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# Trumpism, Brexit, Industry 4.0, and COVID-19: What is happening to globalization?

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A Review of the Literature on  
Economic Globalization

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30 April, 2021  
Uppsala University  
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<https://fek.uu.se>  
ISBN: 978-91-506-2908-8



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## Executive summary

In this literature review we provide an overview and sorting of a large number of studies addressing the question of the current changes with respect to economic globalization. This is a first step in a larger collaborative project between Uppsala university and SEB, where we examine the changing landscape of globalization and how Swedish firms are dealing with these changes.

As the recent experience of the pandemic taught us, we are all dependent on a globalized production system for most of our necessities and our jobs. A decade ago, economic globalization was an almost unquestioned fact for most. Few could imagine it being called into question. But major events like Brexit, the rise of nationalistic and populist leaders and the global financial crisis of 2007/2008 has sown doubts: what is happening to globalization? In this report we have waded through a large number of reports and academic research to seek an answer not only to what the current state of globalization is, but more importantly to the question of what causes changes to globalization. As expected, we have not found a single answer; the question is far too complex for that, and the findings and arguments in the literature are too disparate. We have, however, found what we believe are a number of convergences in beliefs and analyses on what the current state of globalization is, and what the most important drivers are for future changes. Our main findings follow here.

Any rumors of the demise of globalization are overblown. The world is, by most measures, becoming increasingly globalized. But, compared to the period from the mid 1980's when the world was being globalized at a very high rate, the rate of globalization has abated since the financial crisis of 2007/2008. The pandemic, while denting the global value chains that constitute the backbone of a globalized world economy, does not seem to have significant direct effects. The longer-term effects, in terms of loss of trust in globalized production systems, are yet unclear.

The slowdown in globalization that can be observed is largely driven by two intertwined factors: a change in the policy landscape away from an earlier dominant ideal of free trade, and a change in the geopolitical situation towards a bi-polar world. The belief in the ideal of free trade has in many countries been shaken by rising inequalities and job losses believed to result from globalization, fueled by a rise in populist nationalist rhetoric. The rise of China as an economic superpower has provided a new role model for growth that is not as dependent on free trade and small government, but rather an active state and an idea of managed trade.

The latest technological revolution, Industry 4.0, in contrast to earlier industrial revolutions, does not unambiguously drive globalization. Advances in robotics and additive manufacturing now enable firms to manufacture more locally, leaving the impact of this technological revolution on globalization ambiguous.

In conclusion, our best guess is that the future global economic landscape will be more multidimensional as we move from a uni-polar world where the ideal of free trade was unquestioned, to a bi- or multi-polar world economy where alternative ideals for economic development compete. If this comes to be, it stresses the importance of rethinking earlier ideas about how to manage organizations, their strategies and their innovation systems. These, however, are questions for the next report in this project.

# Contents

<b>Introduction</b>	<b>1</b>
What is globalization, and why are we interested in it?	3
What is globalization?	3
This is why globalization is important	5
<b>A longer perspective on globalization</b>	<b>6</b>
Learning from history	7
<b>Current drivers of and limitations to globalization</b>	<b>9</b>
Technology: a constant enabler?	9
One sustainable world	10
Politics: master driver and hindrance	12
Recent experience: more protectionism and less free trade	12
Intervention to be attractive or to load the dice	13
Financial globalization and financial cycles	14
Why have we seen these changes, and what else is in store	15
Two, or more, economic systems?	16
More regional, bilateral and ad hoc economic cooperation	16
COVID-19 a driver of globalization or not?	17
Globalization after COVID-19	17
Lessons from current drivers and to globalization	18
<b>Indicators and measures of globalization</b>	<b>20</b>
A comprehensive measure: globalization indices	20
The four flows of globalization measures	21
Trade flows	21
Investment flows	22
Information flows	23
People flows	24
Measures of technology	25
Measures of sustainability	26
Measures of politics	27
Lessons from measures	28
<b>Conclusions</b>	<b>29</b>
<b>References</b>	<b>30</b>
<b>Appendix A – Data Sources</b>	<b>33</b>
<b>Appendix B – A Brief Note about Methods</b>	<b>34</b>

# List of Figures and Tables

<b>Figure 1.</b> FDI, trade, GDP and GVC trends, 1990-2019 _____	4
<b>Figure 2.</b> Waves and Phases of Globalization _____	6
<b>Figure 3.</b> DHL Global Connectedness Index, 2001 – 2020 _____	21
<b>Figure 4.</b> KOF Globalisation Index, 1970-2018 _____	21
<b>Table 1:</b> Indicators for Trade Flows _____	22
<b>Table 2:</b> Indicators for Investment Flows _____	23
<b>Table 3:</b> Indicators for Information Flows _____	24
<b>Table 4:</b> Indicators for People Flows _____	25
<b>Table 5:</b> Indicators for Measures of Technology _____	26
<b>Table 6:</b> Indicators for Cultural Globalization _____	27
<b>Table 7:</b> Indicators for Political Globalization _____	27

# Introduction

Few topics receive such interest in media and everyday discussions as the state of globalization of the world. For a long period, it has felt as if the world has become increasingly more connected, and multinational firms like Amazon or H&M have become increasingly present in everyday life. But a spate of recent events – Brexit, Trump’s “Make America Great Again” campaign, and looming trade wars – have led many to wonder whether globalization is under threat. The COVID-19 pandemic and the following bouts of nationalism and talk of “strategic autonomy” has further fueled such concerns. What is happening to globalization?

A sign of the concern for globalization is the question that the free-trade oriented journal *The Economist* posed in their January issue in (2019): “Has the steam gone out of globalization”? Another sign that the concern for globalization has gained ground of late can be seen in the doubling of the use of the term ‘de-globalization’ in English language texts from 2011 to 2020<sup>1</sup>. While *The Economist*, and other writers, conclude that globalization may have slowed down but is far from under threat, it is important to note that this is a question that requires further nuance than the simple “is it becoming more or less.”

The world can be globalized in different and sometimes contradicting ways. Globalization is often thought of in terms of the movement of goods across borders, but if the capital needed to set up production in different countries becomes more globalized it can reduce the need for shipping goods across borders. One form of globalization can reduce another. A common theme in discussions on the future of globalization is to discuss its ‘drivers’ – such as new technologies or political initiatives that enable globalization – but this is like only discussing the supply-side when trying to understand how a market works. A nuanced understanding of where globalization is going also requires an understanding of changes in its demand; what is it that makes us want more or less globalization in our lives. By seeing globalization as the outcome of a balancing of the *possibilities of* against the *limitations to* spreading economic activity across nations it is possible to better understand what is happening to it.

Understanding what is happening to globalization is an important, but challenging, task. The good news is that many people have already asked this question and have communicated their insights and ideas journal articles, reports and academic studies. The bad news is that this wealth of studies can easily feel overwhelming. The purpose of this report is to provide a first sorting out of the literature that has addressed the question of globalization. As detailed in Appendix B, we have surveyed different types of literature, with a focus on academic writing, on the question of what is happening to globalization. This is not a fully encompassing review of everything that has been written on this topic, but it constitutes, to the best of our combined efforts, an attempt to cover the most relevant literature.

We summarize our findings in six points:

1. The globalization of the world is, by most measures, significantly slowing down after a period of hypergrowth.
2. This slowdown is result of changes in the possibilities and limitations of globalization. Of particular importance is a change in the political vision, across nations, of the need for a globalized world; the problems today seem greater in relation to the benefits of a globalized world as compared to thirty years ago. Free trade is not any longer an unquestionable principle for economic policy.
3. Globalization is, and will become, increasingly regionalized, largely as a consequence of the rise of China as a second world economic power. Increased regionalization sets the bounds for future globalization and allows for the possibility of blocs that are differently globalized.
4. More than before, technological development is an ambiguous driver of globalization. Industry 4.0 (robotics and additive manufacturing) can lead to either more or less

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<sup>1</sup> The google engram service (<https://books.google.com/ngrams>) allows a quick investigation into the relative popularity of terms in English written text over extended periods of time.

globalization, and while artificial intelligence can enable more globalized production, increased concerns about IT safety can reduce such efforts.

5. From the perspective of a firm, the discussion and measures of globalization *in general* are too abstract to be of direct use. Depending on the business model of a firm, different indices can be of varying importance.
6. COVID-19 impacted globalization through its effects on the global value chains that firms are connected to and brought into sharp focus the strategic management of global value chains as a new and central field of managerial and academic attention.

In this report we provide an overview of the ongoing discussion and research on where globalization is heading. A follow-up report addresses the question of how Swedish multinational firms are dealing with the changing globalization landscape. Where the current report takes a broad perspective on globalization, the next report will focus on firm's strategic responses to current globalization challenges.

Next, we introduce the topic of globalization and present a simple thought model of globalization that we will use throughout the report to sort the literature. Then we look back at the history of globalization to discern earlier causes of change in globalization, from which we structure a discussion on the current drivers and limitations on globalization that are likely to shape globalization over the coming decades. We then survey different measures that can help to track changes in globalization. Last, we conclude the report with a discussion of where we see that the literature on globalization stands today and what issues require further understanding.

# What is globalization, and why are we interested in it?

## What is globalization?

The term globalization is commonly used in academic writing, and it goes back some seventy years, although there are other older concepts – such as internationalization – that capture some of the essence of globalization (Ghemawat, 2018). Globalization became a mainstream term in economics in the 1960s, to denote the extent to which goods, services and money flowed between countries and to what extent national economies were interconnected. The term gradually came to be used in other research fields such as political science, sociology and management. As the concept of globalization spread across social science it was reconceptualized to include three broad dimensions: the economic, the political and the cultural (Caselli & Coleman, 2006). In this report we focus on the economic aspects of globalization, but, as will be clear from our discussion, these dimensions drive each other: economic globalization affects culture and politics, which in turn influence economic globalization in a complex cycle. One of the points we make in this report is that to understand changes in one of these aspects of globalization, it is necessary also to understand the other.

Globalization can easily become a very technical subject. Transaction costs, asset specificity, comparative advantage and other economic terms are commonly used to describe and analyze it. Behind this jargon lies a fairly simple story. Globalization is not automatic, or with a life of its own. Globalization is the outcome of a myriad of decisions that firms make every day about more or less two questions: where should we produce what we want to sell, and where do we sell it?<sup>2</sup> This answer to the question depends on two considerations: what can be gained by locating the production and sales in a particular place, and what are the possibilities of doing so.

In the simplest of pre-industrial worlds, the answer to these questions is: in the same place. Before there were factories for mass production, and before it was possible to transport goods long distances at a reasonable effort and cost, most production and consumption was located in the same place, or ‘co-located’. This is still the case for many services that cannot be mass-produced and shipped, such as haircuts. After the first and second industrial revolutions with their improved capabilities to produce things at a large scale and to transport goods far and wide, the answer to the questions of where to produce and where to sell became more complex. Some things, like hard drives for computers, are produced in more or less one location and shipped around the world. This is an example of globalization by trade in goods. Other things, like beer, are produced in many places close to where they are consumed. When the beer is produced by a multinational firm in many different countries, it is an example of another type of globalization. This is not globalization through trade in beer cans, but through the movement of production technology and the use of a brand across different countries and the repatriation of profits to a headquarters that constitutes the globalization. This gives rise to globalization in the form of foreign direct investment (FDI) and services, where a multinational firm invests in other countries and sets up production and/or sales there. These two types of globalization (by trade and by the coordination of local producers under a global brand) show up differently in measures of globalization. Where the first type shows up in regular trade data, the second one does not; data on cross-border investments and trade in services that occurs within the multinational firm is required to measure that globalization (WIR, 2020).

When firms make the decision of where to produce and where to sell, they, by and large, consider what makes the most economic sense. If they can earn a greater profit from producing in one place and shipping it to another, they will do so; if they think they can earn more by using their technology and brand in production across different locations, they will do so. These kinds of decisions determine how globalized our world is. If all firms decided to only produce and sell within the borders of their own nation the world would not be globalized, and the more firms decide to produce and sell across the world, the more globalized the economy becomes. A first insight is thus that to understand what is

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<sup>2</sup> This simple model does not reflect the full complexity of international business and trade; it merely fulfills the function of a thought figure that helps us orient a complex and sometimes confusing literature on globalization.

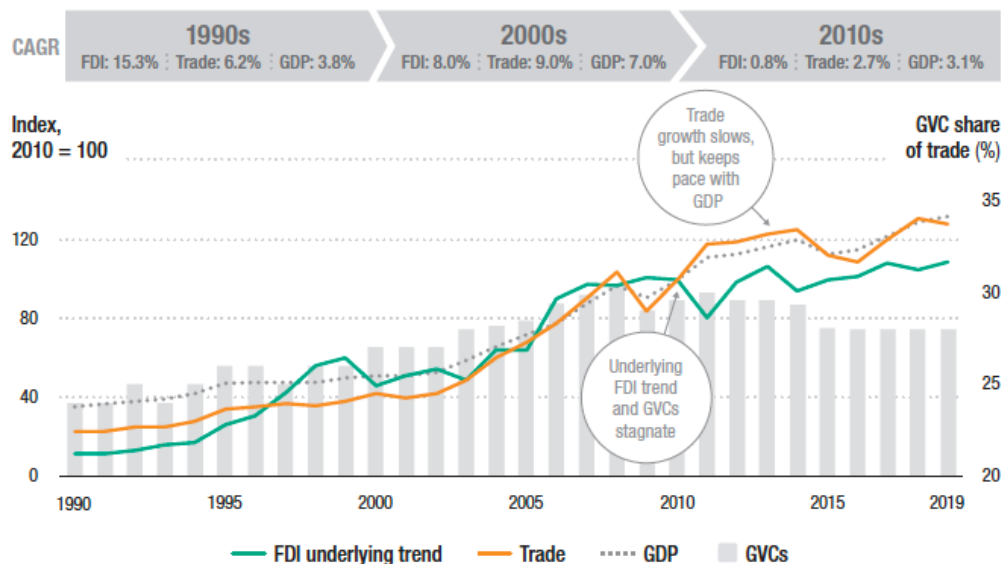


happening in globalization, we need to understand how firms are responding to changes that affect their decisions on where to produce and sell their goods.

To understand economic globalization in its modern form, we need to make our model a little more complex, because the firm also makes the decision on what part of the product it should make itself, and what part it should buy from other producers: the ‘make-or-buy decision’. Henry Ford had the idea that all the parts of a Ford automobile should be made by the Ford company, so it originally owned its own mines and Brazilian rubber plantations along with the US assembly line for the cars. This choice to make everything would be very unusual today. Most firms make only a small part of a product, and some produce no part of it at all – they just design and market it. The make-or-buy decision is important in our simple model of globalization because the firm that chooses to buy needs to choose whether to buy parts, intermediary products, locally or globally.

Much of the increase in the trade globalization that has taken place over the past three decades is not in trade in final goods – the iPhones or the Volvo car – that are shipped to the customer, but that the *parts that go into making* the iPhone or the Volvo is sourced more globally than earlier. When Volvo cars in Gothenburg decides to buy parts from manufacturers in Estonia rather than from Sweden, the production chain of Volvo becomes more global, and this drives globalization. The technical term for the entire chain of intermediary products – from the steel sheets to the electronics and marketing – that go into making a Volvo car that is assembled in Gothenburg is the *global value chain* of a Volvo car. The reason why it is called a value, rather than a production, chain is because economic policy makers are interested in tracing where along the production chain that economic value is generated, as that determines the payoff to firms and nations of participating in the production chain. Global value chains are essential to our model of globalization as they constitute a third expression of globalization by firms. WIR (2020) shows that about 30% of the all the world trade happens within GVC, i.e., that firms have decided to make their value chains more global.

Figure 1 below, taken from WIR (2020, p. 123) illustrates the development of different measures of globalization from 1990 onwards. FDI (green line), trade (orange line), world GDP (dashed line) and trade in GVCs (bars). FDI and trade and trade in GVC all grew rapidly and more or less in synch from 1990 to 2010, after the financial crisis. Trade continued to grow but at a slower pace while FDI and trade in GVC stagnated.



Source: UNCTAD.

Note: Trade is global exports of goods and services. GVC share of trade is proxied by the share of foreign value added in exports, based on the UNCTAD-Eora GVC database (see Casella et al., 2019). The underlying FDI trend is an UNCTAD indicator capturing the long-term dynamics of FDI by netting out fluctuations driven by one-off transactions and volatile financial flows.

**Figure 1.** FDI, trade, GDP and GVC trends, 1990-2019. (FDI, trade and GDP indexed, 2010 = 100; GVCs, per cent).

Source: WIR (2020)

To understand globalization and what is happening to it, we need to understand when and why firms – like Volvo, SKF or H&M – decide to produce and sell locally or across borders, a decision that is visible in the kind of global value chains they organize. In our simplified model this decision is taken to maximize the profits of the firm by maximizing the revenue while minimizing the cost. In speculating about what will happen to globalization in the future, we are interested in the developments (drivers) that influence the perceived costs and benefits of global or local value chains of firms. In the next section we trace some of the historical drivers of these decision, and in the third section we look at some of the most important current drivers.

### **This is why globalization is important**

What happens to globalization is important to all of us because it influences our daily lives in several ways. Changes in globalization can make the world more or less similar. Because of the increased globalization of the food industry, a visit to a fast-food restaurant or eating packaged ice cream provides a similar experience across most of Europe. By changing the experience of everyday events, globalization impacts cultures and the way we think and see things.

Because globalization is the result of the decisions of firms that provide employment and pay taxes in countries, a change in globalization also means a change in the economic situation of countries and their inhabitants. Increased globalization is well known to grow the economies of countries that trade and to improve the living conditions of many of their inhabitants. Globalization also creates losers; nations can lose taxes as firms move to another place, and workers that lose their employment when firms move production to another country. An important point that is often brushed over is that even if trade is generally beneficial to the economic development, the distribution of these benefits can be unequal, and thereby globalization can create winners and losers (Lesser, Reeves, & Harnoss, 2016; Rodrik, 2011).

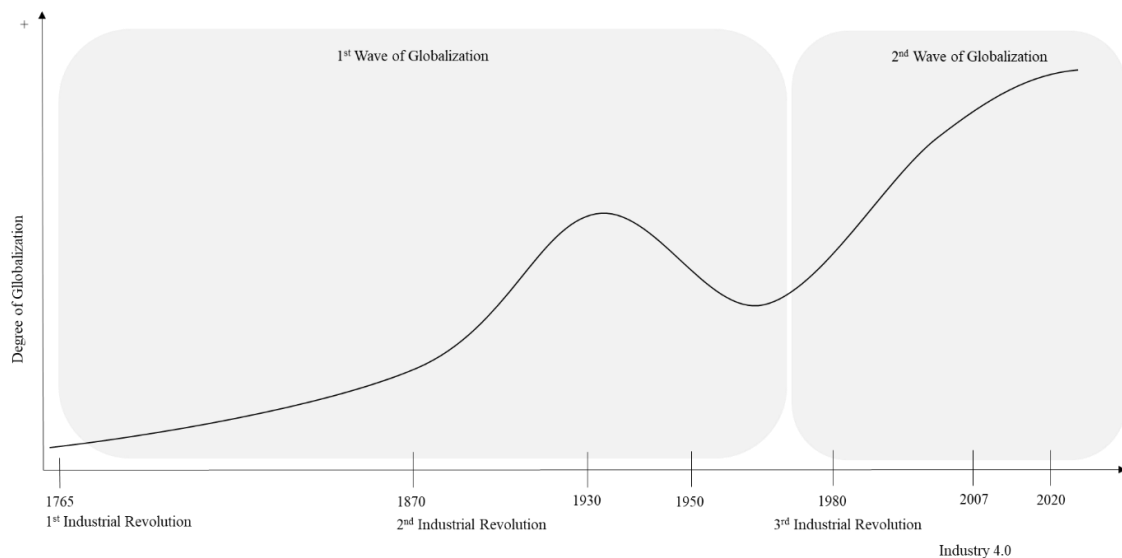
Trade and globalization are particularly important questions for a small and open economy like Sweden. Increased globalization has enabled Swedish firms to sell more goods, but it has also meant that much of the low-skilled work in manufacturing in Sweden is now done in other countries, where labor is cheaper. Globalization, in the form of increased GVC trade, has thus made it easier for skilled people to find a job in Sweden, and it has grown the Swedish economy, but at the same time it has made it more difficult for a Swede with fewer skills to find a job (Tillväxtanalys, 2014). This is a change that can be difficult for politicians to note as the total number of jobs increase, but the problem is clear for those who have lost their job and have a difficult time finding a new one.

Disgruntled people who have lost their jobs, and what they do, is another reason why globalization is important. Globalization is closely related to the question of national sovereignty and democracy. While democratic nations can trade and thereby create a globalized world, some researchers argue that there is a fundamental tension between global markets and democratic nations (Rodrik, 2011; Stiglitz, 2002). The connection is complex, but, simply put, globalization thrives when everyone uses the same currency, has the same economic policies, and has no restrictions on the movement of people or goods across borders, as this reduces the costs of trading. However, such similarity among nations is often at odds with the idea of the sovereign democratic nation state. We see this tension when the EU seeks to harmonize for instance the minimum wage across the union.

Regardless of the stand on globalization as homogenizing, beneficial or detrimental, we are all deeply interested in understanding what is happening to globalization. In the absence of a crystal ball, a useful method is to look to seek patterns in what we can know something about – history – and from there to form an idea about what might occur in the future.

## A longer perspective on globalization

Based on our most recent history and current perception of the world, it is easy to imagine globalization as a force that is inexorably advancing towards a world where its economies, cultures and populations become more and more interdependent. However, taking a look back in time shows that this has not always been the case. Globalization has not always been an unstoppable movement towards total interdependence. Although the common desire of civilization to reach out and interact with one another has always fueled globalization (Beer, 2015), over the years there have been ups and downs in the degree of globalization. While globalization at some points in history has slowed down or decreased, globalization, in general, followed an increasing trend, from lesser degrees of globalization to the interconnected world that we live in today. Over the past 300 years, we can identify two distinct waves, where globalization increased and decreased (cf. Cuervo Cazurra, Mudambi, & Pedersen, 2017; Jones, 2008). Figure 2 provides an illustrative overview of the two waves of globalization and puts it into a historical perspective.



**Figure 2.** Waves and Phases of Globalization. *Source:* Authors' illustration inspired by Jones (2008), Cuervo-Cazurra, Mudambi & Pedersen (2017), and Cavusgil et al. (2020)

During the **first wave of globalization** (from about 1765 to the early 1970s) there was an increase in globalization, followed by a period of disintegration, or de-globalization. Starting with the first industrial revolution, the use of water and steam power to mechanize production and power ships and trains has initiated this “First Global Economy” (Jones, 2008). With the help of the 2<sup>nd</sup> industrial revolution, electricity was introduced, steel production picked up and the use of gas and oil became more accessible. This led to a steep increase in the degree of globalization, where production and shipping were lifted to a new level. It was also during this period of time that the colonialization politics of European countries led to the establishment of the first subsidiaries of early (often state-sponsored) multinational enterprises (MNEs) in Asia, Africa, and the Middle East. The first wave of globalization unraveled in 1914 and more or less collapsed in 1929. Even before the First World War, a backlash against the first global economy were noticeable, by several countries introducing tight immigration controls based on ethnicity that led to a disintegration of global commodity, capital, and labor markets. The First World War intensified prior trends and resulted in the dissolution of trade agreements, and in a growing nationalism that led to governments blocking foreign companies, trade, and people (Cuervo Cazurra, Mudambi, & Pedersen, 2017). This resulted in a decrease in the level of globalization.

Although the great depression led to a meltdown of both cross-border capital flows and the international trading system, there were entrepreneurial activities nevertheless (Jones, 2008). The period between the two world wars presented an interesting paradox. While technology – in the sense of the further development of cars, telephones, and air travel – continued to shrink geographical

distances and thereby enabling firms to produce and sell in other places, political distances between nations were growing simultaneously. Several circumstances, amongst others the great depression in the 1930s and the build-up to World War II, caused political leaders in the Western world to pause plans of trade expansions and focus on national production first, to sustain jobs and ensure economic independence. “Technology made the global businesses of that time much more robust, so they largely survived the political and institutional upheavals” (Cuervo Cazurra, Mudambi, & Pedersen, 2017, p. 158). As a reaction to World War II and the advent of the cold war, a number of trade barriers were put into place that slowed down globalization even more. The Western economies were, however, begun to dismantle previously installed trade barriers and reconstructing the economy. It was during this time that the creation of the General Agreement on Tariffs and Trade (GATT) reduced barriers to international trade and investment. Furthermore, international organizations such as the World Trade Organization (WTO), the International Monetary Fund (IMF), and the World Bank were formed, and the Bretton Woods System was put into place. Taken together, this first wave of globalization shows how technological improvements are subservient to political developments when it comes to shaping globalization.

The **second wave of globalization** (from the late 1970s to today) began with a stimulated increase in globalization due to deregulations, liberalizations and an enormous growth in cross-border trade and investments. The effects of a third industrial revolution which led to technological advances in information, communications, and transportation technologies (also known as the ICT revolution) facilitated more efficiency at lower costs and increased the interconnectedness of the world, affecting the degree of globalization in a positive way. For example, personal computers, the internet, and web browsers not only laid the path for digitalization, but also facilitated communication through creating internet presence of individuals and firms. Thereby, the ICT revolution not only contributed to a continuing growth of established MNEs but also allowed small and medium-sized enterprises to become internationally competitive. The internet and web browsers allowed for an increased international competition, due to online purchasing and shopping made available beyond national borders. Furthermore, the ICT revolution has allowed for the globalization of the service sector, allowing areas like tourism, entertainment, banking, insurance, and retailing to provide their services to an international customer base.

On the political front, the collapse of the Soviet Union as well as the market liberalization of Central and Eastern Europe led to a further integration of national economies. The growth of the European Union and its ideal of an internal market played an important role. The opening up of China and India to trade, and the transformation of these from some form of socialism to some form of capitalism, enormously increased the global availability of labor and consumers. A period of hyper-globalization resulted, where globalization reached higher degrees in a rather short period of time (Rodrik, 2018).

This hyper-globalization has, by most measures, slowed down after the financial crisis of 2007/2008. The rise of digital technologies that constitutes the fourth industrial revolution, also known as Industry 4.0, has been more ambiguous than earlier industrial revolutions with regards to propelling globalization. Another factor influencing the slowdown in globalization has been a concern among consumers about the sustainability of the global economic system. The effect of Industry 4.0 and the concerns for sustainability on globalization are treated in depth in the next section.

## Learning from history

History shows that there are two primary drivers of change in globalization. First, there are changes in *technology* that provide new opportunities for production, transportation and coordination over great distances. Overall, technology has led to increased degrees of globalization, connecting the world more and more and thereby increasing interdependence between individuals and nations. Second, there are changes in *politics* that have influenced globalization, both positively and negatively. Of these two drivers, technology has been steadily providing increasing opportunities for globalization (cf. Cavusgil, Knight, & Riesenberger, 2020, p. 66ff), while it is the political will to globalize that has

waxed and waned, thereby creating the waves in globalization that we have experienced over the past century.

If we look at globalization from a historical perspective, it is not surprising that globalization has had its ups and downs. The “yo-yo effect” of globalization, as Ghemawat (2018) describes it, has manifested itself in two identifiable waves that have been heavily influenced by technology and politics as the two main driving forces. However, the effects of global financial cycles should not be left unmentioned either, since finances are one of the enablers of future growth and development. While the first wave of globalization declined dramatically during the great depression that started in 1929, the second wave of globalization experienced a period of hyper-globalization (Rodrik, 2018) that has not been affected by the great recession in 2007/2008 to the same extent as the first wave. While the great depression of 1929 induced a decline in the degree of globalization, hyper-globalization during the second wave has slowed down. This phenomenon has been labeled as “slowbalization” (Bakas, 2015), fittingly describing a deceleration of hyper-globalization. In the most recent years, hyper-globalization during the second wave has reached a plateau, if not its peak (Kobrin, 2020). How the COVID-19 recession in 2020 will affect the future development of the degree of globalization remains to be witnessed.

Next, we turn to what is known about the current drivers of globalization to conclude where the important consensuses and divergences about where globalization is heading.

# Current drivers of and limitations to globalization

The literature we have surveyed is full of observations of what may or may not drive globalization. To structure the overview of this multitude, we have followed the United Nations Trade Conference on Trade and Development (UNCTAD) in their world investment report (WIR, 2020). They distinguish three current megatrends that can serve as 'drivers and limitations on globalization: (1) technology and new industrial revolution, (2) policy and economic governance, and (3) sustainability. These three drivers are often intertwined, enhancing each other, yet situations can also occur where they drive globalization in different directions.

## Technology: a constant enabler?

The digital transformation often described as the fourth industrial revolution, Industry 4.0 or the digital economy will profoundly change the way in which firms produce and coordinate activities in global value chains (Pananond, Gereffi, & Pedersen, 2020; WIR, 2020). The cost of doing transactions is central for location and spread of firm activities; in the research literature this is referred to as the coordination cost and monitoring costs of business operations (Autio, Mudambi, & Yoo, 2021). Both of these costs have decreased as a consequence of the introduction of digital communication technologies. Digital transformation includes several new technologies, such as Internet of Things (IoT), AI, robotics-enabled automation, the cloud, augmented and virtual reality (AR and VR), platform-based technologies, e-commerce, fintech, blockchain, and 3D printing. Taken together, these enable firms to operate over greater space, which drives globalization and international interconnects. On the other hand, these developments open up for economic possible solution to re-shore firm operations, enabling local-for local production and consumption (Antràs, 2020; WIR, 2020).

This development has enabled more complex governance and synchronization in global value chains. It has also opened up for a greater number of collaborating actors and processes (Awate, Larsen, & Mudambi, 2015). The impact of some of the giants of the digital economy such as Amazon and Alibaba have profoundly altered and developed global value chains (Pananond, Gereffi, & Pedersen, 2020). Platforms have enabled small firms to become suppliers to global markets, either directly to end consumers or as suppliers of intermediary products that form a part of a global value chain (Li, Frederick, & Gereffi, 2019). Looking forward, AI systems of control and maintenance can be improved, which can enable firms to globalize their business even more, in regard to specialization and lean production processes, increasing control and minimizing cost. It can also open up for new business opportunities, in particular when it comes to transforming the offering of products into services – what is called 'servification'. For example, Big Data analytics can be used in manufacturing to foster servification of manufacturing, and Cloud storage makes it possible to carry out complex, data-intensive tasks from standard personal computers (WIR, 2020). Teleconferencing accelerates the physical separation of service labor and service activities (Baldwin, 2019). Hence, the ability of firms to spread out production and consumption across the globe is likely to increase further with digitalization, creating longer, more specialized GVCs, optimizing efficiency and cost minimization by making use of local advantages coordinated into GVC (Lorenzen, Mudambi, & Schotter, 2020).

New technologies are also suggested to open up for the reshoring of business operations, i.e., bringing back home operations that have earlier been outsourced and offshored, leading to a lower pace of globalization or de-globalization of business activities. More specifically, scalable digital technologies enable the concentration of both low and high knowledge activities, strengthen the centralization of activities to fewer points. For example, advanced robotics-driven automation opens up for a scenario of reshoring and centralization in terms of production steps (WIR, 2020). To the extent that globalization is driven by a search for cheaper labor (Ghemawat, 2018), robotic development can reduce globalization as robots can be cost competitive with cheaper labor and therefore reduce offshoring for cost reasons. The coming years will also show further development towards "white collar" robots, opening up for the centralization of both low and high knowledge activities, and the possibility of re-bundling activities (WIR, 2020). Future automation solutions may thus reduce rather than increase the profitability of breaking up production processes, thus making the nature of firm

activity central for deciding on the net effect of digitalization on organizational form (Antràs, 2020). This is especially interesting when matched with sustainability and the need for less transportation and a smaller footprint on the environment. With time, there might be economies of scale with local production, opening up for the centralization and bundling of firm activities in one place.

In addition, the future technology of 3D printing also holds promise for significant shifts in production allocation and coordination, supporting reshoring (Autio, Mudambi, & Yoo, 2021). Currently, 3D printers are available in different categories, from very advanced high end to open-source printers for private use. This far, 3D printing is mainly used to produce a limited set of products, often in materials like plastics, non-metallic mineral products and components (WIR, 2020).

Going back in time, the pre-industrial economic system was generally local; more specifically production was decentralized as well as consumption. This changed with industrialization that led to centralized production, which ending up in today's internationally fragmented network of global value chains. Just as in advanced robotics, the inseparability of the 3D process supports centralization and re-bundling of production steps. The additive production process of 3D printing in the form of layer-by-layer production demands that all manufacturing steps, from raw-material to end-product occurs as one process (Buonafede, et al., 2018). Although the new technology has limitations in terms of technical and economic feasibility, where it is applicable it has the power to significantly reshape global value chains with regards to geographic span and distribution (Laplume, Petersen, & Pearce, 2016; Rehnberg & Ponte, 2016). Moreover, 3D printing opens up for mass customization instead of mass production, where the value added is focused on the design/programming phase whereas the manufacturing step becomes low value-added and an activity that is replicated in many countries (Autio, Mudambi, & Yoo, 2021).

In sum, the more advanced robotics AI and new technologies open up for a hyper-globalization (Contractor, 2021), whereas other elements of digitalization such as 3D printing, robotics and IT-security open up for a more decentralized world economic system where production and consumption are collocated (Antràs, 2020; Autio, Mudambi, & Yoo, 2021). The effect of the new industrial revolution on globalization is multidimensional and will enforce both centrifugal and centripetal forces. Simultaneously arguing for increased global integration as well as decentralization, opening up for new combination in terms of local-for-local and global-for-local production and consumer processes.

Industry 4.0 is, in another sense, also different from earlier industrial revolutions in that it introduces a significant concern about IT security into production systems. Industry 4.0 enables global value chains to be more closely connected, allowing the sharing of data. Global value chains can be described as digital ecosystems where technology, info and knowledge are integrated through technology such as robotics, IoT, and AI (Pandey, et al., 2020). Manufacturing is one of the most frequently targeted industries for cyberattacks and data breaches, particularly smaller actors (Verizon, 2014). The challenge of protecting the entire value chain is essential, since no party is more secure or stronger than the weakest link. Hence, cyber security becomes an essential competitive issue, closely related to the strategic management of GVC. If firms cannot protect their core technology and business operations, it becomes difficult to be part of these integrated networks. According to Cisco (2018) Annual Cyber Security Reports, 31 per cent of organizations have a risk of cyber-attacks on operational technology. Even though the area of cyber security in GVC is under strong development, there is also the scenario of firms wanting to opt out of these ecosystems to protect their intellectual property. This might serve as a driver for reshoring, by centralizing activities firms can create closed systems where the need to be connected to the Internet is not needed.

## One sustainable world

It is not only the possibilities to spread production that determines globalization, but also the demand for production to be spread out. Over the last few decades there has been an increased focus on sustainability among consumers across the world, as they want to contribute to a better and fairer world. When sentiments shift in this way, and if they become shared across the world, it can

significantly impact the felt demand for globalized production. Several consumer trends related to sustainability can be found, with regards to organic food, eco-friendly clothing, fair trade in products, green investments and pension funds savings, all indicating that consumers and users do care about sustainability, and, when given an opportunity to choose sustainability, many do so. The issue of one globe is particularly central when discussing climate change and the need for sustainable production and consumption, but it is also important to other social issues. To quote Rodrik (1997, p. 28) “not all residents of advanced industrial countries are comfortable with the weakening of domestic institutions through the forces of trade, such as when child labor in Honduras replaces workers in South Carolina or when cuts in pension benefits in France are called for in response to the requirements of the Treaty on European Union.”

There have been several important policy initiatives that originate from, and in turn strengthen, an increasingly globalized consumption preference for sustainability. In 1992, Agenda 21 was adopted by 178 countries, which can be seen as the first global sustainable initiative, resulting in the latest and most comprehensive initiative – The 2030 Agenda for Sustainable Development adopted by all United Nations Member States in 2015. At its heart are the 17 Sustainable Development Goals (SDGs), aiming at ending poverty and other deprivations, improving health and education, reducing inequality, and spurring economic growth – all while tackling climate change and working to preserve our oceans and forests. In order for firms to live up to these new standards, business operations will have to change and evolve, necessitating fairer, carbon neutral and sustainable ways to produce products and services (WIR, 2020). This trend is also found in emerging markets and, in tandem with a more direct climate threat, the awareness of sustainability is putting high pressure on firm operations to fulfill their obligations (Narula, 2019).

The introduction of future legal frameworks making firms pay for air and water pollution is likely to increase costs related to global value chains, such as transportation and international production. As an example, climate change policies and green deals have been adopted in major constituencies and trading blocs, enabling courts in several countries to force governments to follow their implemented air quality laws or to enforce their emission targets (WIR, 2020). This will have an effect on global value chains in terms of changes in location-specific advantages. Some locations may not be financially defensible with increased transportation costs – opening up for regionalization and reshoring to cut transportation costs.

Changes in GVCs will also be driven by actual climate change. For example, water access and levels may shift comparative advantages of countries and regions, forcing certain production locations to be reconsidered. An additional example is extreme weather, causing damages in infrastructure and even changing the prospect of soil usage and production ability (WIR, 2020). Extreme weather also affects the cost of GVCs through transportation difficulties. For example, due to repeated extreme weather, maritime shipping, which accounts for 80 percent of global trade volume, has lately faced frequent delays and port closures (WIR, 2020). The increased risk of GVCs due to sustainability concerns among consumers is also a concern from investors, banks, insurers and financial market regulators. According to the IPCC (2014), climate change will affect all forms of transport relevant to international trade, including seaborne transportation, land-based transport modes, and aviation. Thus, changes in climate change are likely to be driven not only by nature itself but also by investors seeking asset control. In some markets firms already have to disclose the physical risk from climate change when assessing their financial situation; an example is stranded assets in the oil industry, or from extreme weather conditions (WIR, 2020). Taken together this suggest increased costs with GVC, both in terms of actual costs for transportation but also in terms of insurance and resilience planning, calling into question the location advantage of certain activities – suggesting regionalization and reshoring when possible.

As for now, the main sustainability driver is market changes due to heightened sustainability awareness from customers, demanding higher transparency and sustainability regarding products and processes. While this earlier was a weak trend, consumer preferences for responsibly produced goods and services in mature markets have now outgrown their niche status (WIR, 2020). Often times customers are willing to pay a premium for a product or service deemed greener, i.e., more



environmentally friendly and produced under fair working conditions. Moreover, the homogenization in global views related to sustainability, in terms of working conditions and environmental footprint is forcing multinational firms to act in accordance with expectations that can sometimes be hard to live up to. For instance, low wages as a result of demography or history is different from low wages due to government repression of unions (Rodrik, 1997). H&M and Nike have just spoken out negatively about reports of forced labor in and connected to Xinjiang, China, being in line with EU sanctions and calls from their home markets to foster sustainable working conditions. This, however, was met with a boycott from Chinese customers, who have another perspective, resulting in H&M changing their wording regarding this issue, trying to live up to different customer perceptions in their home and host markets.

To sum up, the development of international policy and regulation in relation to sustainability will put pressure on multinational firms to become more sustainable and may serve as a driver for the implementation of more inclusive, fair and green business operations. Simultaneously, there will be pressure from consumers who demand and hold firms more accountable for their global value chains and activities included. The pace and enforcement of these developments will affect globalization. Additionally, unforeseen climate change may force firms to rethink their GVC structure, due to altered or limited production ability.

## Politics: master driver and hindrance

Following from our model where globalization is the outcome of decisions taken by firms regarding how to organize their value chains, the policy of states is crucial, as this directly and indirectly shapes the decision of firms. National policy shapes firm decisions by local laws and economic policy and by participation in bilateral and multilateral trade agreements (Cuervo-Cazurra, Doz, & Gaur, 2020; Meyer & Peng, 2016). The relationship between policy and firms is not one-way, however; the decisions that firms make with respect to globalization affect the citizens of nations, who vote for politicians. There is thus a complex relationship between the policies that shape globalization, the perceived effects of globalization, and the political system that determines who gets to shape policy. We begin by noting changes in policy with respect to globalization, and end by sorting out what is known about the dynamic relationship between globalization, policy and the political system of nations.

## Recent experience: more protectionism and less free trade

From the mid 1980's until early 2000's the world experienced a significant growth in globalization with increased interdependence of economies and societies, much due to economic policy liberalization and the opening up of states by the lowering of trade barriers (Cuervo Cazurra, Mudambi, & Pedersen, 2017; Kobrin, 2017). During the last couple of decades, the world has witnessed increased instances of protectionism and heightened interest in hindering free trade.

The changes have not been enormous, but the trend is clear. Tracking the changes in national investment policies across the world shows that where 95% of the changes in investment policies across nations in 2003 were towards liberalization, that number had declined to 76% in 2019, i.e., from only 5% of regulatory changes limiting liberalization the figure rose to 25% of changes that reduce liberalization in international investment (WIR, 2020). The multilateral liberalization agenda which has been promoted by the WTO over past decades can be described as having been put on hold, exemplified by the Doha round which starting in 2001 and still has not been concluded. Free trade as the main economic policy is not a foregone conclusion any longer, and the WTO has lost considerable influence over the past decade (Antràs, 2020).

Changes to the conditions of globalization do not come only in the form of small decisions that accumulate over time. Brexit, resulting in the United Kingdom leaving the European Union, is an example where a big national policy decision affects the ideal of free trade. Although decision makers often claim the opposite, Brexit will increase costs of trading and therefore likely decrease the interdependence of the United Kingdom and the European Union. The effects of Brexit will be greater

than the changes in the traded final goods alone; firms in the UK depend on intermediary products from the EU and vice versa. A study of the interdependence of global value chains in 2013 shows that over 80% of what UK firms earn from trading in intermediate goods comes from GVC trade with the EU 15 nations (Tillväxtanalys, 2016). While Brexit will not cut off such connections, it will make GVC trade more costly and cumbersome (Antràs, 2020).

While Brexit is an example of a change in trade policy with very complex historical, social, political and economic causes, countries have also begun to curb free trade based on more narrow technological reasoning, what can be called ‘techno-nationalism,’ where countries seek to actively support their own technology-oriented firms in the global competition by seeking to curb the ability of competitors to prosper (Petricevic & Teece, 2019). An example of this is the US ban on using Huawei networking equipment in order to block their development of the new 5G telecom technology (Davis & FitzGerald, 2020). Techno-nationalism is often difficult to clearly distinguish from other reasons for the same action. For instance, the antitrust actions that some of the world's largest tech companies like Google, Amazon and Facebook face with United States and European Union regulators (Nicas, Weise, & Isaac, 2019) can be seen as techno-nationalism or simply as efforts to protect global markets from turning into de-facto monopolies. Techno-nationalism is increasing across the economies of the world, clusters of semiconductors and display panels are found in China and the Republic of Korea, and IT services in India, indicating that both developed economies and emerging markets are looking for global leadership in high-tech industries (WIR, 2020). Chinese technological absorption and its quid pro quo policy – a policy that makes technology transfer a precondition for foreign firms to be able to operate in China – has received criticism and calls for better intellectual property rights (IPR) protection (Antràs, 2020).

### **Intervention to be attractive or to load the dice**

In the decades following the 1980's there was a shared belief among western world leaders that free trade and globalization was the best solution for all in the long run. The economic policy ‘toolbox’ of a country was therefore limited to actions that do not interfere with the free movement of goods and services. A country that experiences loss of jobs because local firms are offshoring jobs to another country can, when adhering to an ideal of free trade, only try to become more attractive to other investments that could generate new jobs to make up for those lost. If policy makers, on the other hand, let go of the ideal of free trade and globalization, the toolbox for policy making becomes bigger. Not only can the country try to become more attractive for foreign investments, but it can also try to limit the ability of firms already in the country to move their production elsewhere, and it can try to influence other countries to buy more of its products. The ‘Make America Great Again’ campaign of Donald Trump and the attempts to ‘bring investments home’ by incentives and punishments is perhaps the clearest example of this type of policy changes.

When firms decide where to locate their production, countries can seek to attract those stages of a value chain that creates the greatest value, and thereby gain the most. This is a form of interventionist policies that are aimed at promoting value addition in targeted sectors of international production, aiming at securing net benefits of globalization to a particular country (WIR, 2020). Countries often support the location and concentration of know-how and technology in capital and innovation heavy industries. One such example is Make in India, launched by the Indian Prime Minister in 2014 as a part of building the nation. More recent initiatives are President Biden’s Build Back Better Initiative, serving as a way forward to reimagine and rebuilding the American economy. Included in the initiative is the American Jobs Plan. It is described as historical public investment with the aim of boosting US productivity and growth. One percent of GDP per year over eight years will be invested in the upgrading of infrastructure, revitalize manufacturing, investments in basic research and science, and shore up of supply chains. Taken together the investments amount to \$2 trillion this decade and serve to make the country competitive and innovation strong, with a particular aim of increasing well-paying middle-class jobs by production throughout the country (The White House, 2021b).

While such interventions have been seen as a change from earlier free-trade and hands-off-firms policies of US and European economies, China has stood apart in its economic policies where active support to industries as well as firms has been part of the policy. The success of the Chinese model has provided the world with a possible alternative to the free-trade based model of economic growth that has been dominant for the past few decades (Rodrik, 2015). Part of this alternative model is to set up economic policy in five-year plans (FYP). The 14<sup>th</sup> FYP presented by the Chinese government aiming at making China an advanced manufacturing superpower was introduced in March 2021. According to IMF's 2020 World Economic Outlook China is the second largest economy, after the US, and the largest measured in purchasing power parity. The plan's main focus is to strengthen China's global competition in robotics, new energy vehicles and aircraft development. Moreover, China will foster the development of becoming a first-tier manufacturing nation like the US and Germany, making innovation a growth engine for the Chinese economy. In accordance R&D spending will increase significantly during the 14<sup>th</sup> FYP, by 10 percent during 2021 alone. The tax deduction of 75 percent of firm R&D spending will be maintained and raised to 100 percent for manufacturing firms. These initiatives can be seen as attempts to make the country more attractive, and thus not by definition negative for globalization. The question is, however, to what extent these initiatives constitute direct governmental support to firms, which is – considered under the earlier ideal of free trade – skewing the global competitive situation.

Other governmental policies center around reduced tax on capital and financial regulations to attract Foreign Direct Investments (FDI), capital investments and location of headquarters. As of 2017 the EU has a list of countries that refuse to engage with the EU or to address tax good-governance shortcomings (European Union, 2021), in an attempt to manage international flow of capital and prevent tax payment so that arbitrage effects are eliminated. More recently, the made in America tax plan introduced by President Biden in 2021 also aims at stopping unfair and wasteful profit shifting to tax havens – ensuring that large corporations pay their fair share and to bring an end to the race-to-the-bottom on corporate tax rates that allows countries to gain a competitive advantage by becoming tax havens. Specifically, the corporate tax rate is suggested to be set at 28 percent, and the minimum tax on U.S. corporations is suggested to increase to 21 percent and to be calculated on a country-by-country basis to hit profits in tax havens. The overall aim is also to incentivize job creation and investments in the US, by denying firms expense deductions for offshoring jobs as well as eliminating loopholes for intellectual property offshoring (The White House, 2021a).

## **Financial globalization and financial cycles**

Besides the trade in goods and the movement of people, the flow of financial resources can also be globalized to a greater or lesser extent. Financial globalization is, like other forms of globalization, something that allows greater access to capital across the world, and therefore it can also help economic growth. Financial globalization is slightly different from other forms of globalization in that it is potentially even more invasive in local economies than globalization of products or services. Financial globalization *connects* economies to each other, for better and for worse.

Financial globalization can lead to national financial cycles –the cycle of ups and down in the economy –becoming interconnected, i.e., globalized. Global financial cycles have particularly been driven by US fiscal policy and international investments, affecting small and open economies the most (Potjagailo & Wolters, 2020). There are, however, questions regarding the extent to which financial cycles really are global (Rugman & Verbeke, 2004). The dominance of US fiscal policy is a reflection of the historical dominance of the US economy in the world. If, as we discuss below, China becomes a second economic pole, their fiscal policy is likely to influence global financial cycles in the future as well. Taken together, the financial integration as a result of globalization, will likely result in a homogenization of national and global financial cycles. The ability of a country to steer its own monetary policy will depend on the size of foreign investment and integration, particularly by the US and China.

Apart from influencing national financial cycles, the global financial interconnectedness was particularly noted during the financial crises that rippled through the world economy in 2007-2008. Starting with the fall of Lehman Brothers and the crisis on Wall Street in the US, it developed into a global recession, impacting far-off nations like Iceland and Greece particularly hard. The negative effects of the globalization of financial crises have provided another argument for why the globalization of, in particular financial markets, may need to be limited (Rodrik & Subramanian, 2009).

### **Why have we seen these changes, and what else is in store**

The relationship between globalization and politics is both complex and strong. The political will to enable globalization by globalization-friendly policy is, among democratic states, the extension the will of the people of different nations to globalize (Rodrik, 2020). At the center of this dynamic is the fact that, at its core, economic globalization functions as a form of economic rationalization; goods can be produced more efficiently, cheaper, and can be sold to more places. As with any other form of economic rationalization, globalization has different effects on different people. Although globalization has resulted in enormous economic benefits at a general level, its effects have not always been distributed in an equitable manner, and, as we noted earlier, globalization has created both winners and losers.

In a recent thought piece from the Boston Consulting Group (Lesser, Reeves, & Harnoss, 2016), the authors pose the provocative question of whether globalization and technology can be saved from themselves; suggesting that the current globalization skepticism is to some extent brought on by the actions of the firms themselves in their efforts to globalize their business. Globalization leads to economic benefits, they reason, and if these are distributed broadly it can strengthen the acceptance of globalization and thereby generate policy that helps globalization. But if gains are unequally distributed, they will undermine confidence in globalization, which will lead to policy that limits or reduces globalization. They point to the important role of corporate leaders in shaping the globalization, through their decisions, in a way that enhances the equal distribution of benefits.

While directly touching on the important aspect of distribution of the gains of globalization among those who work, globalization influences the political systems in more indirect ways too; by affecting those who are outside the labor market because of globalization. Globalization means a change in the functioning of an economy; it is this change that produces benefits and winners, but it also produces losers. Researchers have warned of the negative effect of globalization for certain people and states, emphasizing the importance of compensating those who lose out from globalization (Krugman, 2008; Stolper & Samuelson, 1941). Taking the example of Sweden, the Agency for Growth Analysis (Tillväxtanalys, 2014) has investigated the effects of globalization on jobs in Sweden by studying how firms have changed their value chains. While globalization has increased the demand for medium and highly skilled jobs required, it has also reduced the demand for less-skilled jobs. A similar structural shift in the demand from lower to more highly skilled workers can be seen in the rest of Western Europe (Tillväxtanalys, 2014). From a policy perspective, it has been an insidious change, as the total number of jobs demanded has increased, so it has not been a big political question, but the uneven distribution between demand for skilled and non-skilled jobs has become stark – leaving those without skills in demand further outside the labor market than earlier. A common policy response to this question is to note that it is beneficial for the economy that its jobs be upgraded, which is true, but it does not address the problem felt by those who cannot get a highly skilled job because they lack the qualifications. This matters to the dynamics of globalization, because countries that have not been able or willing to help the losers back into economic activity run the risk of generating a segment of the population with very negative views of globalization. This is an explanation often put forward for the surprising wins in the ‘rust belt’ states by Donald Trump (McQuarrie, 2017).

In an NBER working paper, Harvard economist Dani Rodrik asks why globalization seems to feed populism (2020). He suggests a simple model to explain this that builds on the well-established idea that change in demand for labor is felt as an ‘economic dislocation’ within the labor force. He then

goes on to speculate that the effect, in terms of resentment and demand for policy action, differs according to the *cause* of the dislocation. Specifically, he suggests that because of cultural and racial attitudes prevalent in a society, dislocation that originates from globalization would cause greater resentment than dislocation that results from a change in technology. He then reports on experimental studies where they show that a plant that is closed due to offshoring causes greater local resentment than a plant that is closed due to technological change. In this way, effects of globalization can ‘turbo charge’ resentment caused by dislocation and increase the popular demand for policy actions. This, in turn, opens up for populist parties and increases the supply of populist suggestions and actions. Together, the increased demand and supply for populism can lead to electoral outcomes where populist demands for increased nationalism thrive.

Rodrik’s model is developed with the US situation in mind. However, these feedback mechanisms whereby the globalization policy of a nation is dependent on how its population experience its effects would work in any democratic system. Globalization and its effects could, thus, be seen as a force that may weaken the functioning of democracies (Rodrik, 2011). One interesting question, for which we have not found an answer in the literature, is whether or not a democratic political system is more or less tolerant to economic dislocation from globalization than one that is less democratic. The link between political systems and globalization and its effects has become even more important with the rise of China to the status of an economic super power in combination with the sustained decline of the quality of democracy in several of the large economies (Lührmann, et al., 2020). The question that is more often asked is: are we seeing a bifurcation of the economic world order?

## **Two, or more, economic systems?**

In much of the post WWII era the world economy has been dominated by economies that have been, more or less, democratic (Witt, 2021). The present is different. Since the mid-2000’s China has become one of the most important economies in the world, muddling the connection between the will of people and the policy that shapes globalization. Petricevic and Teece (2019) refer to this as a “bifurcation of the world economy,” where there are two different systems that shape the rules in which firms make their decisions on where and how to produce and sell. Professor Witt of INSEAD business school develops this idea in a series of knowledge briefs and concludes that a likely scenario is that globalization may be considered as two different processes, proceeding with different sets of policy in the future. One US-centric globalization, and another China-centric one. Overlaying this bifurcation in economic policy relating to globalization is the closely related question of *data regulation*. Even today, the EU has its GDPR, the US another set of regulations and China has its ‘electronic wall’ to govern the use of data. Given the importance of data in the Industry 4.0 revolution and its influence on globalization, the question of data rules and regulations will be central to an understanding of how globalization will develop.

## **More regional, bilateral and ad hoc economic cooperation**

If there are populist national pressures to limit policies for globalization, and we are moving towards a world where the economic systems diverge, what will then happen to globalization?

A likely scenario in the case of a bi-polar world is that globalization will be confined to substructures – regions and within the respective economic systems. Even today, the world is primarily regionalized, not globalized. Data from multinational firms looking at depth and scope show that 80 per cent of their sales is done within their home region (Rugman & Verbeke, 2004). In other words, the globalization is ‘spotty,’ primarily confined to clusters of nations that trade and exchange with each other. For example, within the East Asia & the Pacific region, about 55 per cent of the region’s flows are with other countries in that region (Altman & Bastian, 2020). On this particular metric, East Asia & the Pacific falls second only to Europe, which due to the EU have the highest interconnections (Altman & Bastian, 2020). This means that many of the world’s largest firms are not global but regionally based, in terms of breadth and depth of market coverage (Rugman & Verbeke, 2004). There are several reasons for this; treaties and agreements are easier to devise and monitor among nations that share

borders and cultural similarities. A trade agreement reduces transaction costs and serves as a backbone for building global production chains. The European Union is an example of regional and ad hoc economic cooperation, for example, in its inner market and the “Juncker Plan” initiative. The Investment Plan for Europe is of top priority for the European Commission, focusing on boosting investments, create jobs and growth, by wiser use of financial resources. The European Union also has several trade agreements; one is the EU-Mercosur Trade Agreement, which was reached during 2019. It is a comprehensive trade agreement including a chapter on trade in services and establishment and chapters on environmental protection (WIR, 2020).

Another regional and ad hoc initiative is China’s Belt and Road Initiative (BRI). The Belt and Road Initiative is an international economic endeavor, aiming at stimulating economic development in a vast region covering sub regions in Asia, Europe and Africa, which accounts for 64 percent of world population and 30 percent of world GDP. While infrastructure development plays a central role, the Belt & Road Initiative also includes policy dialog, unimpeded trade, financial support and people-to-people exchange (Huang, 2016). Related to the question of shared data regulations, a central part of the BRI is the Digital Silk Road (DSR), launched in 2015, particularly emphasizing growth and trade in artificial intelligence capabilities, cloud computing, e-commerce and mobile payment systems, surveillance technology and smart cities.

## COVID-19 a driver of globalization or not?

The COVID-19 virus that struck the world in 2020 turned into a devastating global pandemic, affecting people and firms all over the globe. A factor that has been particularly emphasized is the reconfiguration of global supply chains. Early in the pandemic it was reported how 94 percent of the Fortune 1000 firms had disruptions in their supply chains due to the pandemic (Sherman, 2020). More specifically, global FDI fell with 40 percent during 2020 and is projected to decrease an additional five to ten percent during 2021 and start the recovery journey from 2022 (WIR, 2020). Countries have tried step by step to open up again, however under severe constraints; 80 countries still hold export control for personal protective equipment (PPE) and medical supplies (WTO, 2020). Indeed, the disruption of global value chains and the vast effects of international trade and investments have been visible, exposing serious issues with regard to future globalization orchestrating (Lorenzen, Mudambi, & Schotter, 2020).

Is the COVID-19 pandemic then to be defined as a driver of (or a hindrance to) globalization? Anchoring in Antràs (2020), we think that it should rather be classified as an event or shock, that emphasizes the potential fallouts from the megatrends. Even though the short-term effects of the pandemic have limited globalization, the long-term effects might be lighter than first expected. Such a view is supported by the very quick recovery in world trade even within the first pandemic year, especially in Asia, together with historical data on the previous Recession, and the 1997 Asian Financial Crisis (Antràs, 2020). Others have argued that the world may even revert into hyper-globalization to recover from the pandemic and create future growth. Contractor (2021) argues that the underlying reasons for globalization have not changed and that the comparative advantage, and rationalization arguments for global investment and trade, will remain irresistible. There will still be aggregation and arbitrage opportunities for international trade and investments.

## Globalization after COVID-19

While its immediate impact may be fleeting, the permanent imprint of COVID-19 on globalization is more difficult to predict. Potential deglobalization patterns may be sustained and thereafter lead to permanent changes, redrawing the globalization and management of global firms.

More than one million factory works have already lost their jobs as a consequence of drop in demand, and this development might continue to increase (WIR, 2020). Even if demand bounces back with the vaccinations, and a normalization of consumer behavior is expected, there is uncertainty concerning whether all jobs lost during the pandemic will come back. The crisis might have served as the trigger for more profound changes with regard to firm activities, opening up for a digital shift in terms of

automatization and use of new technology, making firm operations more slimmed down and in need of fewer employees.

Another example of short-term effects that have been extended is that of the protectionism of countries and the supply-chain management of firms: “the coronavirus pandemic has illuminated the risks that global supply chains pose to people, economies and the security of nations” (O’Neil, 2020). Even though the verdict is still far from known, some predict a new landscape resembling that of economic nationalism, including reshoring of supply chains of critical goods and services (Campbell & Doshi, 2020; Farrell & Newman, 2020). An example of this is how several governments have taken action in order to prevent the sale of domestic firms during the crisis. The European Union introduced supervision concerning investment from non-member economies for the protection of member States’ strategic assets, and Australia introduced investment reviews in an attempt to shield national interest and local assets from acquisition (WIR, 2020).

Generally, consumers and citizens do not consider the global value chain orchestrating done by multinational corporations, yet, if trade in and supply of products deemed necessary are not working, the opinions of people may shift (Medrano & Braun, 2012). The crisis has underscored the dangers of relying on any one country for inputs or final products. As a result, countries will put a premium on the diversification of trading partners, and multinational firms will look to making and holding more inventory and safety stocks, multiple sourcing, as well as reshoring production to the domestic economy (Shih, 2020).

To sum up, the immediate effect of the pandemic on global trade and investment has been severe, yet the long-term influence is harder to predict. Even though all aspects of society will strive to bounce back, and hyper-globalization would benefit growth, there are indicators that suggest slower globalization and increased regionalization in the aftermath of the pandemic. Multinational firms, as well as nations, will likely become more risk averse with respect to global value chains and may opt for less efficient chains with built-in redundancies, nationalism, and protectionism (Fontaine, 2020). Taken together, the long-term effect will be affected more by the length of the pandemic and to what degree vaccinations will enable the re-opening of the world.

## Lessons from current drivers and to globalization

Globalization is, as we have seen, not a simple thing but can take many forms. Over time, globalization has increased and decreased, and there are a multitude of factors that influence globalization. Our reading to conclude a few things about the current drivers and limitations.

First, technological development, which in earlier time periods almost exclusively propelled further globalization in trade by enabling and reducing costs of production and movement of goods across national borders, is now an ambiguous driver of globalization. Industry 4.0 propels globalization by enabling firms to both produce and transport goods more efficiently, and it opens for possibilities of producing more efficiently in many different locations, which may reduce globalization in trade. A little discussed, but increasingly important, distinctive feature of Industry 4.0 is that it is reliant on connectivity and electronic data to an unprecedented extent. This, in turn, renders it sensitive to both regulations on the use and storage of data, as well as data piracy and hacking in an unprecedented way. The effect of Industry 4.0 on globalization will likely be decided by how questions of data management and security can be addressed.

Second, while technological development can enable globalization, it is political developments that shape what firms can do with technologies. National politics, by setting the economic policy and entering into bi- and multilateral agreements, shape the space in which firms make their decisions on where to produce and where to sell. The relationship between policy and globalization is not one-way; while policy shapes globalization in the short term, popular reactions to globalization shapes policy in the longer term, primarily through democratic processes.

Third, the COVID pandemic, while not a driver of globalization per se, can be understood as a catalyst of short- and longer-term changes – primarily in terms of policy – that will shape the future of globalization.

Fourth, while many measures indicate that globalization has shifted from a state of hyper-globalization towards a slower globalization and others suggest that it will soon recover to a level of hyper-globalization again, we think that the main feature of globalization ahead is that it will be more *fragmented* than earlier. We see two main factors behind this. First is the increasing popular skepticism towards globalization, which will reduce the demand for globalization and strengthen localization and regionalization; and second is the rise of China to become a second major economic pole in the world economy. Together, this may lead to a situation of increased globalization within regions, but lessening globalization across regions. Integration among certain countries and regions such as the EU, the United States–Mexico–Canada Agreement (USMCA) or the China–Africa integration is expected to increase.

As a help in navigating the development of globalization there are various indicators and measures. In the following section we will present some of the most common indicators and measures of globalization.



## Indicators and measures of globalization

Reliable measurements are crucial in order to make any statements about the development of globalization. As difficult it is to capture globalization conceptually, finding a suitable measure is even more challenging. Academics, business consultants, and the Organization of Economic Cooperation and Development (OECD) have all used various criteria for globalization. Traded goods and services and foreign direct investment (FDI) flows in and out of nations mark the most common measures for globalization (Contractor, 2021). This is mainly because data for these measures are relatively easily available at different sources such as the OECD, the World Bank, or the World Investment Reports. Verbeke, Coeurderoy, and Matt (2018) add cross-border movements of ideas, people, portfolio capital, technology, and effective institutional practices. Before diving into individual measures for different aspects of globalization we take a closer look at some of the more comprehensive measures.

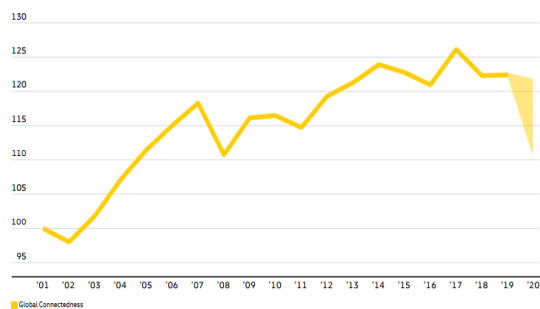
### A comprehensive measure: globalization indices

Researchers have developed different indices to provide comprehensive measures that enable comparisons between individual countries. While some indices were only relevant in a certain period of time, there are two indices that are still highly relevant today: The DHL Global Connectedness Index and the KOF Globalisation Index.

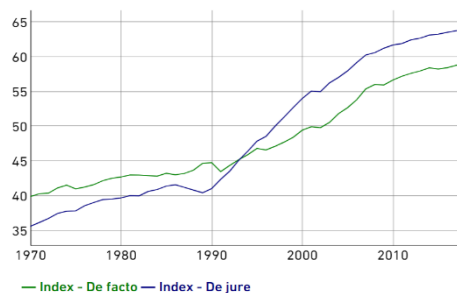
The *DHL Global Connectedness Index 2020* by Altman and Bastian (2020) summarizes the most common measures for globalization. It was originally developed by Pankaj Ghemawat, an economics professor at New York University and sponsored by DHL (a global courier and delivery service). The index reports the depth and breadth of international flows of trade, capital, information and people over the period from 2001 to 2019. In total they employ 13 different measures of country-to-country flows. The weightings of the sub-indices roughly correspond to their relative importance in the world economy. While the “depth” measure is a ratio of a country’s international flows compared with its domestic economy (GDP), the “breadth” measure compares a country’s distribution, or spread, of international flows with the rest of the world’s distribution of the same index (Contractor, 2017).

Another index for measuring globalization is the *KOF Globalisation Index* by Dreher (2006). Axel Dreher developed this index in 2002 at the Konjunkturforschungsstelle of ETH Zurich, in Switzerland. In contrast to the DHL Global Connectedness Index, the KOF Globalisation Index starts as early as 1970 and spans up to 2018. In its current version (Gygli, et al., 2019), it measures economic, political and social flows and bases the index on 12 dimensions with 44 measures in total. The variables are divided into sub-categories in order to be able to make statements about trade globalization, financial globalization, interpersonal globalization, informational globalization, cultural globalization and political globalization. The recent version of the index differentiates its measures of globalization into de facto and de jure, to enable readers to distinguish between *actual* international flows and activities (de facto), and policies or conditions that *enable, facilitate, and foster* flows and activities (de jure) (Gygli, et al., 2019). De jure measures of globalization make a statement about the potential for globalization, while de facto measurements describe the current state of globalization.

One clear similarity between the DHL Global Connectedness Index (see Figure 3) and the KOF Globalisation Index (see Figure 4) with other trade-based indices is that they all show a downturn after 2007, due to the great recession. Both indices illustrate a period of hyper-globalization up to the great recession, which is followed by a recovery period where globalization has slowed down, but still proceeded to grow. The KOF Globalisation Index, with its distinction between measures of de facto and de jure globalization, provides an interesting suggestion about what actors have driven globalization historically. From 1970 to about 1990, the measure of de facto globalization was higher than the de jure, suggesting that globalization was driven by firms that challenged the legal infrastructure and policy makers that lagged. After 1990, the pattern reversed, with the legal scope being greater than the actual globalization. In this period, it would seem, legislators and policy makers led the work on globalization and the firms and other practitioners did not fully live up to the possibilities offered by the policy and legal infrastructure.



**Figure 3.** DHL Global Connectedness Index, 2001 – 2020.  
 Source: Altman and Bastian (2020)



**Figure 4.** KOF Globalisation Index comparison between de facto measurements and de jure measurements, 1970-2018.  
 Source: <https://kof.ethz.ch/en/forecasts-and-indicators/indicators/kof-globalisation-index.html>

However, from the perspective of an individual firm, these general indices can easily be seen as background noise. For some firms, the ease of trade is central to their business; for another firm it is the possibility to share data across nations, while for a third it may be whether or not consumer preferences are global or not or whether there are global standards for production. We therefore survey a number of more specific indices below.

## The four flows of globalization measures

The large variety of different measures used to capture globalization, both individual measures and measures that compose an index, can be summarized into four aspects or flows of globalization: *trade flows* (products and services), *investment flows* (portfolio and direct investment capital), *information flows* (cross-border information and data flows on internet networks), and *people flows* (persons crossing borders temporarily or permanently). This classification is quite similar to the four freedoms of the European Single Market: free movement of goods, capital, persons, and the freedom to establish and provide services. The four flows of globalization are described in more detail below.

### Trade flows

The classical measure of globalization also reflects the classical definition of limiting globalization to trade. The measure *World trade divided by world GDP* only includes physical products, and thereby captures only a part of what globalization is all about, i.e., it neglects the service industry, as well as the flow of investments, information, technology and people. Data for calculating the ratio of world trade to world GDP can be easily found in the World Bank’s World Development Indicators Database.

World trade usually only includes products while services are almost always fully neglected in this measure. To overcome this shortcoming, splitting world trade into *trade in goods* (exports and imports of goods as a percentage of GDP) and *trade in services* (exports and imports of services as a percentage of GDP), as the KOF Globalisation Index does, is a possible solution. The DHL Global Connectedness Index 2020 (Altman & Bastian, 2020), on the other hand, measures *merchandise trade* (merchandise exports as a percentage of GDP) and *service trade* (service exports as a percentage of GDP). The UNCTADstat database provides good data for those measures.

While trade in finished goods is an easy-to-understand-and-capture measure, it has become increasingly limited as firms have shifted from local to global production chains. Trade in finished goods is an accurate of the value created in a country if all, or almost all, of the inputs needed for the product exported are local. If, as is increasingly common, the inputs for the finished good are sourced from other countries, it becomes misleading to credit the total value of the final product to the exporting country. China exports most of the produced iPhones, as the FoxConn factories are located in China. However, most of the value of an iPhone is created outside China; in particular the design and branding, so while China’s trade figures are credited the value of an iPhone, it has only created value by assembling inputs from other places. Figuring out the competitiveness of a country by studying its exports of finished goods risks leading to a faulty analysis, depending on how much of

the value in the product is imported (Tillväxtnalys, 2014). To deal with these limitations, the OECD has developed a database that tracks the trade in intermediary products across nations – the trade in value added (TiVA) database to track the role of global value chains in the world economy (OECD, 2021). This dataset describes the role of trade in intermediary goods, and in values that form an increasingly important part of the economic globalization. As seen in Figure 1 above, GVC trade accounts for about 30% of all the trade, and this is a direct reflection of the decisions of firms to organize their production and sales of goods. *Global Value Chain Trade*, measured by the ratio of Global Value Chain Trade to World Trade was developed by Borin and Mancini (2019). The most recent World Development Report (2020) has used this measure to illustrate that GVC trade grew rapidly in the 1990s but stagnated after the 2008 global financial crisis. This measurement takes inter-country input-output tables into consideration.

Another very important and highly significant measurement for globalization is the *cross-border payments (mainly royalties) for the licensing of intellectual property*. Royalties for intellectual property, such as patents, trademarks, and copyrights, have grown dramatically over the past years and also seem to be far less affected by recessions and pandemics (Contractor, 2021). However, these particular measure are under-researched in the academic literature so far.

Over all, most of the trade measures show an exceptionally rapid growth in globalization from the mid 1980's to about 2008, when the growth tapers off. Table 1 provides a summary of indicators and measures of trade flows.

**Table 1:** Indicators for Trade Flows

Indicator	Measure	Source
World Trade	World trade divided by world GDP	WDR (2020)
GVC Trade	Ratio of Global Value Chain Trade to World Trade	WDR (2020)
Trade in Goods	Exports and imports of goods as a percentage of GDP	KOF, de facto
Trade in Services	Exports and Imports of services as a percentage of GDP	KOF, de facto
Merchandise trade	Merchandise exports as a percentage of GDP	DHL
Service Trade	Service Exports as a percentage of GDP	DHL
Trade Partner Diversity	Average of the Herfindahl-Hirschman market concentration index for exports and imports of goods (inverted)	KOF, de facto
Trade regulations	Average of two subcomponents: prevalence of non-tariff trade barriers and compliance costs of importing and exporting	KOF, de jure
Trade taxes	Income from taxes on international trade as percentage of revenue (inverted)	KOF, de jure
Tariffs	Unweighted mean of tariff rates	KOF, de jure
Trade agreements	Number of bilateral and multilateral free trade agreements	KOF, de jure
Royalties	Cross-border payments (royalties) for the licensing of intellectual property	Contractor (2021)

Note: FDI = Foreign direct investment, GVC = Global Value Chains, WDR = World Development Report (2020), KOF = KOF Globalisation Index, DHL = DHL Global Connectedness Index, TiVA = Trade in Value Added

## Investment flows

Antràs (2020) advocates two measures for tracking investment flows connected to globalization. The first one is a combination of *FDI inflows and portfolio investment inflows as share of GDP* as it was originally suggested by Broner, et al. (2011). Both measures peaked right before the global financial crisis of 2007/2008 and have been recovering ever since.

Another measure that Antràs (2020) uses is foreign direct investments measured by *foreign affiliates' gross output as share in global output*. The DHL Global Connectedness Index advocates *foreign direct investment stocks* (FDI inward stock as percentage of GDP) and *foreign direct investment flows* (FDI inward flows as percentage of GFCF) as suitable measures of investment flows. A summary of indicators and measures for investment flows can be found in Table 2.

**Table 2:** Indicators for Investment Flows

Indicator	Measure	Source
FDI inflows	FDI inflows and portfolio investment inflows as share of GDP	Broner et al. (2011)
FDI	Foreign affiliates' gross output as share in global output.	Antras (2020)
FDI stocks	FDI inward stock as percentage of GDP	DHL
FDI flows	FDI inward flows as percentage of GFCF	DHL
FDI	Sum of stocks of assets and liabilities of foreign direct investments as percentage of GDP	KOF, de facto
Portfolio investment	Sum of stocks and assets and liabilities of international equity portfolio investments as percentage of GDP	KOF, de facto
International debt	Sum of inward and outward stocks of international portfolio debt securities and international bank loans and deposits as percentage of GDP	KOF, de facto
International reserves	Includes foreign exchange (excluding gold), SDR holdings and reserve position in the IMF as percentage of GDP	KOF, de facto
International income payments	Sum of capital and labor income to foreign nationals and from abroad as percentage of GDP	KOF, de facto
Investment restrictions	Prevalence of foreign ownership and regulations to international capital flows	KOF, de jure
Capital account openness	Chinn-Ito index of capital account openness	KOF, de jure
International investment agreements	Number of bilateral investment agreements and treaties with investment provisions	KOF, de jure

Note: KOF = KOF Globalisation Index, DHL = DHL Global Connectedness Index

## Information flows

Another important measure of globalization is how globalized the flow of information is. Antràs (2020) relies on the *number of internet users* (as share of world population) as a suitable measure. Both the DHL Connectedness Index and the KOF Globalisation Index heavily rely on *internet bandwidth* (total used capacity of international internet bandwidth in bits per second as percentage of population) to measure the degree of information flows. Also, information exchange via telephone has been measured by both indices. While the DHL Connectedness index relied on *telephone call minutes* to illustrate information flows, the KOF Globalisation Index rather used *international voice traffic* (international incoming and outgoing fixed and mobile telephone traffic in minutes as percentage of population) and *telephone subscriptions* (fixed telephone and mobile subscriptions as percentage of population) as indicators for interpersonal globalization. Moreover, *scientific research collaborations* (international collaboration as percentage of total publications) and *trade in printed publications* (printed publications exports per capita) have been utilized by the DHL Connectedness index to illustrate information flow. The KOF Globalisation Index, on the other hand, has focused, apart from *internet bandwidth*, on *international patents* (patent applications by non-residents filed through the Patent Cooperation Treaty procedure or with a national patent office as percentage of population) and *high technology exports* (exports of high R&D intensity products in current US\$ as percentage of population) to measure de facto informational globalization. *Television access* (share of households with a television set), *internet access* (individuals using the internet as percentage of population) and *press freedom* (quantification of the legal environment for the media and political pressure that influence reporting and economic factor that affect access to news and information) were measured to capture de jure informational globalization. An overview is presented in Table 3. In sum, measures capturing the flow of information indicate a constant growth when it comes to globalization. Although the pace of growth has slowed over the most recent years, a future continuation of growth is still predicted.

**Table 3: Indicators for Information Flows**

Indicator	Measure	Source
Number of internet users	As share of world population	Antràs (2020)
Internet bandwidth	Total used capacity of international internet bandwidth in bits per second as percentage of population	DHL, KOF
Telephone call minutes		DHL
International voice traffic	International incoming and outgoing fixed and mobile telephone traffic in minutes as percentage of population	KOF
Telephone subscriptions	Fixed telephone and mobile subscriptions as percentage of population	KOF
Scientific research collaborations	International collaboration as percentage of total publications	DHL
Trade in printed publications	Printed publications exports per capita	DHL
International patents	Patent applications by non-residents filed through the Patent Cooperation Treaty procedure or with a national patent office as percentage of population	KOF, de facto
High technology exports	Exports of high R&D intensity products in current US\$ as percentage of population	KOF, de facto
Television access	Share of households with a television set), internet access (individuals using the internet as percentage of population	KOF, de jure
Press freedom	Quantification of the legal environment for the media, political pressure that influence reporting and economic factor that affect access to news and information	KOF, de jure

Note: KOF = KOF Globalisation Index, DHL = DHL Global Connectedness Index

## People flows

One go-to measure to capture the flow of people when talking about globalization is *international migration*. Captured as international migrant stock as percentage of world population, it is a reliable measure for capturing and illustrating how the flow of people has developed over the years (Antràs, 2020). Another possible measure to capture international migration is to measure the foreign-born population as percentage of the total population, as utilized by the DHL Connectedness Index. The KOF Globalisation Index also measures *migration* and includes the number of foreign or foreign-born residents as percentage of the population in its measurement. While the DHL Connectedness Index rather focuses on capturing absolute numbers of *tourists* (international tourist arrivals per capita) and *international university students* (inbound university students as percentage of tertiary enrollment) to represent people flow in globalization, the KOF Globalisation Index also focuses on interpersonal globalization and emphasizes the exchange of knowledge and information between private individuals. Table 4 presents a summary of indicators measuring people flows.

**Table 4:** Indicators for People Flows

Indicator	Measure	Source
International migration	International migrant stock as percentage of world population	Antràs, (2020)
Foreign-born population	Foreign-born population as percentage of the total population	DHL
Migration	The number of foreign or foreign-born residents as percentage of the population	KOF
Absolute numbers of tourists	International tourist arrivals per capita	DHL
International university students	Inbound university students as percentage of tertiary enrollment	DHL
International tourism	Arrivals and departures of international students as percentage of population	KOF, de facto
International students	Inbound and outbound number of tertiary students as percentage of population	KOF, de facto
International voice traffic	International incoming and outgoing fixed and mobile telephone traffic in minutes as percentage of population	KOF, de facto
Transfers	Secondary income paid and received; gross inflows and outflows of goods, services, income or financial items without a quid pro quo as percentage of population	KOF, de facto
Telephone subscriptions	Fixed telephone and mobile subscriptions as percentage of population	KOF, de jure
Freedom to visit	Percentage of countries for which a country requires a visa from foreign visitors	KOF, de jure
International airports	Number of airports that offers at least one international flight connection as percentage of population	KOF, de jure

Note: KOF = KOF Globalisation Index, DHL = DHL Global Connectedness Index

## Measures of technology

One of the important drivers of globalization is technological change. Antràs (2020) uses an index of *processing power and memory capacity of computers* to illustrate the rapid development of the information and communication technology (ICT) revolution, with the suggestion that this will enable globalization. A new technology, however enabling it may be for globalization, will not make a difference to the pace of globalization unless it is adopted and used by firms and thereby can enable decisions to produce and sell across the globe. While a general measure for technology adoption would be highly appreciated, until today, there is no unifying measure. There are several attempts and promising indices that capture parts of the diffusion of technologies that can drive globalization.

For example Kuruczleki, et al. (2016) created a new index based on Eurostat data, called *Industry 4.0 Readiness*, which contains eight indicators (see Table 5). The index helps to identify the Industry 4.0 readiness of individual countries, and this varies quite heavily. It is noteworthy that this is not only an index of existing adoption, but also aims to track the probable adoption propensity across nations in the future. Another example is the *Industry 4.0 Index* developed by Atik and Ünü (2019). The index helps to determine the relative performance of European countries in transition towards Industry 4.0, and contains ten indicators that all are measured as a percentage of total enterprises.

These two indices represent important work in seeking to track both the adoption and the propensity to adopt new technology. However, as is known from the long tradition of technology adaptation studies in management, the adoption of a technology is a very rough indication of whether or not it is being put to use in the business processes of a firm. Much important work remains to be done in developing indices that not only track the technological aspects of adoption, but more importantly their impact on management and business models of firms.

**Table 5:** Indicators for Measures of Technology

Indicator	Measure	Source
Technological development	Processing power and memory capacity of computers	Antràs (2020)
R&D expenditure	Total intramural R&D expenditures in Euro per inhabitant	Industry4.0 Readiness Index
Gross domestic expenditure on R&D	Amount of gross domestic expenditures on R&D as percentage of GDP	Industry4.0 Readiness Index
Community trade mark applications	Number of community trade mark applications per million inhabitant	Industry4.0 Readiness Index
Community design applications	Number of community design applications per million inhabitant	Industry4.0 Readiness Index
Total R&D personnel and researchers	Number of total R&D personnel and researchers as percentage of active population – numerator in full-time equivalent	Industry4.0 Readiness Index
Tertiary educational attainment	Tertiary educational attainment as percentage of age group 30-40	Industry4.0 Readiness Index
ICT specialists	Number of ICT specialists as percentage of total employment	Industry4.0 Readiness Index
Digital single market	Number of enterprises selling online as percentage of enterprises	Industry4.0 Readiness Index

## Measures of sustainability

While there are several indices for measuring sustainability of existing business practices, such as for example the Human Development Index (United Nations Development Program (UNDP), 2020) or the Environmental Performance Index (Wendling, et al., 2020), reliable measures for capturing the impact of sustainability on globalization are scarce. Several investment firms have created indices to facilitate investment in companies that demonstrate good ESG practices that contribute to the achievement of the SDGs (WIR, 2020). This stresses the importance of sustainability equity index data and emphasizes the impact of sustainability issues on the performance of industries in the long run. For example, the *FTSE Russell's Environmental Opportunities Index* measures the performance of global companies having significant involvement in environmental business activities. This includes energy efficiency, waste and pollution control, renewable and alternative energy, and water technology. Again, these indices track the historical performance of firms with respect to certain sustainability goals; while this is important, it is not directly informative about how concerns of sustainability among global consumers may affect the future of globalization.

One important aspect and driving force in sustainability is the homogenization in global views related to sustainability. This could be measured with help of investigating how intertwined different cultures around the globe are becoming. The KOF Globalisation Index captures cultural globalization with the help of several measures of de facto and de jure cultural globalization (see Table 6). Currently, the gap between de jure (the potential for cultural globalization) and de facto (the actual cultural globalization) is quite large, indicating a great potential for the future development of cultural globalization.

**Table 6:** Indicators for Cultural Globalization

Indicator	Measure	Source
Trade in cultural goods	Exports and imports of cultural goods defined as in UNESCO 2009, as percentage of population	KOF, de facto
Trade in personal services	Exports and imports of personal, cultural, and recreational services as percentage of population	KOF, de facto
International trademarks	Applications to register a trademark with a national or regional intellectual property office by non-residents in percent of all applications	KOF, de facto
McDonald's restaurants	Number of McDonald's restaurants as percentage of population	KOF, de facto
IKEA stores	Number of IKEA stores as percentage of population	KOF, de facto
Gender parity	Ratio of girls and boys enrolled in primary education level in public and private schools	KOF, de jure
Human capital	Human capital index based on the average years of schooling and an assumed rate of return to education	KOF, de jure
Civil liberties	Quantification of aspects on freedom of expression and belief, associational and organizational rights, rule of law and personal autonomy and individual rights	KOF, de jure

Note: KOF = KOF Globalisation Index

## Measures of politics

The political development around the world is of high importance for the decisions that firms make that shape globalization. It is the autonomy of different nations (that is, the ability to legitimately take actions) that matters the most. However, the relationship between globalization and the autonomy of nations is one of the less frequently discussed aspects in the globalization debate.

Acknowledging politics as one of the key drivers in globalization, the KOF Globalisation Index uses several measures to capture political globalization (see Table 7). However, the indicators for political globalization have been criticized for not fully capturing the full impact of political drivers affecting globalization. Other very helpful indices can be found in the 2020 Democracy Report published by Varieties of Democracy Institute (Lührmann, et al., 2020). In particular, the *Liberal Democracy Index* and the *Electoral Democracy Index* provide helpful data and information on how democracy is developing worldwide.

**Table 7:** Indicators for Political Globalization

Indicator	Measure	Source
Embassies	Absolute number of embassies in a country	KOF, de facto
UN peace-keeping missions	Personnel contributed to U.N. Security Council Missions as percentage of population	KOF, de facto
International NGOs	Number of internationally oriented nongovernmental organizations operating in that country	KOF, de facto
International organizations	Number of international inter-governmental organizations in which a country is member	KOF, de jure
International treaties	International treaties signed between two or more states and ratified by the highest legislative body of each country since 1945	KOF, de jure
Treaty partner diversity	Number of distinct treaty partners of a country with bilateral investment treaties	KOF, de jure

Note: KOF = KOF Globalisation Index



## Lessons from measures

From investigating different measures used to capture development and change in globalization and the different aspects of it, we can summarize that there are promising indices available that can give a good overview over the degree of globalization, both for the whole world, and for individual countries or regions. However, most of the existing indices rely on flows in trade, investments, information, and people. Thus, there is a need for an index that takes all the drivers of globalization into account, thereby measuring technology, sustainability, and politics, as well as the predominant flows. Drawing upon Petricevic and Teece (2019), until today, most research has had the outlook that the US Dollar is the dominating currency in the world. This Western-biased world view might change in the future with the rise of China as global leader. Moreover, most of the statistics and data gathered for compiling different indices are anchored in country statistics, thereby putting the country or nation at the center of attention. Considering the fact that globalization is a trans-national phenomenon, this poses a serious limitation in terms of data collection and analysis.

We need more and better measures of technology as a driver of globalization, especially on the impact of different technologies on the future of globalization. Some measures are already utilized in capturing information flows, such as internet bandwidth or number of internet users. However, what remains to be developed are reliable measures for the development and effects of robotics, AI, internet of things, digitalization in supply chains, and 3D printing on globalization. Furthermore, more suitable measures need to be developed to better capture the effects of sustainability and politics on globalization.

A list of reliable data sources that can be used to compute measurements for either different aspects of globalization or for a globalization index can be found in the Appendix A.

## Conclusions

In this report we asked the question of what is happening to globalization, after Trump, Brexit, Industry 4.0 and COVID-19. To begin to answer that question, we reviewed a broad set of literature on the topic: articles, reports and academic research. The works we have read have presented different analyses of the current situation, processes to take note of, and ideas about what lies ahead. We do not make any claims to possess a crystal ball, but we make the following observations as what we regard as somewhat supported across the readings.

First, the globalization of the world is, by most measures, slowing down after three decades of hyper-growth. The slowdown in globalization is primarily seen in terms of foreign direct investment and in traded goods. Globalization, by other measures, such as royalties or information sharing, shows less of a slowdown. A slowdown in globalization is not unique; it has been seen before.

Second, the slowdown has resulted from a weakening of some of the main drivers of globalization. Of particular importance is the weakening in the political vision of a global world and the assumption that free trade is the best economic policy. The mechanism behind this change can partially be understood by recognizing the interconnected nature of economic globalization, the distribution of its gains, and the working of democracies, and partially by the shift towards from a uni-polar (US-led) to a bi-polar world order where China provides a second economic pole. This, we believe, will result in a more fragmented regionalized globalization than we have known this far. Firms may need to think about one strategy for globalizing within each region, or within each economic system – a thought that recalls memories of the cold war situation of the 1970's.

Third, in contrast to earlier industrial revolutions that have all propelled globalization, recent technological development, what is often called Industry 4.0, has an ambiguous effect on globalization. While technologies such as AI, improved robotics and 3D printing can enable firms to spread out their production and sales and thereby increase globalization, it can also enable firms to localize production close to sales and thereby decrease globalization.

Fourth, the COVID-19 pandemic has – in the short run – impacted primarily the functioning of the global value chains that firms are connected to, and this has brought into sharp focus the strategic management of global value chains as a new and central field of managerial and academic attention. The long-term impact of the pandemic on globalization, for instance in terms of changes in the political attitudes towards strategic autonomy and globalization, remains to be seen.

While our focus in this report has not been the perspective of the individual firm, our reading nevertheless provides two tentative findings. Essentially, from the perspective of the individual firm, we draw two main conclusions. First, the discussion and measures of globalization *in general* is too abstract to be of direct use. There are more encompassing and sophisticated measures of globalization that include also social and cultural globalization. Depending on the business model of a firm, indices can be of different importance. Second, the experience of the pandemic has placed in sharp focus the importance of global value chains and their strategic management. It is through the functioning of the global value chains that any change in globalization translates into the success or the failure of a firm. While global value chains and their operation has been a daily routine for managers over the past decade, it is only the last couple of years that academia has begun to appreciate their importance and what the significant shift in this means for core management subjects, such as strategic management or international business studies. A core task for the years ahead is to develop theories of strategic management, innovation management, international management, and governance of firms that no longer have their primary economic basis in an industry but in a global value chain that cuts across industries and nations. This, among other questions, is what the second report in this series will address. So, stay tuned.

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## Appendix A – Data Sources

Below follows a list of reliable data sources that can be used to compute measurements for either different aspects of globalization or for a globalization index:

<b>Data Source</b>	<b>Online access</b>
Eurostat	<a href="https://ec.europa.eu/eurostat">https://ec.europa.eu/eurostat</a>
Europa World Year Book	<a href="https://www.europaworld.com/pub/">https://www.europaworld.com/pub/</a>
International Monetary Fund Database (IMF Data)	<a href="https://www.imf.org/en/Data">https://www.imf.org/en/Data</a>
International Financial Statistics (IFS)	<a href="https://data.imf.org/?sk=4c514d48-b6ba-49ed-8ab9-52b0c1a0179b">https://data.imf.org/?sk=4c514d48-b6ba-49ed-8ab9-52b0c1a0179b</a>
Balance of Payments and International Investment Position Statistics (BOP/IIP)	<a href="https://data.imf.org/?sk=7A51304B-6426-40C0-83DD-CA473CA1FD52">https://data.imf.org/?sk=7A51304B-6426-40C0-83DD-CA473CA1FD52</a>
International Telecommunication Union (ITU)	<a href="https://www.itu.int/itu-d/sites/statistics/">https://www.itu.int/itu-d/sites/statistics/</a>
OECD International Migration Database	<a href="https://stats.oecd.org/Index.aspx?DataSetCode=MIG">https://stats.oecd.org/Index.aspx?DataSetCode=MIG</a>
OECD Trade in Value Added (TIVA)	<a href="https://www.oecd.org/sti/ind/measuring-trade-in-value-added.htm">https://www.oecd.org/sti/ind/measuring-trade-in-value-added.htm</a>
TeleGeography Global Internet Geography database	<a href="https://www2.telegeography.com/global-internet-geography">https://www2.telegeography.com/global-internet-geography</a>
Tillväxtanalys	<a href="https://www.tillvaxtanalys.se/oppna-data.html">https://www.tillvaxtanalys.se/oppna-data.html</a>
UN Comtrade database	<a href="https://comtrade.un.org/">https://comtrade.un.org/</a>
UN World Tourism Organization (UNWTO)	<a href="https://www.unwto.org/unwto-tourism-dashboard">https://www.unwto.org/unwto-tourism-dashboard</a>
UNCTAD World Investment Reports	<a href="https://unctad.org/topic/investment/world-investment-report">https://unctad.org/topic/investment/world-investment-report</a>
UNCTADstat database	<a href="https://unctad.org/statistics">https://unctad.org/statistics</a>
UNESCO Institute for Statistics	<a href="http://uis.unesco.org/">http://uis.unesco.org/</a>
World Bank's World Development Indicators Database	<a href="https://databank.worldbank.org/source/world-development-indicators">https://databank.worldbank.org/source/world-development-indicators</a>
World Telecommunication/ICT Indicators Database	<a href="https://www.itu.int/en/ITU-D/Statistics/Pages/publications/wtid.aspx">https://www.itu.int/en/ITU-D/Statistics/Pages/publications/wtid.aspx</a>
World Trade Organization Data Portal	<a href="https://www.wto.org/english/res_e/statis_e/statis_e.htm">https://www.wto.org/english/res_e/statis_e/statis_e.htm</a>

## Appendix B – A Brief Note about Methods

This report is based on a thorough literature review. Literature was chosen from several different areas to achieve a broad overview and understanding of globalization and its possible future development. With the help of ‘snowballing,’ i.e., finding new leads from what is already read, we gathered literature that can be divided into three different categories: First, scientific and peer-reviewed research articles published in academic journals. More specifically, we scanned the scientific literature in the fields of international business, global strategy and general management, as those are the most relevant areas for research on globalization to be published. Second, official reports from large international organizations, such as for example OECD, World Bank, UNCTAD or the European Union. Third, general management magazines, for example *The Economist*, *Financial Times* or *Harvard Business Review*. Thereby we gathered a broad spectrum of the most recent literature that is timely in terms of describing current phenomena with general management magazines, on the one end of the spectrum, but also based on scientific evidence and allowing for generalizability with scientific articles, on the other end of the spectrum. In total, we read about 115 different articles or books related to globalization. In our search, we limited ourselves to the most recently published works appeared after 2016. However, some slightly older pieces were nevertheless included to complement our understanding of globalization.

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