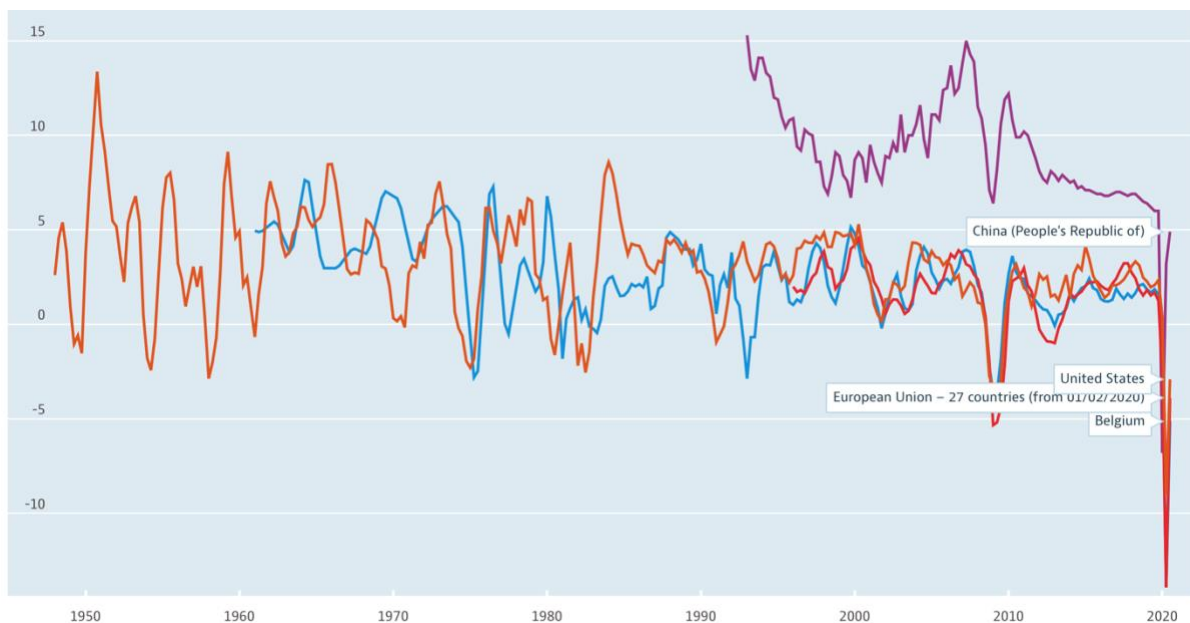


## Covid-19 and the resilience of global value chains

- Glenn Magerman

On top of a tragic global health crisis, the COVID-19 pandemic has caused the largest decline in aggregate supply and demand since World War II. GDP has fallen in the order of 10% in the second quarter of 2020 across the globe, and even up to 15.5% in Belgium (see **Figure 1**). The latest data shows a significant recovery in the third quarter, but this does not include the sharp increase in policies of the so-called second wave in EU countries. It's interesting to point out that China, while heavily curbed, still shows positive expected growth for 2020, compared to most Western countries that face a plausible recession. Similar patterns can be drawn for international trade flows and foreign direct investments (OECD, 2020).

These steep numbers arise from a combination of government responses to curb the outbreak of the virus, as well as increased uncertainty about both short- and long-term economic outcomes. At this moment, it's unclear whether economies will face V, W or L recoveries, resulting in either return to previous growth paths, or to new, lower, growth paths. Together with a decade of low growth and low interest rates, this only adds to the uncertainty, as e.g. the ECB has been in "unconventional mode" since the financial crisis.

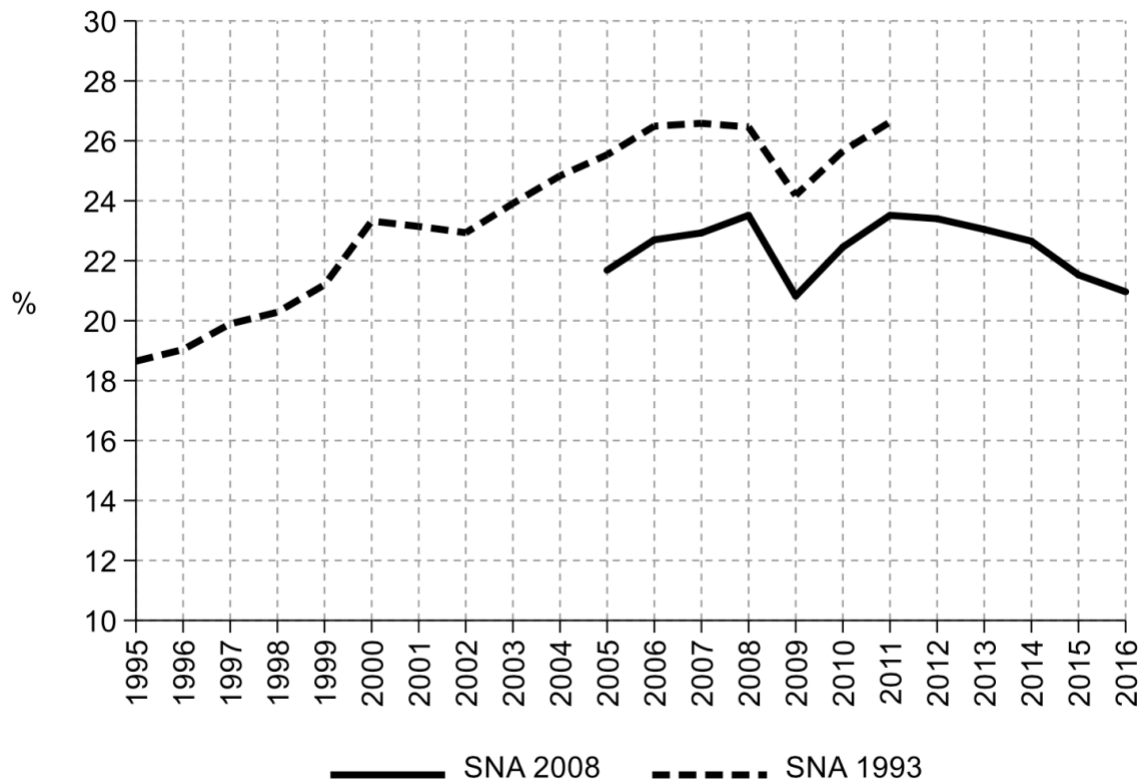


**Figure 1** – Quarterly GDP growth (year-on-year) across selected economies (1947-2020q3).

Source: OECD.

These trends and outlooks have an impact on the organization of production across the globe. Globalization, measured as either the value-added content of trade flows or the length of value chains, has peaked in 2008, and has started to gradually decline since 2011 (see **Figure 2**). Moreover, in its Roadmap to Recovery, the European Council urges for further deepening of the Single Market by restoring disrupted supply chains, to invest in strategic value chains and to reduce over-dependency on third countries. Parallel, there is also a tendency of reshoring, in which firms relocate production closer to home, and often in a particular way: shifting away from labor abroad to investment in capital goods (automatization, digitalization,

robotization) at home. Together with already increased tension on the geo-political scene in terms of protectionist measures up to outright trade wars, Brexit and the demise of the WTO, small shifts in the choices of firms on where to produce what and changes in policies and regulatory frameworks, can have very large consequences on economic outcomes (prices, variety, wages, unemployment rates, specialization patterns etc.) for decades to come.



**Figure 2** – Foreign value added in total global exports (1995-2016). Source: Miroudot and Nordström (2020).

In our current research agenda with Bram De Rock and Mathias Dewatripont, which has been recently supported by ULB and FNRS grants,<sup>1</sup> we study the impact of large shocks such as Covid-19 on (global) value chains and reallocation of production.

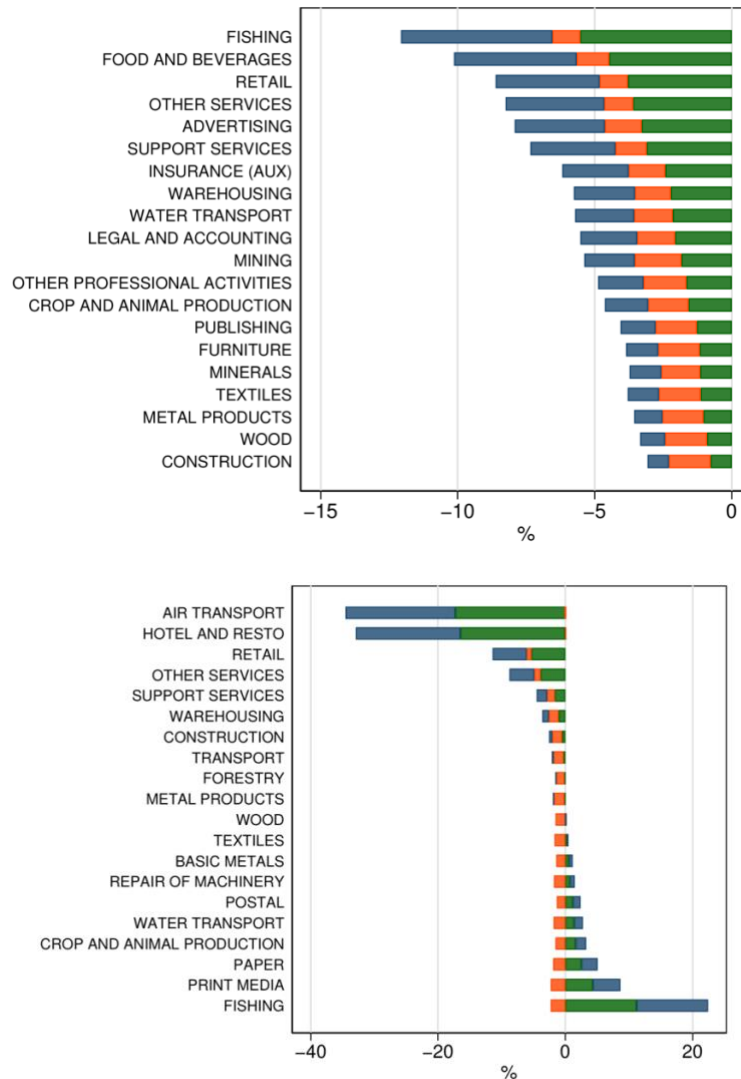
One aspect is the resilience of value chains in response to such shocks, including cascading effects of firm bankruptcies, the availability of suitable substitutes in production, and the reallocation of market shares and competition resulting from this. While very preliminary, we see that exit rates of suppliers and customers are strongly positively correlated, and increase in the importance of the supplier (measured through its input share in expenditures of the customer).

Another aspect is the impact of shocks on the reallocation of factors of production: how do firms readjust their input mix (capital, labor and intermediate inputs) in response to large shocks and under increased uncertainty about the availability of inputs in global value chains? In current work (Bernard et al., 2019), we study multidimensional firm heterogeneity, and find a strong mechanism for both productivity and the ability of firms to match with customers in value chains. Moreover, both channels are strongly related in the data, in a way that rejects standard models of one-dimensional heterogeneity through productivity

differences. Yet a third dimension of the research agenda is to study the nature of contracts, and how they contribute to the resilience and efficiency of value chains.

While most of this work is to be done over the next few years, we have some results for the Belgian economy at the sector level. In Grassi et al. (2020), we simulate the impact of a 9-week lockdown policy on sectoral output. We take into account the network structure of production, the enforced administrative closures, the ability of individual sectors to telework to some degree, and the impact of school closures on the labor supply in each sector. These combined effects generate a reduction in labor supply by sector, which then propagates throughout sector-to-sector linkages, up to final demand. The model predicted a 6.5% decline in GDP for the year 2020, for a 9-week lockdown. However, there is significant variation across sectors, such as air transport, hotel and restaurant accommodation, and retail, which face a close to 100% reduction in sales to final demand over this period (see **Figure 3**).

Such exercises can be used to perform back-of-the-envelope calculations on which sectors to close and open up first, based on their importance in the economy and their contribution to GDP. Unfortunately, the government decided to shut down all non-essential shops and enforce teleworking in all sectors wherever possible, twice. A more detailed approach could have minimized the impact on GDP while keeping as many sectors open and increase the probability of survival of firms in these sectors. Obviously, conditional on health care choices first.



**Figure 3 – Sectoral impact of lockdown policies on Belgium.**

Cumulative impact: administrative closings (green), school closings (red), teleworking (blue). Top panel: value added growth. Bottom panel: sales to final demand. Source: Grassi et al. (2020).

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<sup>1</sup> Exceptional Research Grant FNRS H.P046.20; ARC Grant 20204850; Projet Spécial Covid-19 – ULB.