Policy Brief #2020/05

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Globalization Report 2020: Who benefits the most from globalization?

The outbreak of the coronavirus pandemic is throwing the global division of labor off track. Exports collapse, while deliveries of urgently required products from abroad are delayed or may not come through at all. As a result, globalization is increasingly classified as a risk. Slowing or even reducing globalization would come at a high price. Our Globalization Report 2020 shows that advancing globalization has increased material prosperity at the macroeconomic level, in particular in industrialized countries, between 1990 and 2018.

Globalization and growth

The “Globalization Report 2020” examines how much individual countries have benefited from progressing globalization between 1990 and 2018. For this purpose, the influence of increasing or reducing globalization on the real gross domestic product (GDP) per capita is calculated for 45 industrialized and emerging countries.

This analysis is based on the conviction that intensifying economic, social, and political globalization increases an economy’s GDP due to specialization gains from international division of labor, cost reductions from production for a larger market, lower trading costs from international product standards, and productivity gains due to greater international competitive pressure.

Increasing international integration between countries thereby raises the real GDP in all participating economies. Although GDP is not an ideal indicator of prosperity, its increase comes with a number of positive effects. As the supply of goods and services to citizens increases, this growth of material prosperity also positively affects people’s immaterial living conditions. A few aspects include a better state of health, lower child mortality, and availability of a larger number of education resources (Bertelsmann Stiftung 2019a, p. 22f.).

Three steps are necessary to calculate the effect of globalization on real GDP per capita:

1. First, the international integration of the 45 countries analyzed from 1990 to 2018 is measured by a globalization index.

2. Subsequently, statistical methods are applied to determine whether a systematic correlation can be found between the change in the globalization index and the growth rate of the real GDP per capita, and how strong this correlation is if so. The indicator chosen is GDP per capita, which is more indicative for the prosperity of citizens than the economy's total GDP.

3. Finally, a hypothetical development is calculated in which the value of the globalization index for all 45 countries remains at the 1990 level between 1990 and 2018. The globalization-induced GDP increases are thereby removed from the calculation.

In this context, it is important to note that the economic advantages of advancing globalization are calculated for the entire economy this way, and subsequently distributed evenly among the population. Income changes resulting from globalization within a given country are not examined in this analysis which looks at averages (Petersen 2019).

Globalization development between 1990 and 2018

The scope of a country's integration with the rest of the world is measured by an index that is very closely aligned with the established "KOF Globalization Index' of the Eidgenössische Technische Hochschule Zürich (Dreher 2006). It includes indicators of economic integration (e.g. data on border-crossing trade in goods and services, trade barriers, and capital controls), social globalization (e.g. international tourism, degree of distribution of information and ideas, and share of the foreign population in the total population), and indicators on the political integration of a country in the world (e.g. data on membership in international organizations, foreign embassies, and international treaties). The period under observation is from 1990 to 2018. The data from this allow development of a globalization index for each country and year. Index values can range from 0 to 100. The higher the index value, the greater the integration of the respective country with the rest of the world. **Three central developments** can be found when measuring globalization this way (Fig. 1).

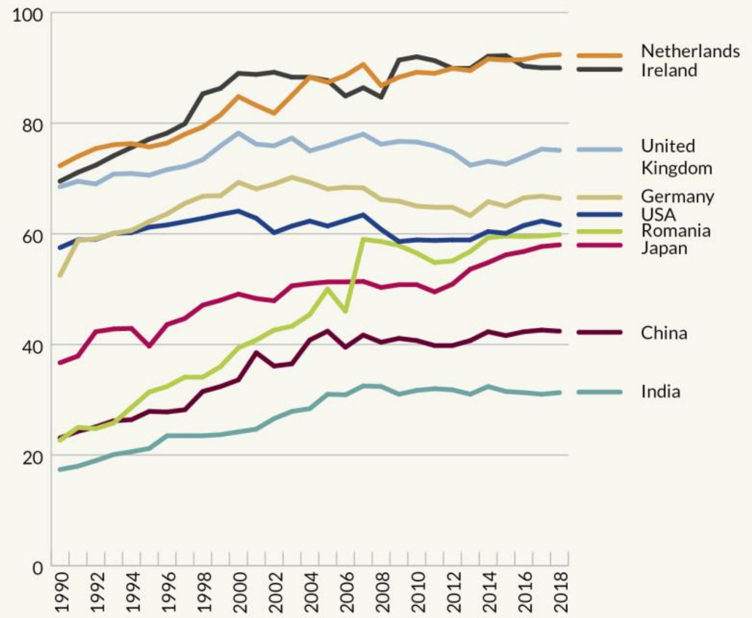
1. **Small, highly developed economies** such as the Netherlands, Ireland, Belgium, Switzerland, and Luxembourg **show the highest degrees of globalization.** This is caused, among other things, by the small internal markets of these countries. As a consequence, cross-border trade is more important for them than for larger countries. Industrialized nations with large domestic markets, such as Germany, Japan, and the USA, only achieve average values in the globalization index.

2. **Up-and-coming emerging markets** such as China, India, Argentina, Brazil, and Nigeria **have the lowest index values of all 45 countries**. Economic restrictions such as capital controls and trade restrictions are one reason for this. The economic indicators considered are set in relation to the country's GDP as well for the sake of international comparison. For example, China is one of the lowest-ranking countries in terms of exports in relation to GDP – just like the USA.

3. **Viewed across the entire period, global integration has increased.** In 1990, the median of the globalization index (the index value of the country that ranks 23rd in each case and is, therefore, in the middle of the ranking of all 45 countries) was at a value of 42. The strongest increases happened between 1990 and in the early 2000s. The median value peaked at around 64 points in 2007. Since then, it has dropped slightly, to be

FIGURE 1 **Globalization declines slightly since 2007**

Developments in the globalization index for selected countries



Changes in the globalization index before and after the global financial crisis 2007, selected countries

	Difference 1990 to 2007	Difference 2007 to 2018
Netherlands	18.3	1.8
Ireland	16.9	3.7
United Kingdom	9.5	–2.9
Germany	15.8	–2.0
USA	5.9	–1.8
Romania	36.3	0.9
Japan	14.6	6.6
China	18.6	0.7
India	15.1	–1.2

Source: Prognos 2020

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around 63 points in 2018. The globalization index value has reduced in 26 countries since 2007. Luxembourg, Belgium, and Austria recorded the sharpest declines. This shows that the financial and economic crisis has led to a declinein globalization. The three countries with the strongest increases in globalization between 2007 and 2018 are Mexico, Japan, and Lithuania.

Globalization-induced growth effects

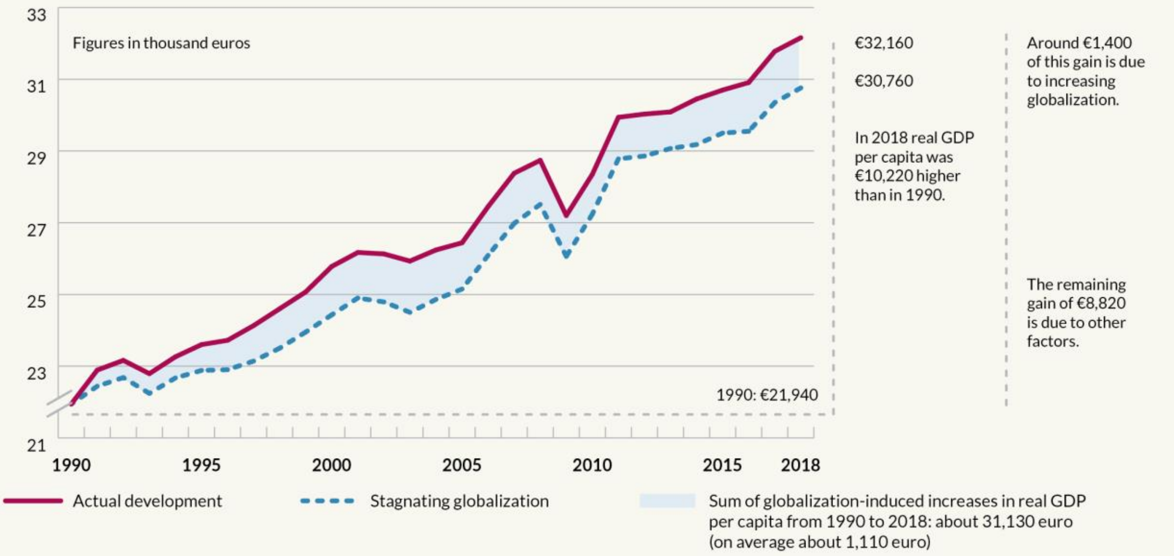
Regression analyses are used to calculate the impact of changes in globalization on the growth of real GDP per capita. The calculations reflect the following result for the 45 economies under consideration in the period from 1990 to 2018: If the globalization index rises by one point, the growth rate of real GDP per capita increases by about 0.3 percentage points.

Subsequently, the actual development of real GDP per capita between 1990 and 2018 is compared to a hypothetical development. For this, it is assumed that the international integration of all countries under consideration had not changed between 1990 and 2018, keeping the value of the 1990 globalization index constant across all years until 2018. This means that the globalization-induced growth gains resulting from the actual progress of globalization are deducted. The result of this approach can be illustrated using the example of Germany (Fig. 2):

- In 1990, the real GDP per capita in Germany was at around 21,940 euros. By 2018 it had risen to 32,160 euros (a real growth of 10,220 euros).
- Without the advancing globalization within the meaning of the globalization index used here, the real GDP per capita would have remained at a value of around 30,760 euros in 2018. Increasing globalization has, therefore, raised the real GDP per capita in 2018 by around 1,400 euros above the level it would have had without such a progress in globalization.

Across the entire period, the GDP growth per capita adds up to around 31,130 euros. Distributed across the total of 28 years, **progressing globalization has increased the average GDP per capita in Germany by around 1,110 euros per year.**

FIGURE 2 **Development of real GDP per capita with and without increasing globalization,** (real = 2000 prices)



Source: Prognos 2020

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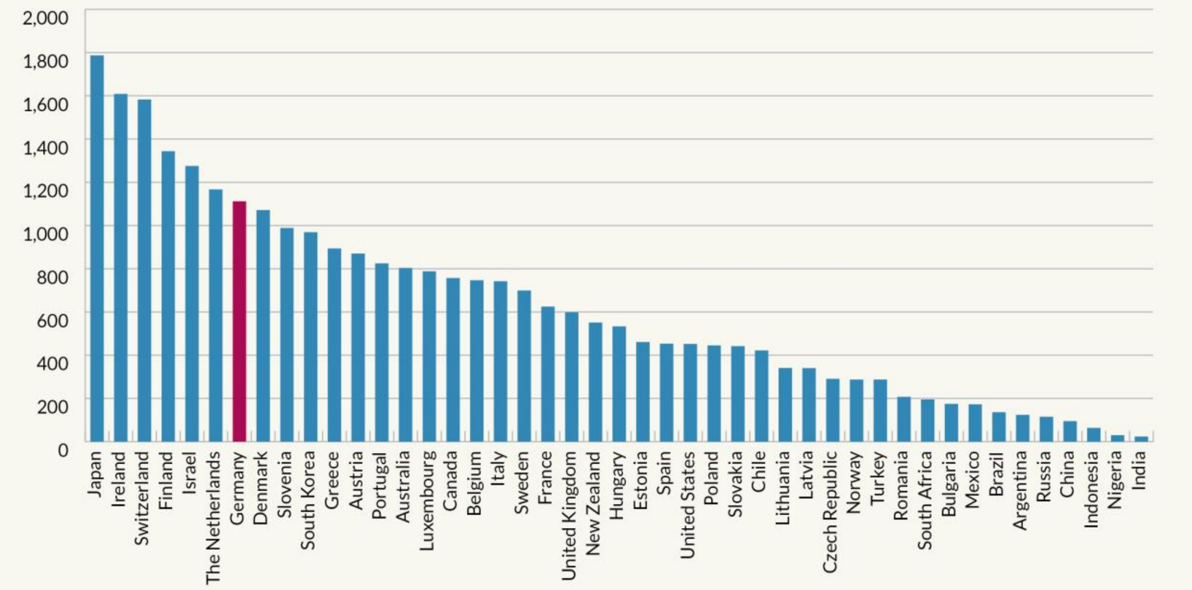
Lower globalization gains due to the coronavirus pandemic – a rough estimate: The global economic crisis set in motion by the coronavirus pandemic is going to reduce the international integration among the countries measured by the globalization index, and therefore also the GDP gains induced by globalization. The following rough calculation can be applied in order to obtain an estimate of the scope of the threatening reduction in monetary globalization gains for Germany: The estimated reduction of individual indicators of the globalization index for Germany is determined based on present forecasts. Subsequently, the index value for 2018, which is the last known index value, is reduced accordingly. Three scenarios are applied due to the continuing great uncertainty concerning further development of the economic crisis. The respective declines range from 1.1 to 4.7 points. A new growth rate of the GDP per capita can be calculated for 2018 using the unchanged regression coefficient (0.34) and the new globalization index value, and with it a new hypothetical GDP per capita in 2018. This would be between 100 and 500 euros less for 2018. Accordingly, 100 to 500 euros of the globalization gains in the amount of about 1,400 euros in 2018 as shown in Fig. 2 may be lost.

These calculations took place for all 45 countries under consideration. Globalization-induced GDP gains were achieved in all countries. The values for the globalization-related average annual gains in real GDP per capita vary considerably among the 45 countries (Fig. 3): **The largest average income gains per capita and year are recorded in Japan (around 1,790 euros), Ireland (around 1,610 euros), and Switzerland (around 1,580 euros).** The large emerging countries are clustered at the lower end of the scale when measuring globalization gains like this. The average globalization-induced GDP growth per year and capita in Nigeria, for example, is only at around 30 euros, and the one in India is at no more than 24 euros. There are three main reasons for these differences:

- The starting level of GDP per capita: At an initial value of only 100 euros, even a twenty percent increase in income merely leads to a growth of 20 euros. An increase of only two percent at a GDP per capita of 10,000 euros means an increase of absolute growth by 200 euros.

- The extent to which globalization has changed over the period under consideration: The stronger the globalization index rises over time, the greater the growth gains due to globalization. Countries that started out at a

FIGURE 3 **Average annual income gain per capita between 1990 and 2018 due to increasing globalization, in euros** (real = 2000 prices)



Source: Prognos 2020 | BertelsmannStiftung

high index score in 1990 have little space remaining for further globalization gains. This also means that the GDP increases caused by progressing globalization remain relatively small. This is why countries such as Belgium and Luxembourg are not among the top-10 nations in terms of globalization-induced income gains.

- The timing of the globalization index gains: If a country's index value grows only in the last year of the period under consideration, it can only achieve a globalization-induced growth increase in that respectiveyear. On the other hand, a country that increases its globalization in the first year of the period analyzed raises its GDP per capita to a higher level that is maintained through all subsequent years, generating an increase in income induced by globalization for each and every year.

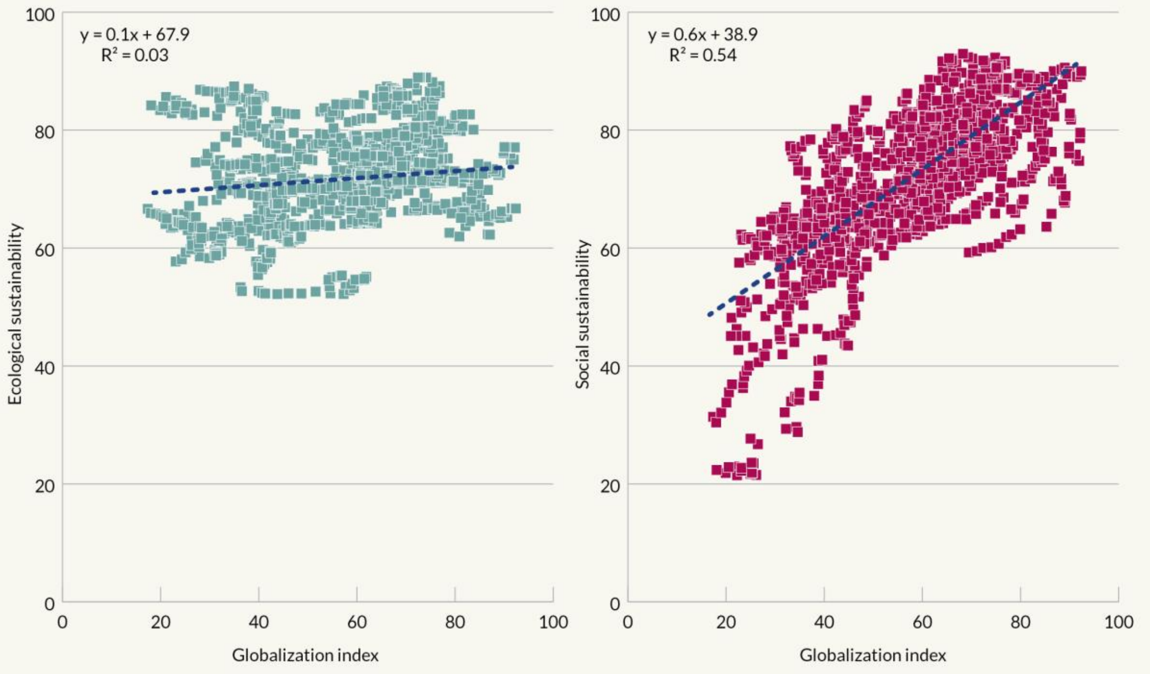
Japan therefore makes the first place in this ranking, becoming the "globalization champion 2020", after coming in second in the Globalization Report 2018. One reason for this improvement is that Japan achieved the strongest globalization index growth among the 45 countries between 2007 and 2018. Many other countries saw reducing performance in the same period. Additionally, Japan had a high starting level of 37,640 euros in terms of real GDP per capita in 1990. Only Switzerland, which reported the highest globalization-induced GDP growth per year and capita in the "Globalization Report 2018" (Bertelsmann Foundation 2018), started out with a higher value in 1990 (around 39,000 euros).

Globalization and sustainability

The Globalization Report 2020 also deals with social and ecological sustainability in addition to the matter of the material advantages of increasing globalization. Two indices are developed for this purpose based on selected sustainability indicators from the United Nations' Sustainable Development Goals (Bertelsmann Stiftung and Sustainable Development Solutions Network 2019).

The social sustainability index includes, among other things, indicators like the mortality rate among newborns and under-five-year-olds, the pupil-teacher ratio in primary schools, unemployment, and the ratio of women in the national parliament. Like the globalization index, the corresponding index is standardized. Its value is between 0 and 100, with a high value indicating high social sustainability. The social sustainability measured in this way has increased by an

FIGURE 4 **Correlation between sustainability and globalisation**
Correlation between the globalization index and the ecological (left) and social (right) sustainability



Source: Prognos 2020 | BertelsmannStiftung

average of 19.5 index points in all countries under consideration between 1990 and 2018.

A simple correlation shows that **a higher value of the globalization index is associated with a higher value for social sustainability** (Fig. 4, right). While correlations do not represent causalities, it is quite plausible that the globalization-induced GDP increases described above improve immaterial living conditions. An improved state of health, a better education system, etc., may subsequently also increase a country's social sustainability.

Environmental sustainability is measured with an index that includes a country's CO2 emissions (per capita and in relation to GDP), the share of renewable energy, air pollution, and freshwater extraction in relation to the annually regenerated freshwater. The environmental sustainability resulting from these values has increased only slightly around the world in the analyzed period (from 70.9 to 74.4 points in the average of all countries). Furthermore, there is **no significant positive correlation between the globalization index and the environmental sustainability index**. This result can be interpreted as suggesting that the globalization-induced income gains were not used for the promotion of environmental sustainability.

Globalization and dependence on foreign trade

Globalization may increase material prosperity via the specialization gains, cost reductions, and productivity increases outlined above. On the other hand, these efficiency gains increase dependence on imported input and final products. The production and employment in exporting companies and their suppliers also depend on the absence of economic collapse in the countries that buy these products.

Three aspects of cross-border trade are considered for a general idea of the dependence of the 45 economies in the sample on foreign trade:

1. The value-added exports of a country indicate the proportion of domestic value added that depends on foreign demand. This, therefore, indicates the relevance of foreign demand for domestic production and employment.
2. Value-added imports are defined as the domestic demand for value added from

abroad. This figure reflects what share of intermediate consumption required within the country is imported from abroad. It shows how strongly domestic companies depend on foreign inputs.

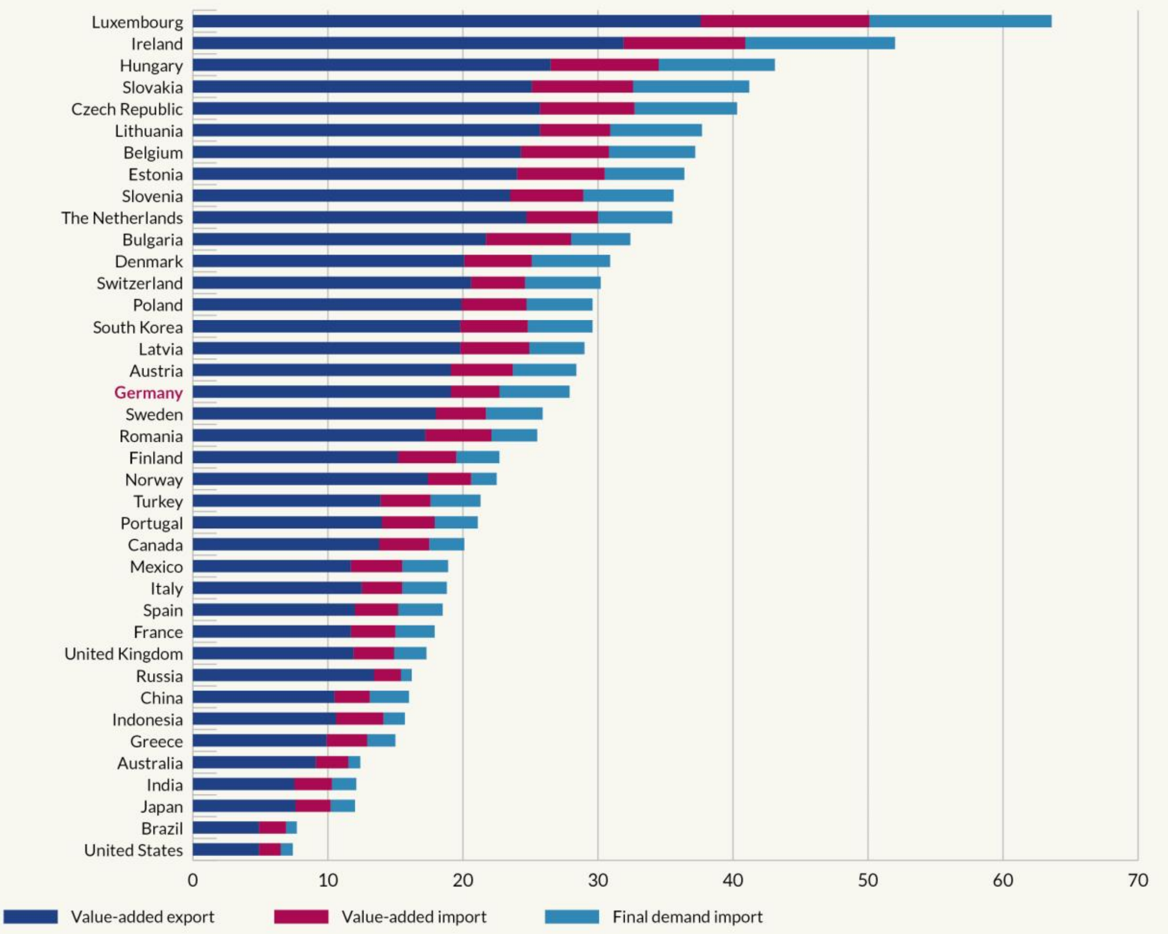
3. The share of imports in domestic consumption, or final demand import, indicates how strongly domestic consumers depend on products from abroad.

These three variables are summarized in a dependency index. A low value means that the country does not depend strongly on foreign countries.

The data for value-added export and import cannot be found in the annual national accounts statistics. These variables must be determined based on input-output tables that reflect the entire global economy. Value-added contributions are calculated using a number of steps based the "World Input-Output Tables" (WIOT). These are provided in the "World Input-Output Database" (WIOD). The methodological details can be found in Los, Timmer, and Vries (2015) and Bertelsmann Stiftung (2019). The calculations required are performed at irregular intervals. At the moment, WIOD data are available for the years of 2000, 2008, and 2014. Using the data for 2014 shows that **small economies such as Luxembourg, Ireland, and Belgium as well as Hungary, Slovakia, and the Czech Republic depend particularly strongly on foreign trade** (Fig. 5). The dependency measured in this manner is the lowest in the USA. This can be primarily attributed to the size of the US domestic market.

A strong dependence on foreign trade means that any economic collapse abroad will probably considerably influence the economy in question as well. This is because production, employment, and income are declining due to a loss in foreign sales. On the other hand, the loss of input

FIGURE 5 **Dependency index 2014 –** *Divided into the components value-added export, value-added import and final demand import*



Source: Prognos 2020

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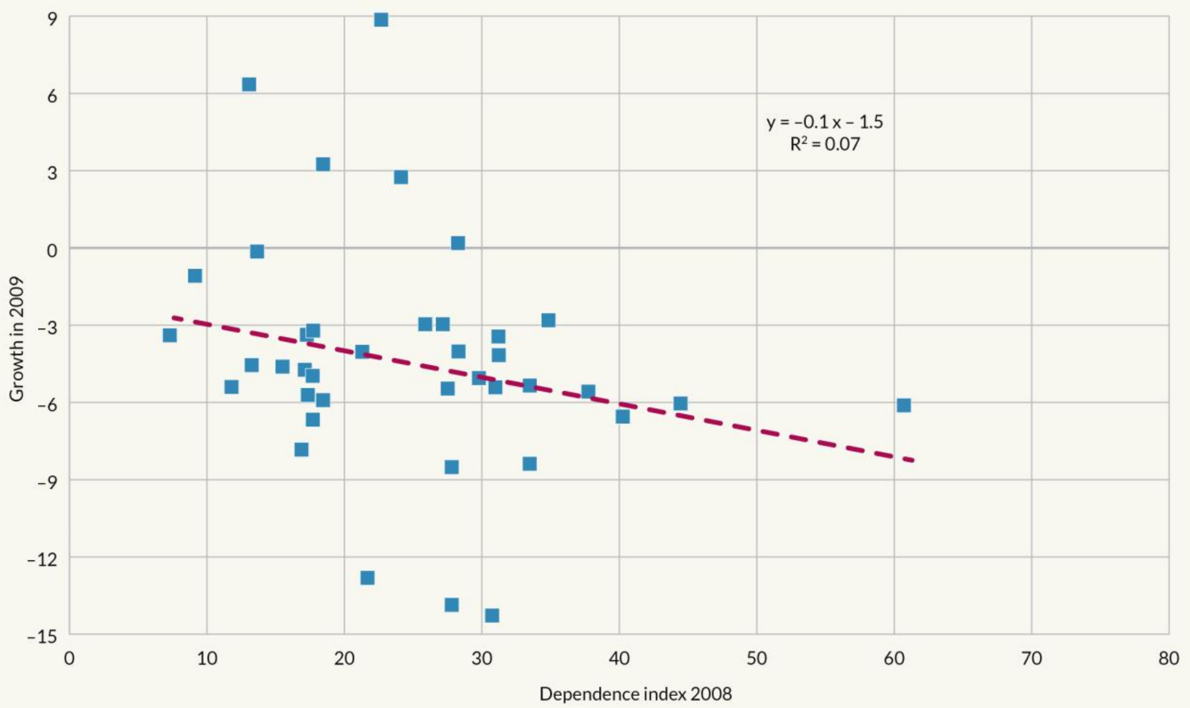
FIGURE 6 **Correlation between dependence from foreign countries and growth in the crisis**
Correlation between dependence index 2008 and growth 2009



Source: Prognos 2020 | BertelsmannStiftung

products may disrupt domestic production processes. The resulting drop of demand and production alike leads to an economic collapse that lowers both real GDP and employment rates. In addition to this, a lack of imports of consumer goods can culminate in supply bottlenecks.

A look at economic developments in the 45 countries under observation in the time after the Lehman bankruptcy actually shows a negative correlation between the dependency index of 2008 and the change in real GDP in 2009 (Fig. 6).

If this correlation applies to the economic crisis triggered by the coronavirus pandemic as well, and provided that the dependencies on foreign trade calculated in accordance with the data collected for 2014 are still applicable, the countries at the top of Fig. 5 must expect particularly steep declines of their GDP following the current global recession. However, this is of course limited by the fact that the economic trend is also influenced, among other things, by domestic economic conditions, e.g. by domestic investment and consumer behavior, economic stimulus packages from the governments, and the local economic structure. Viewed in isolation, a high dependence on foreign trade means that the burden of a collapse of the global economy on the affected national economy is accordingly high.

Implications for economic policy

As shown at the beginning, the global financial and economic crisis from 2008 brought about a slight decline in globalization. All forecasts so far suggest that the current global economic crisis caused by the coronavirus pandemic is bound to lead to a more severe global economic collapse. This increases the risk of further economic isolationist tendencies and the rise of protectionism around the world. Integration of countries as measured by the globalization index described above would then decline further.

The Bertelsmann Stiftung believes that such a development would be reason for concern. Companies, and even entire economies, are rethinking their current supply chain relationships. It must be expected, for example, that efficiency considerations will reduce in relevance in the future, and that risk aspects will play a greater role in entrepreneurial and socio-political decisions.

For example, this will lead to increased re-localization of selected economic activities. The associated strengthening of national autonomy reduces dependence on foreign input and end products, while also meaning a loss of specialization gains from the international division of labor. Resilience comes at a price (Petersen 2020). Partial re-nationalization of production processes may also launch a further protectionism race. It therefore must be determined how an **appropriate balance between economic efficiency and resilience can** be reached.

In parallel with improved crisis resilience, economic, political, and social globalization should be promoted further to realize its positive effects on the material – and subsequently also
effects on the material – and subsequently also
the immaterial – prosperity of people.

The Bertelsmann Stiftung believes, however, that the international division of labor and the international trade associated with it can only unfold their welfare-enhancing effects if certain standards and principles are observed in the further design of the legal framework for border-crossing exchange of goods, services, production factors, and technologies. Five aspects are at the focus of this process (Bertelsmann Stiftung 2019c, pp. 17-20):

#1 Reducing discriminatory trade barriers without initiating a "race to the bottom"

Breaking down import restrictions that only serve to protect domestic companies (discriminatory trade barriers) is a central element of international trade. However, restrictions that protect domestic consumers should be preserved. In order to prevent a "race to the bottom", labor, social, and other protection standards achieved (e.g. working time regulations, prohibition of forced and child labor, protection against dismissal, occupational health and safety, and environmental protection requirements) must not be abandoned for the sake of intensifying global free trade.

#2 Market transparency and a consistent level of information for all market participants

Market transparency is an absolute requirement for a working international trade system. Breaking down barriers to international trade therefore must not cause product claims to be abandoned that consumers would need to make their best choices.

#3 Welfare increase requires internalization of external effects

Free trade will only improve the welfare of societies as a whole if consumers and producers bear all costs associated with international trade. This affects, among other things, effects of costs associated with use of the environment (e.g. the costs of CO2 emissions for societies as a whole) on the market prices. If enforcement of the liability principle requires state intervention, such intervention must not take the form of discriminatory trade barriers. The same applies if the private benefit of an economic decision remains below the benefit to societies as a whole. This form of market failure requires state intervention as well, mainly expressed in the form of state involvement in financing of relevant activities. Subsidies for internalizing positive external effects should, therefore, not be considered to favor domestic producers in a manner that distorts competition.

#4 Fair distribution of income growth between countries

Like its predecessor studies, the "Globalization Report 2020" has shown that the developed industrialized nations have benefited the most from globalization so far if using absolute figures of GDP per capita as an indicator. In order to give emerging and developing countries a greater share in the economic benefits of the promotion of international trade, it would be helpful, for example, if industrialized countries opened their markets to processed products from developing countries without demanding the same in return (since developing countries are generally unable to live up to competition from industrialized countries). Industrialized countries should also reduce, or even discontinue, their subsidies for agricultural products in order to eliminate the distortion of competition towards developing countries that depend heavily on agriculture. Fair distribution of trade profits finally includes financing from rich industrialized countries for less developed economies to enable these countries to afford the required infrastructure, education, and production facilities.

#5 Fair distribution of income growth within the countries

As mentioned initially, progressing globalization within the participating countries produces losers as well as winners. The gains from globalization must be widely spread to preserve the social acceptance of an open economy. Many policy areas are, therefore, called upon to take appropriate measures. This requires strengthening of the social security systems, adjustments to structural and regional policies and the education system, and balancing out of income differences via the tax and transfer systems. Since the international division of labor increases the material prosperity of all participating economies, a country's globalization winners can at least in principle compensate for the losers while still improving their own income situation by way of global division of labor and trade.

Issues following the coronavirus pandemic

The global economic collapse triggered by the coronavirus pandemic will make it even more difficult to establish and maintain such framework conditions in future. Individual countries may introduce additional trade barriers and reduce environmental standards in order to strengthen their economic recovery and improve international competitiveness of their companies. At the same time, we can expect that, instead of increasing their financial support for the developing countries, highly developed industrialized countries are going to withdraw capital from the developing and emerging countries during the crisis. In spite of this, implementation of such standards and framework conditions must be advanced to ensure that trade between economies and consumers can improve the living conditions of all people.

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