

**WHITE PAPER**

# The COVID Crisis and Productivity Growth

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## **The COVID Crisis and Productivity Growth** **by Filippo di Mauro and Chad Syverson**

After the initial wave of the pandemic recedes, productivity will (have to) become yet again a primary concern of economists and policymakers. There are a number of reasons why this crisis might further impair productivity growth, including higher transactions costs (Baldwin and Weder di Mauro 2020), lower mobility, and a reduced scope of resource reallocation across firms, sectors, and countries. There might also be some positive impulses from induced innovation. Either way, policy will matter, and wise choices could mitigate productivity-decelerating effects of the crisis and enhance the influence of productivity-accelerating factors.

The world entered into the COVID crisis in the midst of a 15-year-long productivity growth slowdown. While much debated, there is not yet a consensus on its causes. Regardless, the potential effects of the current partial shutdown of the world economy on the trajectory of productivity growth is a critical question. In this column, we consider the channels through which the crisis might shift the growth rates of productivity and output.

We focus on the expected effects on true productivity, but one thing worth mentioning in passing is that it is likely that in the short run, *measured* productivity will fall. Several governments are implementing policies to encourage labor hoarding, hoping to keep employees on firms' payrolls even as those firms' outputs decline (even necessarily decline, under the hope that the drop in activity will slow the spread of the virus). This measurement issue will unwind at a pace determined by the speed of the recovery and future policy decisions, but could nevertheless swamp changes in underlying productivity growth for some time.

### **Future Productivity Growth through the Growth Accounting Lens**

We begin our analysis with a discussion of the components of the growth accounting identity: output growth equals the growth rate of measured inputs plus total factor productivity (TFP) growth. While, by definition, TFP growth does not reflect changes in labor and capital inputs, we discuss how the current crisis might affect these inputs for two reasons. First, any unmeasured variations in the quantity or quality of labor or capital will be labelled as TFP in any empirical growth accounting exercise. Hence, the potential influences of the crisis on unobservable labor or capital components will show up as measured productivity growth. Second, even measured changes in capital affect labor productivity growth. If one is interested in the implications for labor productivity, the influence of the crisis on capital deepening matters.

**Labor.** The pandemic is unlikely to substantially affect the size of the potential labor force. Tragically, many will die and others will be disabled by the disease, but given what we know from its course so far, these cases are likely to be a small share of total population. Also, this virus seems to disproportionately affect the old, which is no less tragic from a human standpoint, but means that the effect on the labor force is less than its damage across the population as a whole. These are the prospects for the potential labor force. Of course, the

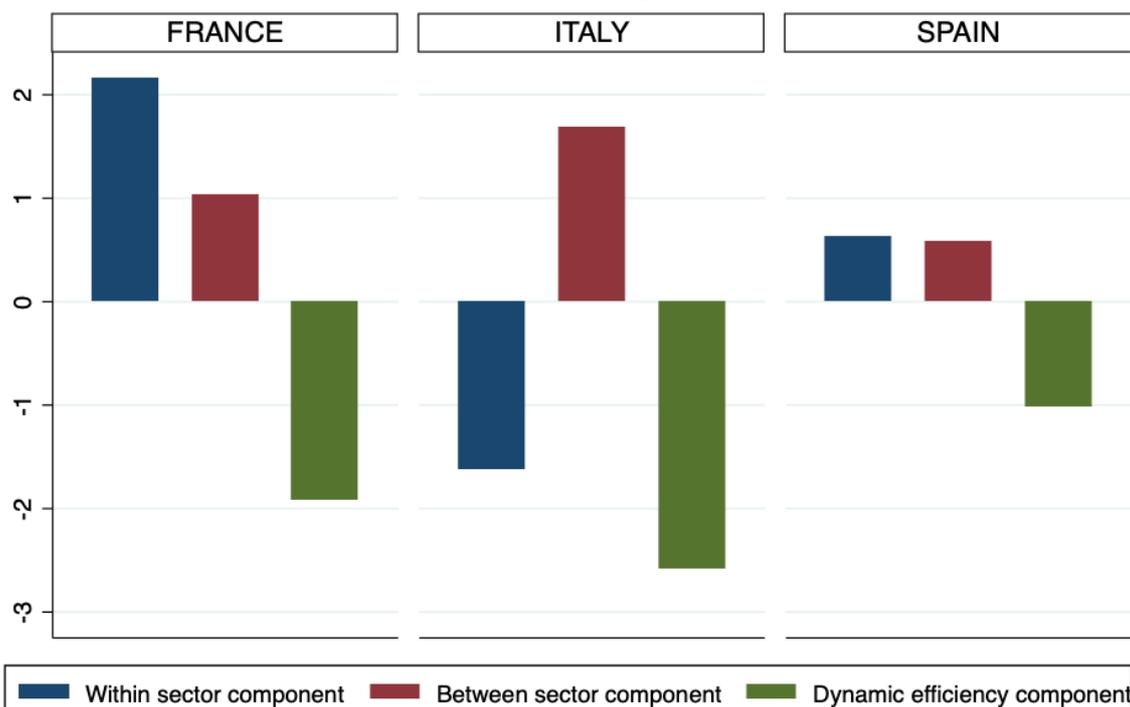
fraction actually employed will depend on the pace of recovery from the crisis. This will be influenced by shorter-run demand and supply side influences that we abstract from here. The crisis might have more effect on labor inputs through **human capital** accumulation channels. Physical distancing measures have already caused some disruption to schooling; whether it will be large enough to show up as a drop in human capital accumulation might not be known for some time. On the other hand, there is some evidence that schooling is countercyclical (e.g. Dellas and Sakellaris, 2003), so the pandemic-induced recession might actually raise educational attainment modestly. Over the medium term, job detachments and persistent unemployment may cause workers to lose skills. Some may be able to build new ones in the meantime, but it bears noting that cyclical unemployment has historically tended to have persistently negative effects on both existing and new workers (e.g. Eliason and Storrie 2006, Oreopoulos et al. 2012). On the other hand, workers who are able to stay attached to their employers and who have shifted to remote working are upgrading their IT skills, raising prospects for productivity gains.

**Capital.** The physical capital stock should not see large changes in quantities due to the crisis. Unlike in a war, the shutdown does not involve a large-scale destruction of physical capital, which also means that that catch up growth from capital investment should be minor. There are some caveats. Certain types of capital might be de facto destroyed/obsolesced simply because demand for certain services (public accommodation in far-away holiday destinations, perhaps) may not recover even in the long run. Likely additions to the capital stock induced by the coronavirus response will be in the form of private and public health infrastructure. In addition, there will be greater incentive to invest in risk-mitigating and robustness-building technologies across various sectors of economies.

**Total Factor Productivity.** We use another accounting decomposition to help structure our discussion of the productivity effects of the crisis. Aggregate productivity growth has three components. The first is within-firm productivity growth, which depends on the way existing firms utilize the resources at their disposal – labor, physical capital, and intangibles like organizational knowledge and management practices. The second is a between-firm component that reflects the gains achieved by reallocations of economic activity that affect utilization of resources within a sector. This can create productivity growth through ‘cleansing’ processes, like the exit of unproductive firms and reallocation of (labor and capital) resources to firms with higher marginal products of these inputs. The third relates to the productivity generation created by the pure shifts of activities across sectors.

Figure 1 shows such a decomposition for the same sample of EU countries, using the firm-level based CompNet dataset ([www.comp-net.org](http://www.comp-net.org)). The within-firm and across-sector components tend to explain (except in Italy) most of the positive dynamics in the productivity. Countering these are inefficient between-firm reallocation dynamics during the period.

## Foster Decomposition country level. Year 2008-16



Source: CompNet data

Let's look at some possible virus-related channels across the three categories.

### 1) Within-Firm Productivity Growth

- **Intangible Inputs.** Intangible assets like buyer-supplier trust, lender-borrower relationships, organisational effectiveness, employee-firm relations, and so on are an important determinant of firms' productivity levels. These assets can have considerable irreversibilities that would require additional, newly sunk investments to replicate if they are destroyed by the crisis and its associated recession. In other words, it is easier for a firm that has kept its employees on the payroll to start back up again after the shutdown than if it had laid all those workers off and had to go track down and rehire them or find replacements. Policies that act to preserve continuity of firms' operations can help avoid intangible capital irreversibilities and their likely associated productivity losses.
- **Knowledge Capital.** This is an additional kind of intangible, worth treating separately due to the attention it receives in productivity research. Will firms innovate and otherwise become 'smarter' as a result of what is happening? Could the virus function, thanks to the broad adoption of new technologies, as a trigger of innovation that could act against the productivity slowdown? It is not clear. Investments of the type mentioned above that mitigate risk and build robustness are likely to be added to the firms' knowledge stock. It is not clear that these investments would show up in productivity as measured from standard operational data, however, in the absence of another crisis. Nevertheless, a reckoning of a firm's operations may yield insights that

raise productivity even during non-crisis times. One might draw a slightly optimistic take on this given research showing a positive correlation between intangibles and productivity (CompNet 2020).

- **The Macro Burden.** Higher taxes and higher inflation may eventually result from the enormous fiscal and monetary actions being undertaken to address the crisis now. This could weigh on capital and labor remuneration and accumulation. This in turn may reduce future productivity growth.
- **Across-Country Barriers.** Transactions costs are likely to increase for the movement of goods and labor across borders, threatening the productivity gains firms achieved through the lengthened multinational vertical supply chains of recent years. Firms will dedicate resources to the repatriation of activities, which again may increase resiliency to future shocks but will involve a contemporaneous loss of output. Firms may also have more difficulties in finding the labor skill sets they desire because of curtailed cross-border labor mobility, even among neighbouring countries that used to have free labor mobility.

## 2) Resource Reallocation between Firms / Dynamic Efficiency

- **Firm size.** Small firms are likely to suffer the most and are likely to exit in large numbers following the virus shock. A large amount of empirical work has established a positive correlation between firm size and productivity. This raises the potential that crisis-induced exit and reallocation might actually lead to within-industry productivity gains through compositional changes. There are some caveats here, however. It is not clear whether such a broad-based shock will select much on productivity as opposed to other firm features (market power, rent-seeking ability, etc.) that could instead be detrimental to productivity growth. Further, the detailed data available on the interaction firm size and productivity at the sector and country level raise critical questions about the potential for productivity-enhancing selection and the initial state. For example, Italy is not only one of the most virus-affected countries in Europe but also has suffered a drag on productivity growth due to the prominence of small firms in its economy. Will the conditions that created this status quo ex ante be changed by the crisis, or will the small, relatively inefficient Italian firms that exit be replaced by new, small and relatively inefficient firms?
- **Zombie firms.** The experience of the Global Financial Crisis shows that massive government interventions may allow firms to survive, but may also create 'zombies' – i.e. firms that in normal circumstances would exit because of poor performance, freeing resources for better use in the process. While there are arguments for limiting business closures at least in the short run (payroll support for workers, knock-on effects in financial markets, irreversibilities in intangible capital), long-run support based only on, say, size or sector rather than productivity, can generate misallocation (Restuccia and Rogerson 2017). Zombie firms might further limit the ability of new, higher-productivity businesses to enter. This highlights the broader issue that business formation rates have been trending downward for several decades in many developed economies.

- **Financial constraints.** The virus crisis will no doubt strain the financial system as much as, or possibly even more than, the Global Financial Crisis did. Productivity outcomes in the long run will depend in part on the capacity of the financial system to effectively channel credit to worthy projects. Several micro-founded sources indicate that financial constraints in Europe may have loosened, particularly after the ECB introduced its Outright Monetary Transactions operations. On the negative side, however, many government and central bank programmes meant to address the current crisis are targeted at small and established firms rather than high-productivity ones. As discussed above, this may make sense in the short run, but in the longer run could unduly increase constraints for – and induce the exit of – start-ups and smaller high potential firms.

### 3) Reallocation across Sectors

The crisis will surely lead to some cross-sector reallocations of economic activity. Sectors such as air traffic, hotels, certain kinds of retail, and so on are likely to see persistent drops in activity. On the other hand, we would expect sectors like healthcare, communications, and IT to see growth. This reallocation will have consequences for aggregate productivity to the extent these sectors differ in productivity and expected productivity growth. These differences vary across countries, making it difficult to predict a uniform expected change in the ultimate direction of such reallocations.

### Conclusions

The focus of policymakers right now is on controlling Covid-19 in the short term and then starting to reopen the economy in a controlled way. Once this has been accomplished, some longer-term and possibly irreversible damage may become visible.

Globalisation, labor mobility and small firms may all still fall victim to the crisis if the world does not succeed in reopening borders, refraining from trade and currency wars and focusing on policies to boost productivity. On the upside, the broad adoption of new technologies – such as IT skills during the epidemic – and strong reallocation pressures may provide an independent boost on productivity as we come out of the crisis.

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