

Hysteresis in Globalisation: What will COVID have wrought?

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Sisältö

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ABSTRACT

This paper explores the possible changes that globalisation will experience as a result of the COVID shock. It first introduces a simple framework for thinking about why some changes persist while most do not. Second, it characterises the key elements of the COVID shock as far as underlying causes of change are concerned. Third, it uses the persistence framework and shock characterisation to conjecture about the likely changes in cross border flows of goods, services, people, and knowhow.

1 Introduction

My favourite expression relevant to this type of speculative paper is: “The future is unknowable, but also inevitable.” This sums up why most economists shy away from this sort of futurology. By training and temperament, we are more comfortable with historical data and time-honoured models. But in Spring 2020, that is not good enough.

COVID-19 is changing the world faster than most expected and in ways few anticipated. Economists have to marshal their skills and experience to thinking ahead about what might come. The goal is not to conjecture about something as specific as forecasting GDP, or stock prices. It is more of a ‘scanning the horizon’ for dangers that we should think about and avoid if possible. Half of good governance boils down to avoiding doing stupid things that seemed like a good idea at the time. Avoiding them requires foresight and open debate that allows many fringe views and speculations to be considered. Group think is the enemy of future planning. This paper, which unabashedly draws on my early work – and thus is not intended as a piece of original research in the academic sense – is my effort to think ahead about the unknowable future.

2 Why only some things change after a shock

“Hysteresis in Trade” was the title my first sole-authored paper (Baldwin, 1986), and it is – deep down – what this essay is all about.¹ Hysteresis – also called history-dependence or path-dependence – is a feature of many physical systems and some economic systems. It’s a simple notion. If you shove something and it moves, but it doesn’t move back when you release it, the system is hysteretic. The American Heritage Dictionary defines hysteresis as “failure of a system changed by an external agent to return to its original value when the cause of the change is removed.”

This makes it natural to pose the question in terms of hysteresis. Will COVID causes hysteresis in globalisation? Or will everything go back to the way it was? To get at this question, it is worth briefly looking at the sort of economic systems and factors that allow for hysteresis.

Hysteresis can occur in any dynamic system which has multiple steady-state equilibria since an exogenous shock may knock the system from one steady-state equilibrium to another. The notion of hysteresis in economics dates back at least to Phelps (1972) and is somewhat related to well-known effects such as irreversibility, ratchet effects and path-dependencies. However, because hysteresis is merely a property of a model, it may arise in different models for entirely different economic reasons. For instance, hysteresis can occur in models where an exogenous shock can lead to an irreversible change in the employability of the workers (as in Phelps 1972), or in union membership (as in Blanchard and Summers 1986), or in the international distribution of factor endowments (as in Kemp and Wan 1974). My early paper on the matter examined a very different mechanism.

2.1 Sunk-cost hysteresis

In the presence of sunk market-entry costs, firms' entry and exit conditions are asymmetric so a temporary shock can lead to a hysteretic change in market structure and thereby induce hysteresis in prices and quantities.

An example is illustrated in Figure 2 (left panel). To keep things simple, consider the COVID shock is unexpected and lasts one period. Before the shock, the number of

¹ Baldwin (1986) was eventually published in the American Economic Review as Baldwin (1988).

competitive firms in this particular market is n_0 and the industry supply curve they generate is shown as the black supply curve marked n_0 . The demand curve is the downward sloped black line. The initial equilibrium is indicated as point 1. Due to some unspecified sunk entry costs, firms will enter if the price is above the entry trigger price and exit if it goes below the exit trigger price. The band between these is what I called the hysteresis band (Baldwin 1986).²

In the illustration, Covid produces a big surge in demand – say this is the market for respirators or surgical masks. The demand shifts out to the blue dashed line; the equilibrium shifts to point 2 with higher prices and output. The higher price triggers entry and the number of active firms rises to n_1 , and thus the industry supply curve shifts out to the blue dashed supply curve. When Covid passes, and the demand curve returns to its original position, the equilibrium price is lower and production is higher than before.

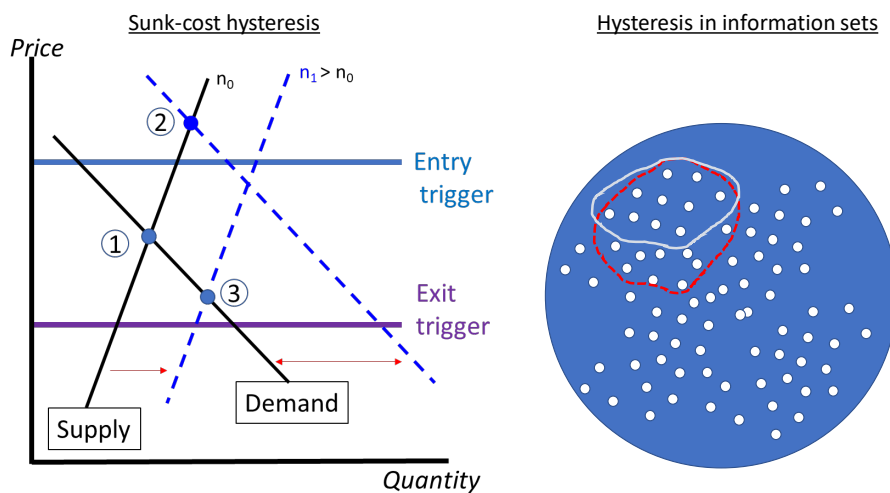


Figure 2: Sunk cost hysteresis – entry that is not reversed.³

To make this sort of hysteretic change work, there must be something in the model that is lasting. Physical capital is an obvious example, but human capital and knowledge capital are equally likely sources of persistence. Basically, the Covid shock alters some sort of capital and thus the productive situation after Covid passes is different because the capital stock is different – capital broadly defined to include human, physical, and knowledge capital.

² Dixit (1989) showed in subsequent work, the band width depends upon the volatility of the underlying process when the process is Brownian motion.

³ Source: Author's elaboration.

Stretching the definition of capital a bit further, similar stories can be envisaged with respect to social capital – things like trust in governments, experts, institutions, and foreigners. There are also more complex versions of social capital like the belief that cooperation and social caring will be reciprocated, or that the government will provide correct information instead of information that filtered by considerations of political expediency.

An important aspect of capital that has been frequently referred to in the COVID debate is the 'organisational capital' linking firms and workers. That is, firms and workers spend time and energy on learning to work together, to acquire firm-specific or team-specific knowledge and to establish relationships with other workers and bosses. This sort of capital is typically lost when firms go bankrupt, so the world post-Covid will not automatically return to the way it was before.

Likewise, networks of suppliers and buyers are based on a form of capital that involves information and trust and reciprocal bonds that are costly to establish. A shock that leads even a few of the 'links' in the supply network to fail may have ripple effects throughout the network. Some of these effects can be persistent since it takes time to re-establish firms and connections.

2.2 Hysteretic changes in information sets

The right panel of the figure shows a schematic example of how a shock can change knowledge capital. The white dots represent suppliers or customers or technologies. Before the shock, the firm is aware of those inside the grey line. The shock exposes the firm to new things and these are not forgotten after the shock passes. The result may well be that the firm's optimal choice – optimal given its information set – changes permanently after the shock.

2.3 Multiple Nash equilibriums

A classic source of hysteresis is the existence of multiple equilibrium. A common source of equilibrium multiplicity comes from strategic interactions that have multiple Nash equilibriums. Consider what might be called the telecommuter meeting game.

In this stylised interaction, workers A and B have to participate in a meeting with their common boss who is in the office. Each worker can choose to come in for the meeting or participate by phone. Since time immemorial, the meeting has been in person, so it

continues to be held in person even when both workers would prefer to take the call from home.

		B	
		In person	On phone
A	In person	2, 2	1, 1
	On phone	1, 1	3, 3

Figure 1: Multiple equilibriums in the meeting game.⁴

A shock like COVID, which forces a coordinated switch to the ‘everyone calling from home’ equilibrium, would lead to hysteresis in the meeting game. At the end of the paper, I suggest that this will in fact change globalisation. By getting people and companies ready for remote workers, Covid is also getting firms ready for hiring talented, low-cost service-workers based abroad.

2.4 New Economic Geography (NEG) models

New Economic Geography (NEG) models, as typified by those in the pathbreaking book Fujita, Krugman and Venables (2001), investigate situations where agglomeration forces influence the location of industry. Since agglomeration is a ‘circular concept’ – an agglomeration force is said to be operating when the concentration of economic activity promotes further concentration – models with agglomeration forces typically have multiple equilibriums.

In such situations – which are pervasive in most modern economies – large policy shocks can have hysteretic effects even when small shocks do not.

To take an example from Baldwin, Forslid, Martin, Ottaviano and Robert-Nicoud (2011), consider the classic core-periphery model (Krugman 1991). This model has two initially symmetric regions (or countries) with two sectors, one where firms and workers are mobile and one where they are not. When industry is already clustered spatially, in such a model, agglomeration forces produce inertia that makes small policy interventions ineffective when it comes to location. That is, agglomeration produces rents which tend to hold firms and factors in place even if a policy otherwise

⁴ Source: Author’s elaboration.

would lead to a geographical shift. However, once the magnitude of the shock crosses some threshold, workers and firms will move. And as firms and factors start to locate away from the agglomeration, the size of the agglomeration rents decreases, and this makes the site even less attractive. Typically, the outcome will be a massive relocation of industry that is hysteretic.

The 2011 book contains dozens of examples where taxes or subsidies can have hysteretic effects when the size of the policy change is sufficiently large. Of course, a large shock like COVID and the massive policy changes it has induced, is exactly the sort of shock that could result in hysteretic changes.

It is, however, my judgement that the Covid shock will not be large enough to have an aggregated impact on the global location of production. It may result in a marginal reduction on trade dependency on China (and thus shift some production to other nations), but agglomeration forces are just too strong for this to have, for example, a significant impact in China's share of global manufacturing.

2.5 Political organisation hysteresis

Given that policies are chosen by political structures of various types, one important source of quasi-permanent changes from Covid will operate via changes in political economy structures. A good example comes from Blanchard and Summers (1986). These authors used hysteresis to explain the persistence and ratchet-like behaviour of European unemployment rates. The basic idea was unions – who bargained over wages with firms – were only concerned with the wellbeing of their members – the insiders.⁵ In setting wages, unions balanced the benefit of higher wages against the cost of higher unemployment – but only of their members. Unemployment of outsiders was a spillover that was external to the optimisation. As each negative shock reduced the union-membership-share of the workforce, hysteretic political economy changes (unionization share) led to persistent unemployment. Moreover, each negative shock raised the new equilibrium level.

In trade, a similar model has been used to explain tariff liberalisation. The idea is simply that liberalisation begets liberalisation, so once the liberalisation ball starts rolling it is difficult to stop. Of course the 'ball' can, and recently has, roll backwards with

⁵ See Lindbeck and Snower (1984) for the original insider-outsider model of unemployment.

steel tariffs rising worldwide following unilateral tariff-hikes by the Trump administration.⁶ It is the backward application of the juggernaut mechanism that is most likely to be relevant to the post-Covid world (more on that later).

The juggernaut theory asserts that tariffs are the outcome of a domestic political confrontation between those who benefit from protection (import competitors) and those who lose from it (buyers of the goods). Given that consumers are typically less well organised politically, the initial tariff rate is higher than it would be if the government were a strict welfare maximiser.

When the GATT was formed in 1947, and reciprocal tariff-cutting talks were announced, the political alignment inside each participating nation was altered. Reciprocity is the key. It converted each nation's exporters from bystanders in the tariff debate to opponents of protection within their own nation. Exporters can win the prize of better access to foreign markets only if tariffs in their home nation are lowered, so lobbying against domestic tariffs becomes a way of lowering foreign tariffs.

To put it differently, GATT trade talks change to political objective function facing all governments. Because the MTN rearranges the political economy forces inside every nation involved in the talks, a new political equilibrium emerges in each nation; an equilibrium that involves lower tariffs, but not necessarily zero tariffs. According to the GATT practice, these tariff cuts are phased in over 5 to 10 years in all participating nations.

The juggernaut aspect, i.e. the liberalisation-begets-liberalisation aspect, stems from the impact of each round of reciprocal tariff cuts on the stock of firms in import-competing and export industries. In every participating nation, phasing in tariff cuts expands export sectors' output/employment and contracts import-competing sectors' production/employment worldwide.

When the next MTN arrives, the pro tariff-cutting group (exporters) is stronger and anti tariff-cutting group (import-competitors) is weaker in each nation so governments find it optimal to cut again. Once the juggernaut starts rolling, it crushes all tariffs in its path although this may take four or five decades since entry and exit is slow.

⁶ The Baldwin and Robert-Nicoud 2007 model is based on Grossman-Helpman protection-for-sale approach to tariffs setting; the economic mechanism was first elaborated in Baldwin (1994).

Plainly, a one-time surge in domestic prices and reduced exports – say the temporary trade restrictions imposed by governments, or the logistic disruptions imposed by containment policies – could lead to the entry (of import competitors) and exit (of exporters). This could conceivably start the tariff ball rolling in the protectionist direction.

More generally, temporary protection can create vested interest groups that then persist in lobbying for protection long after the shock the led to their creation has dissipated. This is one common explanation for how and why the EU's wasteful Common Agricultural Policy has lasted so long. It created quasi-permanent political organisational capital that changed the policy setting environment.

2.6 Expectations/attitude hysteresis

In financial economics, the notion of 'habit formation' is relevant to thinking ahead about the post-Covid world. Many psychologists are pointing out that confinement is taking a toll on hundreds of millions' – maybe even billions – of people. A March 2020 survey, cited in Perlmutter (2020), showed that 36% of American adults are experiencing a serious impact on their mental health due to the virus. But will this have a lasting impact on things? The evidence is supportive of an affirmative answer.

In a famous paper on behavioural finance, Malmendier and Nagel (2011) investigated the “depression-babies’ hypothesis – people who grew up in the depression are less willing to take financial risks because of the negative returns they experienced in the 1930s and 1940s. They found empirical support for persistent behavioural changes caused by specific shocks. Importantly, they found that age mattered.

“We find that households’ risk taking is strongly related to experienced returns. . . . recent experiences always receive higher weights and thus have a stronger influence on risk taking than those early in life, but even returns experienced decades earlier still have some impact . . . the estimated weighting scheme can be represented, to a good approximation, as weights that decline linearly from the most recent year down to 0 in the year of birth. Our estimates imply that young individuals, with short lifetime histories, are particularly strongly influenced by recent data. (p. 376)”

More generally, macroeconomics and finance studies such as [Boldrin, Christiano and Fisher \(2001\)](#), and [Campbell and Cochrane \(1999\)](#) propose risk aversion behaviour that is based on habit formation. Popular accounts of how Covid has impacted people’s consumption and time-use patterns frequently suggest that the changes may outlast the pandemic. These economic studies provide a structural explanation for why these predictions might be more than woolly and wishful thinking.

3 The nature of the COVID concussion

While international trade has collapse before – most recently in the shadow of the Global Crisis of 2008-2009⁷ - the Covid crisis has hit trade in novel ways.

The most important is the commonality of the shock. Not since the 1970s oil shocks has the whole world economy been hit in the same way by the same thing and at the same time. Taking just the US, China, Japan, Germany, Britain, France, and Italy, the hardest hit nations account for: 60% of world supply and demand (GDP), 65% of world manufacturing, and 41% of world manufacturing exports. To paraphrase an especially apt quip: when these economies sneeze, the rest of the world will catch a cold.

These economies – especially China, Korea, Japan, Germany and the US are also global value chain hubs, so their woes will produce ‘supply-chain contagion’ in virtually all nations. A particular concern is firm-failures in supply chains – especially small and medium enterprises. As such failures destroy sunk cost investments in organisational capital (say, building a team that can work together, establishing a network of buyers and suppliers, establishing trust in the industry, etc), they are likely to have hysteretic effects. But given that most supply-chain trade is conducted by very large firms – and governments seem committed to keeping at least the big firms in business – my guess is that these disruptions will not have an independent impact on supply-chain trade for more than a few years.

⁷ See, for example, Baldwin (2009).

4 Globalisation post COVID: Goods and investment

Turn now to thinking about how these frameworks can be used to think ahead about globalisation in the post-Covid world. Start with the distinction between essential and non-essential goods since the pressures for change are much stronger for the former. There are a number of definitions of essential goods but all of them include food and some medical products (see for instance Bown 2020 on medical goods). For the purposes at hand I'll just take the list as implicit.

4.1 Trade in non-essential goods

Trade in goods happens when things are made in one nation and purchased in another. For most goods, the purchasing side of this equation is rather banal. The action comes from the production location angle. Roughly speaking, things end up being produced where production costs are lowest for the good under study for a very simple reason. Customers prefer to pay less.

Of course, low wages do not always mean low cost, so high-wage nations are often the low-cost location for goods where the nation's technology/productivity advantage more than outweighs its higher wage and nonwage costs. In other products, low-wage nations are the low cost producers since their low wages more than compensate for their low productivity. That, in a nutshell, is the principle comparative advantage.

The point of delving into these basics is to realise that the Covid shock will not fundamentally change nations' sources of comparative advantage and thus will not fundamentally change trade patterns in most goods. As comparative advantage is not something subject to hysteresis from a shock the size of the Covid crisis.⁸ Things are different when it comes to food and medical supplies since there is good chance that governments will adopt policies that are explicitly aimed at distorting the location of production away from the existing comparative-advantage-based allocation.

⁸ I argue in my 2016 book, as do many others, that the long 19th century, say 1820-1914, did produce a hysteretic shock that led manufacturing to concentrate in today rich nations. Thus multiple equilibria are possible, but one or two year shocks are too small to disturb them, in my view.

4.2 Trade in essential goods - trade as insurance

There is now, in a number of countries, a sentiment that trade is a vulnerability. Many commenters point out that the nation would have been better off with domestic capacity for producing, for example, N95 masks. This may lead to a push for more domestic production capacity for essential goods, including raising tariffs to encourage local protection. But is this the right lesson to draw?

The basic principle of risk management is diversification of risks. Or to put it colloquially, “don’t put all your eggs in the same basket.” A good example of this comes from an essay by Chad Bown that details how protectionist instincts in the Trump administration have actually reduced the supply of medical equipment to American healthcare workers (Bown 2020).

As Bown (2020) writes: “The shortages of hospital supplies in America require an immediate scaling up of domestic production capabilities,” but shutting down trade is counterproductive. The US both imports and exports medical equipment and that, Bown notes “should be interpreted as a blessing, not a curse, during this pandemic. As the disease rolls across the globe, shutting down markets in succession, access to imports means Americans can buy medical equipment from a country like China, which, right now at least, is able to maintain its production and exports. Indeed, the Trump administration has quietly recognized this through its Project Airbridge in which it is airlifting PPE supplies from China directly. Early in the crisis, when the tables were turned, it was the reverse. The Trump administration did the right thing the first week of February by sending emergency supplies to hard hit Wuhan province.”

When it comes to the goods that were essential in the fight against Covid, it seems inevitable that there will be a push in many nations to boost domestic production capacities. For small nations that cannot possibly produce the full range of goods domestically, stockpiling is the likely solution. Indeed, in Switzerland stockpiling of food and essential goods has a long tradition (see FONES 2020).

But by the end of the Covid crisis, I believe most nations will recognise that having access to a diverse range of foreign suppliers is a good idea. I would not be surprised if nations set up state-to-state reciprocal supply agreements – deals that would set out principle for trade in essential goods in times of crisis. Something like a risk pooling pact, or the swap networks that central banks have set up.

As a small, rich nation, Finland may want to be sure they are part of one of the ‘clubs’. Since trade is the exclusive competence of the EU, the trade angles would have to

jive with EU rules. But medical matters, and public health matters are in the hands of member states, so there could also be some room for some bilateral emergency planning with other nations.

4.3 Global value chains

While there is much speculation about Covid having a lasting impact on the shape of international supply chains, I am sceptical. Firms are, in the abstract, aware of the risks of supply shocks. Covid was unexpected in many ways, but the possibility of such a pandemic was widely discussed in the past at the WHO. Indeed, many nations have national pandemic preparedness plans, the US being a leading example (CDC 2005). Moreover, pandemics are only one type of shock that can disrupt international supply networks. In 2011, for instance, the Japanese electronic and auto industries suffered from the dual hit of the Fukushima nuclear disaster and flooding of auto plants in Thailand. Labour strikes, political upheaval, and climate disasters are all things that can happen. Firms have risk managers who are well aware of these possibilities. And knowing all that, they still source from abroad.

Private firms arrange their supply chains to balance profitability with risk. The current state of supply chains reflects the outcome of that optimisation. Unless governments change regulations or provide subsidies to shift the balance toward more diversification, firms are likely to find the old balance is the right one – even after Covid.

To see this in more detail, note that the supply-chain diversification risk is basically an application of the traditional portfolio choice problem as Figure X illustrates. The risk-reward frontier is upward sloping since having a highly diversified sourcing strategy means, inevitably, paying higher prices for some inputs. Focusing on the lowest cost sources raises the reward (cost savings) but raises the risk. The indifference curve shows the firm's balancing of the two elements in this trade-off, and the dot shows the optimal balance, i.e. the optimal supply chain configuration.

The main point is that unless Covid somehow permanently changes corporation's perceptions of the cost of risk (i.e. shift the indifference curve), or somehow permanently shifts the risk-reward frontier, the optimal solution will remain the same.

For essential goods, it is possible – indeed likely – that large nations around the world will change laws, regulation, and/or taxes to force companies to adopt more diversified supply chains. This would show up as a policy-dictated shift in the indifference curve.

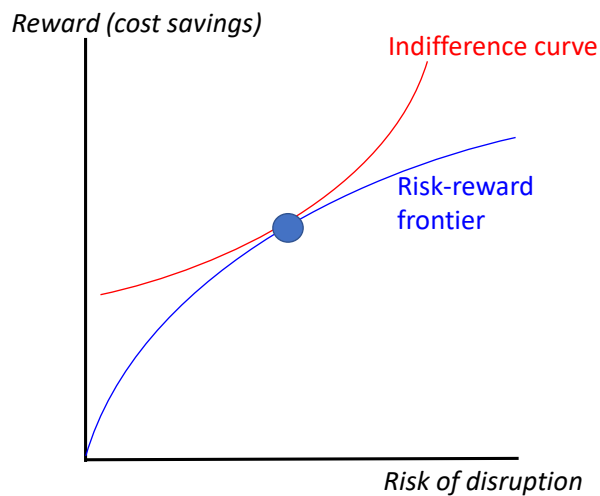


Figure X: Optimal supply chain diversification.⁹

4.4 Climate change and food

In Davos this year – which was held while Covid was still viewed as a Chinese problem that China was dealing with in a Chinese way – the main source of supply disruptions discussed concerned food. Since trade in food is in essence trade in water, climate changes impact on the global allocation of rain will have important implications for food production and thus food trade. Whatever lessons we learn from Covid and access to secure medical supplies should be immediately applied to food supplies. Finland is fortunate in this respect as food production in Europe as a whole should not suffer too much from climate change. But the notion of Swiss-style stockpiling is probably worth consideration.

4.5 Protectionism post-Covid

International trade has seen widespread removal of tariffs and other trade barriers since WWII – with a marked acceleration since 1990 or so. The liberalisation begets liberalisation since the reciprocal opening of trade encourages the entry of export-oriented firms and the exit of import-competing firms. Since a nation's stance on protectionism often depends critically on the political power of exporters (who favour openness) and import competing firms (who favour protection), the gradual liberalisation

⁹ Source: Author's elaboration.

has shifted the political economy equilibrium in favour of openness. This process is described in some detail in, for example, Baldwin and Robert-Nicoud (2008).

To the extent that Covid shuts down international trade for an extended period, it could shift the political equilibrium towards more protectionist stances. The entry of more domestic producers who want shielding from competitive foreign firms, and the exit of exporters who lobby for globalisation could result in a persistent shift towards anti-trade policies. The thrust of this is that trade disruptions that favour local production and disfavour exporting can rearrange political economy forces in a way that lead to continued protectionism. My feeling is that the Covid shock will not be large enough to matter at the aggregate level but that it will matter for some specific products – especially medical products including drugs and their chemical precursors.

4.6 Telemigration and trade in labour services

The Covid containment policies have led to millions of service-sector workers working from home. The result has been a massive, sunk-cost investment in equipment, bandwidth access, and training. Quite simply, a big fraction of the workforce work remotely when previously they did not; in many cases, this is possible thanks to sunk-cost investments that will persist well beyond the pandemic. How many workers?

In a recent VoxEU.org column, Tito Boeri et al (2020) note that evidence from a recent survey (Eurofound 2017) suggested that less than a tenth of workers work remotely before Covid. Boeri contrasts this with a post-Covid survey: “The confinement has induced a spread of these arrangements among persons that so far were only mildly involved in this organisation of work. For instance, in Italy, 7 out of 10 managers interviewed in a survey carried out at the beginning of March by a managerial association (Manageritalia) declared having adopted smart-working practices for their employees – the first experience of this arrangement for about 40% of the workers involved. Taking the survey data at face value, we may expect that the number of workers involved has increased to reach about 15% of employment in the average EU country.” These authors go on to provide a preliminary classification of jobs (based on an analysis of the task involved) that might be carried out remotely given their nature. They call these Type 1 jobs. Their findings suggest that between 24% and 31% of jobs could be done fully from home (depending upon the nation). “These jobs are mainly concentrated in services, with examples being professors, engineers, lawyers and architects.” Within manufacturing, type 1 jobs involve administrative and marketing activities.

Why are these facts relevant to future globalisation? As I argue extensively in my 2019 book, *The Globotics Upheaval: Globalisation, Robotics and the Future of Work*, domestic telecommuting paves the way for international telecommuting, or what I call 'telemigration'.

Once firms realise they can get many service tasks performed using remote workers, they will soon understand that some of the task could be performed by much cheaper workers located in high-talent, low-cost nations. This is essentially the globalisation of the service sector. Using foreign-based freelancers may not be quite as good as using on-the-spot workers, but it will be a whole lot cheaper. Platforms like Upwork.com provide an easy way for rich-nation firms to hire service workers of all types from countries that have much lower costs of living. This is not a new point.

In the 2000s, Alan Blinder became concerned that advancing information technology would lead to offshoring of many US jobs in the service sector. In many areas like call centres, and back-office processing, Blinder's concerns came true. As part of this, he developed a ranking of how "offshorable" each US occupation was. His ranking was based on two criteria. If the job had to be done at a specific location in America, then it could not be displaced by foreign competition. If the job could be done remotely, Blinder assigned a numerical value to how easily the output of the work could be transmitted with little or no deterioration of quality.

Using these criteria, he estimated that about half of all management, business, and financial jobs could be done from abroad. The share was about 30 percent for many professional, and office and administrative jobs. In terms of sectors of the economy with the most offshorable jobs, Blinder lists professional, scientific, and technical sectors as having almost 60 percent of the jobs open to international wage competition. In finance, insurance, and the media, half of the jobs are vulnerable. Subsequent studies, like Blinder and Krueger (2013) tweaked these estimates, but the new numbers remain in the range of one in three US jobs.

To date, this service-sector globalisation has been small but growing fast. By accelerating the trend towards doing more online, Covid will almost surely accelerate this sort of trade in services.

5 Concluding remarks

Things are the way they are for a reason. Economic outcomes are not random draws in a Bingo game, or based on the wit and wisdom of clever people. They are the outcome of careful balancing of trade offs. Covid will change many things for the next few years, but my view is that most of world trade, in particular the nature of multinational production (global value chains), will not be affected in a lasting way since there is no clear source of hysteresis at the aggregate level. There are two very clear exceptions to this.

Trade in services – people sitting in one nation and working in offices in another – is likely to get a mighty boost from the work-from-home experiments that are being run all over the world. Sunk cost investments in equipment, training, and organisational arrangements have been massive. Companies and managers have learned how to get remote workers to produce services. Once Covid passes, these sunk investments will remain. And they will make it easier for companies in high-wage nations to employ lower wage service and professional workers from abroad. In short, globalisation is likely to veer toward more trade in services in the post-Covid world.

The second is trade in essential medical products. Generals tend to plan future armies to be apt at fighting yesterday's wars. This is a natural tendency. It is likely to apply to the production of essential medical equipment and drugs and their components and precursors. The conjecture here is based on my prediction that policies with respect to these goods will lead to quasi-permanent changes in global production and trade patterns. Keep in mind, however, that the size of these industries is modest.

5.1 The Trump factor

Since 2016, President Trump has orchestrated a war against world trade. He has raised tariffs against every major nation in the world and almost all of them have retaliated. The US-China conflict grabs the headlines, but Trump administration policies have been quite consistently anti-trade, anti-investment and anti-immigration. It has been especially focused on disrupting multilateral cooperation of all types, but especially on trade issues. The US's undermining of the WTO appellate body is the best known example of this along with the US's withdrawal from the TransPacific Partnership, which was a plurilateral cooperation that many interpreted as a soft approach to addressing the challenges of China's unique form of capitalism.

Compared to the Trump factor, Covid will – in my view – have a relatively minor impact on international trade relations. But if the Trump administration’s mishandling of the pandemic leads to his losing the election, the door will be open to a renewal of multilateral trade cooperation on topics ranging from medical products to climate-related goods. The future of the US election is truly unknowable, but it might be worth preparing for the possibility of an American administration that would be opening to cooperation on trade and investment.

6 References

Baldwin Richard, Paul Krugman (1989) "Persistent Trade Effects of Large Exchange Rate Shocks", Quarterly Journal of Economics

Baldwin, Richard & Robert-Nicoud, Frederic. (2008). A Simple Model of the Jugger-naut Effect of Trade Liberalisation. International Economics. 143. 10.1016/j.inteco.2015.04.008.

Baldwin, Richard (1986) "Hysteresis in Trade", MIT mimeo prepared for 1986 NBER Summer Institute, April, published in Empirical Economics 15, 127–142, 1990, <https://doi.org/10.1007/BF01973449>

Baldwin, Richard (1988) "Hysteresis in Import Prices: the Beachhead Effect", American Economic Review, September, 78

Baldwin, Richard (1994). Towards an Integrated Europe, CEPR Press, London.

Baldwin, Richard (2019). The Globotics Upheaval: Globalization, Robotics, and the Future of Work, Weidenfeld & Nicolson, RRP£20, 304 pages.

Baldwin, Richard (ed.) (2009), *The Great Trade Collapse: Causes, Consequences and Prospects*, A VoxEU.org Publication, 27 November 2009.

Baldwin, Richard and Paul Krugman. "Persistent Trade Effects of Large Exchange Rate Shocks." Quarterly Journal of Economics, 1989.

Baldwin, Richard, Rikard Forslid, Philippe Martin, Gianmarco Ottaviano, Frederic Robert-Nicoud (2011). Economic Geography and Public Policy, Princeton University Press, New York.

Baldwin, Richard. "Hysteresis in Import Prices: The Beachhead Effect." American Economic Review, September 1988a, 78.

Blanchard O, Summers L (1986) "Hysteresis and the European Unemployment Problem", NBER Macroeconomic Annual, 1

Blanchard, Olivier and Lawrence Summers. "Hysteresis in the Unemployment Rate," NBER Macroeconomics Annual, 1986.

Blinder, Alan S. & Alan B. Krueger, 2013. "Alternative Measures of Offshorability: A Survey Approach," *Journal of Labor Economics*, University of Chicago Press, vol. 31(S1), pages S97 - S128.

Boeri, Tito, Alessandro Caiumi, and Marco Paccagnella (2020) "Mitigating the work-security trade-off while rebooting the economy," *VoxEU.org*, 09 April 2020.

Bown, Chad (2020). "COVID-19: Trump's curbs on exports of medical gear put Americans and others at risk," 9 April 2020.

CDC (2005). National Strategy for Pandemic Influenza, <https://www.cdc.gov/flu/pandemic-resources/national-strategy/index.html> .

Dixit A (1989b) "Hysteresis, Import Penetration, and Exchange Rate Pass-through", *Quarterly Journal of Economics*.

Dixit, Avinash (1989). "Entry and exit decisions under uncertainty, " *Journal of political Economy* 97 (3), 620-638.

Eurofound (2017), "Working anytime, anywhere: The effects on the world of work," Publications Office of the European Union, Luxembourg, and the International Labour Office, Geneva.

FONES (2020). "Report on Strategic Stockpiling 2015", Federal Office of National Economic Supplies, <https://www.bwl.admin.ch/bwl/en/home/themen/pflichtlager.html>.

Fujita, Masahisa, Krugman, Paul and Venables, Anthony, (2001), *The Spatial Economy: Cities, Regions, and International Trade*, vol. 1, 1 ed., The MIT Press.

Kemp, Murray and Henry Wan. "Hysteresis of Long-Run Equilibrium From Realistic Adjustment Costs," in George Horwich and Paul Samuelson (eds.) *Trade, Stability, and Macroeconomics*. New York: Academic Press, 1974.

Krugman, Paul, 1991. "Increasing Returns and Economic Geography," *Journal of Political Economy*, University of Chicago Press, Chicago.

Lindbeck, A. and D. Snower, (1984), "Involuntary Unemployment as an Insider-Outsider Dilemma", Seminar Paper no 282, Institute for International Economic Studies, Stockholm.

Perlmutter, Austin M.D. (2020). "5 Strategies for Managing Uncertainty During COVID-19," Psychology Today, 11 April 2020.