and an **8.8% decrease** in extra-EU27 **imports**.

Against this background, we focus on the **potential disruption of global value chains (GVCs),** which involves two main dimensions of the current debate: i) **how the COVID crisis is** *currently* **affecting GVCs**, and ii) **what will be the** *future* **landscape of GVCs** in a post-COVID world.

The current impact on GVCs. As highlighted in the previous issues of the present newsletter, [Baldwin(2020),]() among others, argues that the first shock comes from the containment measures aimed at slowing the rate of infection. By keeping workers away from work, these measures have expressly reduced output. This is a **supply side** shock that first hit China and some other East Asian countries (e.g. South Korea) and then spread fast in the other industrial giants including the US, Germany, and Italy. **The international contagion from the supply side showed up in a few weeks after the shutdown in China.** About 300 of the world's top 500 companies have facilities in Wuhan and the outbreak of coronavirus caused disruptions to supply chains on all continents and across different sectors ([FT](), [Bloomberg](), [NYT]()). **Industrial production in China has fallen by 13.5% in January-February** combined, compared with the previous year ([UNIDO, 2020]()). This drop of production is severe, in particular when putting it into a longer perspective: neither the SARS outbreak in 2002/2003 nor the financial crisis in 2008/2009 was associated with any such stark fall. As a consequence, in January-February 2020, Chinese exports to Germany, Italy, and France fell by 24%, 18% and 15% respectively ([UNIDO, 2020]()).

The disruption of exports to other countries' domestic production depends on the direct and indirect reliance of such countries on foreign production. **As multi-country production networks have grown more complex, indirect exposure has become an increasingly important consideration.** Using the OECD's inter-country input-output (ICIO) tables [Baldwin (2020)]() computes countries' total exposure (i.e. direct and indirect exposure) to each other. Looking at each countries' manufacturing sector production and aggregating exposure across all manufacturing sector inputs gives the total exposure of each nation's manufacturing sector to the manufacturing sector of other nations. For instance**, in Italy 4.6% of total manufacturing production relies upon Chinese manufacturing direct and indirect inputs**, whereas **4.9% relies on German inputs.**

Given the map of the international production networks Baldwin highlights that supply disruptions in the US, Germany, China, Korea, and Japan would have large effects on consumers and firms in all the major economies. The same is true, but to a lesser extent, for the UK, France, and Italy. A key aspect comes also from the **desynchronization of the Covid outbreak**. He suggests that while China is now gearing back up to pre-crisis production levels, the other two most important countries in the manufacturing sector, Germany and the US – which are still by the virus – can in turn impair supply chains worldwide.

Fernando and Mckibbin (2020) set up **a multi-country multi-sector DSGE model** that accounts, among other aspects, **for the negative impact on production networks and trade.** They estimate a fall in GDP of roughly 9% in 2020 for Italy, US and Germany (see the first newsletter for further details on this paper). Sforza and Steininger (2020) use a **Caliendo and Parro (2015) model of trade**. In their set-up, Covid's quarantine translates into an increase of the production costs that has a direct effect on the cost of each input as well as an indirect effect via the sectoral linkages. They find that in a scenario where countries with a share of COVID-19 cases to the employed population above 0.05% impose a policy where up to 60% of the labor force ends quarantined for one month, there is an average **welfare loss about 13%** for quarantined countries and **global production linkages accounts for about one-fourth of such loss.**

The future of GVCs. The common view of academics and practitioners is that **the COVID crisis will reshape the patterns of globalization**, but **most likely through an acceleration of preexisting trends**. For instance Javorcik (2020a) in her FT opinion argues that the **shocks** that global supply chains are experiencing **are likely to exacerbate existing tensions**. Her points are that i) the US-China conflict has not been resolved, it could reignite at any moment and this would push for moving GVCs within trading blocs; ii) companies can no longer take it for granted that tariff commitments enshrined by WTO rules will prevent sudden surges in protectionism; and iii) the WTO dispute mechanism has stopped working.

Irwin (2020) points out that the pandemics **adds momentum to a deglobalization-trend that started with the Great Recession**. The trade openness index (exports plus imports over GDP) has declined by more than 10% since 2008, which was a historic turning point in the degree of global economic integration post-WWII. This "Slowbalization" is likely to accelerate in response to the current health and economic crisis. **Policymakers could take deliberate steps to reinforce the movement towards deglobalization, as national security and public health concerns provide new rationales for protectionism, especially for medical gear and food, and an emphasis on domestic sourcing.** This will not mark the end of globalization, a process that has reached a historically high level, but probably partially reverse it. Javorcik (2020b) points out that the 2018 tariffs on aluminium and steel, introduced by the US on the basis of the national security exception to the WTO rules, have already paved the way for future protectionism.

Kowalski (2020) suggests that the new FDI measures adopted after the Covid-19 outbreak are already accelerating this trend; for example, EC called on Member States to "*be vigilant and use all tools available at Union and national level to avoid that the current crisis leads to a loss of critical assets and technolog*y". In this respect, on 8 April 2020, the Italian government introduced new measures that expand the strategic sectors governed by the so-called "Golden Power" law on the review of foreign investments in Italian assets.

We are likely to observe changes of attitudes not only in policy, but also in business management. Goldberg (2020) and Javorcik (2020b) make the point that the COVID crisis is likely to change the patterns of global production because of a **different approach to risk management**. So far, **just-in production** strategy, with very little buffers from inventories, was one of the key bones of global production. While this strategy may be optimal to produce complex products, the pandemic has exposed weaknesses inherent in a system that requires all of its parts to work like clockwork. **Low probability events with high disruption potential did not weigh much into production strategies**. However, the **pandemic**, together with past experiences on data breach, hurricanes, earthquakes, and the feared consequences of **climate change**, **might expose firms to what once were considered tail events**. This may lead to a new way of thinking, in which **resilience will feature as prominently as efficiency**. In the context of international trade and GVCs, it may imply that i) a certain degree of redundancy in production may be optimal and ii) there can be **onshoring of critical goods**, which countries may want to hold reserves domestically.

The nationalization or regionalization of global supply chains can have serious **negative spillovers on emerging economies** that relied on GVCs for their development strategy. The UNIDO (2020) warns **onshoring would indeed reduce** opportunities for these economies, mainly for those outside Southeast Asia, which **benefitted from GVC-associated capital flows and access to international markets, human capital and knowledge.** Unless multilateral policy actions are implemented, it is very likely that the disruption of GVCs due to COVID-19 may have long-term consequences: developing countries' potential to industrialize through linking into GVCs can be significantly reduced for many years to come. Javorcik (2020b), however, has a more nuanced view. She believes **that we are likely to observe a geographical shift** for global value chains that will create **new opportunities for less popular investment destinations**, for instance she stresses

that many countries in eastern Europe and eastern and southern Mediterranean have a comparative advantage in products exported by China. If these countries step up their investment promotion efforts, they could enter or intensify their participation global value chains linked to Europe.

The Covid shock is **quickly spilling over to investments** as well, which undermine the future potential of GVCs. The UNCTAD survey over the 5,000 top multinational enterprises (MNEs) reports an average earning revision of -30% by March 23rd (the revision was -9% by March 4th). According to UNCTAD's estimates this will translate into a **30-40% reduction in global FDI during 2020-21**. This means that the collapse of demand and production in many industrialized economies and the divestment from developing countries will likely have far **longer-lasting effects on global production.**

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