



BDO INTERNATIONAL BUSINESS COMPASS 2017

Update and in-depth look at openness

Hendrik Hüning, Konstantin Poensgen, André Wolf



Abbreviations

гUI	
AfDB	African Development Bank
CIA	Central Intelligence Agency
GCI	Global Competitiveness Index
SME	Small and medium-sized enterprise
OECD	Organisation for Economic Cooperation and Development
UNDP	United Nations Development Programme
UNECA	United Nations Economic Commission for Africa

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"Globalisation now no longer seems a natural mechanism.."



Hamburgisches WeltWirtschafts Institut



PROF. DR. HENNING VÖPEL DIRECTOR OF HWWI



DR. ANDRE WOLF HEAD OF ECONOMICS HWWI

THIS PERCEPTION OF CONTINUOUS RAPPROCHEMENT IS ONE OF THE KEY NARRATIVES OF THE 21ST CENTURY. IT MAKES THE RENAISSANCE OF THE CONCEPT OF THE BORDER ALL THE MORE ASTOUNDING.

The idea of boundlessness is closely associated with globalisation. In a globalised world, goods, businesses and people can all move around the planet virtually freely and trade brings once remote locations closer and closer together. This perception of continuous rapprochement is one of the key narratives of the 21st century. It makes the renaissance of the concept of the border all the more astounding. This concept manifests itself most directly in the European refugee crisis which has sparked calls for a return to purely national decisionmaking processes from some groups. However, people have recently also started speaking of regression with regard to the free movement of goods; one need only think of the election of Donald Trump, the massive resistance to TTIP – the planned US-EU free trade agreement - and the trade conflict with China. Globalisation now no longer seems a natural mechanism, but rather a process that is increasingly under threat and besieged by countermovements. In this context, it is informative to place the current degree of openness of countries under the microscope.

Therefore, the focus of this year's issue of the BDO International Business Compass is trade openness. We evaluate the current level of trade barriers using various metrics and carry out an empirical analysis of the effects of protectionism on growth. In addition to our in-depth look at innovation, we present the updated ranking of the IBC overall index as a yardstick of local attractiveness. For the sixth time, we have evaluated the general economic, political and sociocultural conditions of individual countries and converted them into illustrative statistics. Furthermore, the production and business sub-indices have been updated from the previous year. This makes it possible to compare countries in terms of their attractiveness as production and marketing locations. With this analysis we hope to provide corporate decision-makers with a useful tool for selecting locations for their companies.

PROF. DR. HENNING VÖPEL DIRECTOR OF HWWI

DR. ANDRE WOLF HEAD OF ECONOMICS HWWI, GLOBAL ECONOMICS AND INTERNATIONAL TRADE RESEARCH AT HWWI "Tariffs and other barriers to international economic activity are still on the decline. However, we are observing a relative shift between the drivers of and constraints on free international trade."





IDENTIFY OPEN MARKETS – GUARANTEE SUCCESS

The opening of markets, the removal of tariff and non-tariff trade barriers and the greatest possible freedom of movement for goods, services and even labour have long been the trend. This has generated completely new opportunities for small and large businesses alike and made a

significant contribution to considerable improvements in welfare on a global scale. However, the indications that what have so far been predominantly positive attitudes to free international trade are turning sour are multiplying. Especially in Europe and the USA.

What initially manifested itself in widespread opposition to free trade agreements such as TTIP or CETA is now manifesting itself in certain countries' U-turns on trade policy. Great Britain's exit from the European Union was a profound blow to the European Single Market. The collateral damage of Brexit cannot yet be foreseen. On the other side of the globe, the new protectionist line taken by the USA has already led to the termination of its participation in the Trans-Pacific Partnership. The impact of this development on the economy is also uncertain. And other trade barriers are looming on the horizon.

International companies, however, are reliant on a high degree of openness and unrestricted market access, both for their turnover and for utilising comparative cost advantages in the production chain. Protectionism and bilateralism are therefore threatening a number of business models. Yet is this the new global trend?

There are not many signs that this is the case. The results of the recent BDO International Business Compass (IBC), which focused on this subject, attest to the generally (at least) ongoing opening up of the business world. Tariffs and other barriers to international economic activity are still on the decline. However, we are observing a relative shift between the drivers of and constraints on free international trade. Whereas once highly protectionist, emerging industrial nations such as China are increasingly open, traditionally mercantile countries in Europe and America are more frequently resorting to regulating the flows of goods and cash as well as the freedom of movement of people.

At the same time, the process of digitisation is gaining momentum across all borders. Although this fundamental process is revolutionising industry and society inexorably and globally, politicians are looking for isolated solutions. In this context, globally uniform regulatory standards for data transfers and security are indispensable in order to make full use of the potential efficiency improvements offered by digitisation. Until these become reality, regionalism will remain prevalent, as reflected by the indices of our IBC.

As an international auditing and consultancy firm, the ongoing success of German companies is of great importance to us. We therefore invite industry and SMEs to use the HWWI and BDO International Business Compass to gain a quick overview of almost every country in the world. By updating the in-depth analyses on an annual basis, we can ensure that the data are always up-to-date so as to map the risks and opportunities of the market reliably. This way, the IBC can provide you with a sound basis for your corporate decisions – decisions that could make your company even more successful.

PARWÄZ RAFIQPOOR MEMBER OF THE MANAGEMENT BOARD BDO AG WIRTSCHAFTSPRÜFUNGSGESELLSCHAFT

EXECUTIVE SUMMARY

MOTIVATION

The dynamic growth of international trade is one of the most significant global development trends in recent decades. For a long time globalisation seemed a natural, almost irreversible process. However, cracks have appeared in this notion recently. One reason for this is the significant decrease in the dynamism of international trade. It is also due to the resurgence of protectionism on a political level, even in Western countries. However, global markets remain a crucial basis for expansion for international companies. This goes for companies pursuing global export strategies in particular. Indirectly, however, it also affects companies that are less reliant on exports yet whose production chains span numerous countries in order to cut costs. Besides the trading of finished products, the international trading of preliminary services and semi-finished products has also increased steadily over the past few decades. Therefore, in the medium term a swing towards protectionism also threatens to break value chains that have been built up over extended periods. In this context, it appears to be time to carry out an up-to-date appraisal of the degree of openness in the countries around the world and of its relationship with general economic growth.

This is the focus of the BDO International Business Compass 2017. We will firstly compare countries and global regions descriptively with regard to the current status and development trends of their degrees of openness. As the concept of openness cannot be defined unequivocally and encompasses a number of different aspects, we will use a number of different indicators. Specifically, we will differentiate between out-come-based measures based on observed trade flows and policy-based measures that factor in trade policy instruments (tariffs and non-tariff trade barriers). We will then carry out an econometric analysis of the correlation between openness and economic output (gross domestic product (GDP)) on the basis of our global data set. We will be able to use our findings to simulate the long-term effects of an increase in import tariffs on the economic output of a country. This way we will obtain a differentiated picture of the conceivable consequences of upheavals in trade policy.

RESULTS

Overall, there have been only minor changes in the top 10 in the International Business Compass 2017 compared to the previous year. Singapore retook the top spot, due primarily to improved general economic and sociocultural conditions. Hong Kong is in second place. Switzerland too climbed the rankings and is now one of the top three again following improvements in its economic indicators in particular. The Netherlands and Denmark round off the top five, having barely moved since the previous ranking. Germany and New Zealand are new additions to the top 10. In terms of rankings, Germany enjoyed the greatest progress out of all the countries at the top of the rankings. This too was down to its impressive economic data. In the case of New Zealand, its placement in the top 10 is due primarily to its excellent performance in the political and sociocultural pillars. In contrast, Australia (11th place (-1)) and Canada (12th place (-3)) fell out of the top 10. Whereas Australia did not experience any noteworthy declines in absolute terms, Canada lost significant ground in the economic segment. Overall, the dominance of the OECD countries in the top spots remained striking this year. As before, Singapore and Hong Kong were the only non-OECD countries in the top 20.

There were no major movements on a global scale this year, with the largest shifts in rankings being 20 places. The largest leap forward in the ICB 2017 was by Cape Verde, followed by Namibia and Gambia. As Cape Verde and Namibia had already registered double-digit advances in the previous year, their trend can be considered extremely positive. Cape Verde has improved in terms of both its general economic and sociocultural conditions. Namibia made the most progress in the political and sociocultural segments. Considered globally, therefore, both countries have established themselves in the middle of the index (Namibia in 65th place and Cape Verde in 70th place). Other African countries such as Gambia, Liberia and the Democratic Republic of the Congo also achieved significant increases this year. However, in spite of this they are still near the bottom of the global rankings. Otherwise, the biggest winners are the Solomon Islands and Fiji in the Pacific.

This year's biggest loser is Rwanda. The country fell by 17 places due to deteriorations in its economic and sociocultural indicators. Nevertheless, it remains one of the highest-ranked African countries. Other African countries to suffer major setbacks were Mali and Benin. In Europe, the countries to lose the most ground were the Balkan nations of Bosnia and Herzegovina and Kosovo. For Bosnia and Herzegovina, this due to a decline in political indicators; Kosovo experienced a socio-cultural decline instead.

Amongst the OECD countries, the Netherlands is at the top of the IBC production sub-index. This is predominantly due to its central location in Europe and the interna-tional focus of its financial policies. The Netherlands is followed by Great Britain, Denmark, Switzerland and Belgium. In Africa, the production sub-index continues to be dominated by Mauritius. However, some changes are noticeable here compared to the previous year. For example, Gambia, Malawi and Liberia gained significant ground whilst Uganda and Lesotho fell far behind in the production location rankings. The production sub-index for Asia is characterised by the outstanding performances of Singapore and Hong Kong. These are in first and second place respectively in the global comparison due to the great market potential of both countries as well as their investor-friendly legislation. Taiwan, Bahrain and the United Arab Emirates occupy the other top positions in Asia. In 29th place on the production sub-index, Lithuania is the leading European non-OECD country. It is followed by Latvia, Malta and Montenegro. The results of the production index for the countries in Latin America are relatively homogeneous. The best performer was Barbados, followed by Jamaica, St. Lucia and Uruguay. The five countries in Oceania changed very little compared to the previous year.

As expected, the OECD countries were also dominant in the business sub-index. Of the 15 highest index values, 13 are attributable to OECD countries. This year the business market categ ory is led by Norway which stands out a as a business location through its high consumption expenditure per capita. Norway was followed by Switzerland and the USA, both of which also have a high consumption expenditure per capita. In Africa, nations from the south of the continent are in the upper echelons of the business sub-index. Mauritius is at the top of the list and is even one of the 60 most attractive markets on a global scale. South Africa is in second place, followed by its neighbours Namibia and Botswana. The business market for Asia is led by China and Singapore, both of which are also the only non-OECD countries to be in the global top 15. Hong Kong is in third place in Asia. The European non-OECD countries are led by Malta, Lithuania and Latvia in the business sub-index ranking. Globally, both of these countries are in the top 50. They are followed by Croatia, Albania and Bulgaria. The most attractive markets in Latin America are the relatively affluent Caribbean islands of Barbados and the Bahamas. These are followed by Uruguay and Panama. Oceania's non-OECD countries are in the upper middle field in the international comparison. Samoa performed the best.

This year's in-depth look at openness initially showed how greatly the countries of the world differ in terms of the extent to which they practise protectionism. This is largely irrespective of how one conceptualises openness. North America and Europe appear to be the most open regions in the world, both when applying an indicator based on real trade flows and when utilising direct measures of political and administrative barriers. The highest tariff rates and lowest trade intensities are currently to be found in Africa as well as in the Caribbean, Central Asia and parts of South America. Trade intensity in China and Vietnam has increased the most by far. With regard the lowering of tariff rates, North African countries in particular have excelled over the past 15 years.

Additionally, our statistical analysis of the correlation between tariff level and economic output showed that from a global perspective, higher import tariffs are linked to lower GDP per capita for the average country. We can therefore confirm the results of a majority of the available research literature. However, through a differentiated analysis we have also confirmed that the nature of the correlation is dependent on both the initial level of the tariffs and on the economic region under review. According to our estimates, if the initial tariff rates are very low then the expected effects of a tariff rate increase would still be positive. The effect only becomes negative when the tariff rate reaches a certain level. Again, when this is the case it is region-specific. The effect is almost universally estimated to be negative for the countries in Asia and Eastern Europe, whereas positive effects would be expected for Latin America even if the initial tariff level were relatively high. Our exemplary simulation results show that, based on the current levels, an increase in tariff restrictions could have highly diverse effects from region to region. One likely cause of this differentiated effect is the existence of various - sometimes opposed - variables through which increasing openness can influence a national economy. Another likely cause is the heterogeneousness of the economic structures which affects different countries differently in the form of trade policy adjustments. Ultimately, the same applies to trade policy as to most other sectors of economic policy: nothing is black and white and policy recommendations should always be based on the specific circumstances.

CONCLUSIONS

The overall ranking of the International Business Compass remained largely stable in 2017. There were slight shifts at the top of the rankings, with Singapore having reclaimed first place following a setback in the previous year. Hong Kong fell from first place in the previous year to second place, although its decline was negligible in absolute index values. Switzerland was able to break back into the top three. Likewise, Germany and New Zealand both made it into the top 10, Ireland having experienced exceptionally positive developments. Overall, with the exceptions of Hong Kong and Singapore the top 10 once again exclusively comprise OECD countries. The changes in the middle and bottom of the ranking were more significant. This year's biggest winners were Cape Verde and Namibia, whereas the biggest losers were Rwanda and Mali.

TECHNICAL DETAILS

The study comprised 174 countries across all continents. As in the previous year, the study did not include countries with fewer than 150,000 inhabitants or the countries/territories of Cuba, the West Bank, Somalia or Western Sahara. Likewise, Luxembourg was excluded from the overall ranking due to its unusual economic structure, especially because of its extraordinarily high capital inflows per capita. These would have greatly distorted the weighting of direct investments in the index calculation. Additionally, as in previous years Syria was excluded from the index as the civil war makes it impossible to reliably assess its future prospects.

We updated the data by referring to the selection of reliable international sources used in the previous year. This normally involves updating the 2014 values from last year's index to the values measured in 2015. With regard to averages of variables measured over time, such as population growth, the time frame was moved into the future by a period. Compared to last year's report, the selection of indicators used to calculate the index did not change. As before, the indicators reflect the key theoretical sub-aspects of the quality of a country as a business or production location. Like last year, each indicator was first standardised in the form of a scale from 0 to 100 and assigned to one of three pillars. The arithmetic mean of the indicators within each pillar was then calculated. In the final step, the geometric mean of the pillar values was calculated in order to determine the total index value. The values for the business and production sub-indices were calculated by determining the mean of the relevant local factors. For non-OECD countries, the index values were expressed in relation to the continental average for the purposes of intraregional comparisons.

1. INTRODUCTION

The dynamic growth of international trade is one of the most significant global development trends in recent decades. The volume of goods traded internationally has increased one hundredfold between 1960 and 2010. In this context, the idea of the boundlessness of the international exchange of goods and, increasingly, capital and labour has become one of the key hallmarks of our 21st century society. For a long time globalisation seemed a natural, almost irreversible process. However, cracks have appeared in this notion recently. One reason for this is the significant decrease in the dynamism of international trade. Ultimately, the trading volume even declined. This is also due to the resurgence of protectionism on a political level, even in Western countries. The wide-ranging mechanisms of trade policy, tariffs, quotas and even tacit protectionism through product standards or similar measures are suddenly high on the political agenda again. This appears to be the result of increased unease amongst large social groups in connection with the distribution effects resulting from deregulation. Our understanding of globalisation as a socially beneficial process is being questioned increasingly loudly.

However, global markets remain a crucial basis for expansion for international companies. This holds for companies pursuing global export strategies in particular. Indirectly, however, it also affects companies that are less reliant on exports yet whose production chains span numerous countries in order to cut costs. Besides the trading of finished products, the international trading of preliminary services and semi-finished products has also increased steadily over the past few decades. Therefore, in the medium term a swing towards protectionism also threatens to break value chains that have been built up over extended periods. In this context, it appears to be time to carry out an up-to-date appraisal of the degree of openness in the countries around the world and of its relationship with general economic growth.

This is the focus of the BDO International Business Compass 2017. We will first compare countries and global regions descriptively with regard to the current status and development trends of their degrees of openness. As the concept of openness cannot be defined unequivocally and encompasses a number of different aspects, we will use a number of different indicators. Specifically, we will differentiate between out-come-based measures based on observed trade flows and policy-based measures that factor in trade policy instruments (tariffs and non-tariff trade barriers). We will then carry out an econometric analysis of the correlation between openness and economic output (gross domestic product (GDP)) on the basis of our global data set. We use our findings to simulate the long-term effects of an increase in import tariffs on the economic output of a country. This way we will obtain a differentiated picture of the conceivable consequences of upheavals in trade policy.

2. RESULTS OF THE IBC 2017

2.1 OVERVIEW

The International Business Compass (IBC) aims to present the total level of devel-opment of countries and regions in the form of a single index value. This allows us to rank the countries based on their level of development. It will then be possible to use the index to shed light on the investments of multinational companies and other organisations. The IBC shares this ranking concept with other established country indices such as the Human Development Index (HDI) and the Global Competitiveness Index (GCI). However, one key difference lies in the scope of the chosen aspects. Whereas the aforementioned indices ultimately focus on specific sub-aspects of the development of countries (be they economic, political or social), the IBC is expressly attempting to integrate these various dimensions into one index value.

In this sense we can describe its structure as a combination of the three sub-pillars, i.e. the economic, political and sociocultural dimensions, which in turn form a group of related indicators. First, the individual indicators are standardised and the arithmetic mean of the standardised values within the sub-pillars is determined in order to calculate the index. Image 1 shows the chosen indicators and their allocation to the sub-pillars. To produce the total index, the geometric means of the results for the sub-pillars are then calculated. As the selection of variables in this update has not changed, we refer to the 2013 edition.¹

When interpreting the index, please note that it is based on the assumption that a country should be internationally competitive with regard to all three pillars for its overall level of development to be high. This is due to the geometric means of the pillar values: a poor value in one pillar cannot automatically be balanced out by excellent



values in another pillar. This causes some countries to occupy a lower place in the overall ranking than one would expect in light of their otherwise high level of development due to a poor performance in one pillar.

Besides the overall index, the data also make it possible to evaluate countries on the basis of specific aspects of local attractiveness. In this regard we differentiate between the attractiveness of a country as a market and its attractiveness as a production location, and allocate groups of indicators to these sub-aspects on the basis of sound economic theories (see Image 1). The arithmetic mean of the standardised indicator values is then calculated in order to produce the sub-indices. Likewise, these sub-indices are updated each year. This way, we can evaluate the development of a location with regard to investor-specific characteristics as well as its overall development.

Image 2: Global distribution of the index values of the IBC 2017





2.2 UPDATING OF DATA

The same sources as in previous years were used when selecting data in order to facilitate a reasonable comparison. The data were updated for all variables that were factored into the calculation of the rankings. This normally involves updating the 2014 values from last year's index to the values measured in 2015. With regard to averages of variables measured over time, such as population growth, the relevant time frame was moved into the future by a period. Likewise, the market potential indicator we calculated was re-calculated using updated value-creation statistics. Finally, we replaced the often incomplete IMF variable for unemployment with a new World Bank statistic that covers considerably more countries.

As in previous years, Luxembourg has been excluded from the index: the leading position of the country as a global financial centre would otherwise greatly distort the real economic rankings of the countries based on the method used. In particular, the enormous direct investment per capita in Luxembourg is problematic for our methods as it would render the indicator for country comparisons meaningless. Likewise, Syria remains excluded as no reasonable predictions can be made for the region in light of the ongoing civil war. Otherwise, inclusion in the IBC generally requires a minimum population of 150,000 people.

2.3 RESULTS

2.3.1 Results of the overall index 2017

The 2017 rankings are largely based on data from 2015. The changes compared to the index in the previous year greatly reflect the global developments that took place in 2015. This period was characterised by factors including ongoing military conflicts in Syria and Ukraine as well as the expansion of the so-called Islamic State. Overall, the results are relatively familiar in spite of the events. Image 2 represents the global distribution of the IBC overall index for 2017. The industrialised nations from North America and Northern and Western Europe continue to dominate the rankings. Central African countries in particular are performing poorly this year. The full rankings are available in the annex.

Overall, there have been only minor changes in the top 10 in the ICB 2017 compared to the previous year (see Table 1). Singapore retook the top spot, due primarily to improved general economic and sociocultural conditions. Hong Kong is in second place. Switzerland too climbed the rankings and is now one of the top three again following improvements in its economic indicators in particular. The Netherlands and Denmark round off the top five, having barely moved since the previous ranking. Germany and New Zealand have entered to the top 10. In terms of rankings, Germany enjoyed the greatest progress



out of all the countries at the top of the rankings. This too was due to its impressive economic data. In the case of New Zealand, its placement in the top 10 is due primarily to its excellent performance in the political and sociocultural pillars. In contrast, Australia (11th place (-1)) and Canada (12th place (-3)) fell out of the top 10. Whereas Australia did not experience any noteworthy declines in absolute terms, Canada lost significant ground in the economic segment. Overall, the dominance of the OECD countries in the top spots remained striking this year. As before, Singapore and Hong Kong were the only non-OECD countries in the top 20.

Winners and losers

There were no major movements on a global scale this year, with the largest shifts in rankings being 20 places. The largest leap forward in the ICB 2017 was by Cape Verde, followed by Namibia and Gambia. As Cape Verde and Namibia had already registered double-digit advances in the previous year, their trend can be considered extremely positive. Cape Verde has improved in terms of both its general economic and sociocultural conditions. Namibia made the most progress in the political and sociocultural segments. Considered globally, therefore, both countries have established themselves in the middle of the index (Namibia in 65th place and Cape Verde in 70th place). Other African countries such as Gambia, Liberia and the Democratic Republic of the Congo also achieved significant increases this year. However, in spite of this they are still near the bottom of the global rankings. Otherwise, the biggest winners are the Solomon Islands and Fiji in the Pacific.

Tabelle 1: To	p 10 in the IBC	overall index	for 2017
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Tabelle 2: IBC 2016 vs. IBC 2017: The greatest increases and decreases in rank

No.	Country	Value	+/-	No.	Country	Value	+/-	Winners	Increase	Losers	Fall
1	Singapore	82,80	+1	6	Norway	75,75	-1	Cape Verde	+20	Rwanda	-17
2	Hong Kong	80,54	-1	7	Ireland	75,13	0	Namibia	+17	Mali	-16
3	Switzerland	78,69	+1	8	Germany	74,19	+4	Gambia	+17	Benin	-15
4	Netherlands	77,99	-1	9	Great Britan	74,18	-1	Solomon Islands	+16	Bosnia & Herzegovina	-13
5	Denmark	76,23	+1	10	New Zealand	74,02	+1	Fidji	+15	Kosovo	-12
Source: I	HWWI (2017)							Source: HWWI (2017)			

Region	Ø	Region	Ø	Region	Ø	Region	Ø
Northern Europe	73,2	West Asia	52,5	South America	48,0	East Africa	42
North America	72,8	East Asia	51,6	Caribbbean	47,0	North Africa	41
Western Europe	72,2	Central America	51,3	Südliches Afrika	46,6	West Afrika	40
Oceania	67,2	Eastern Europe	50,2	Central Asia	44,6	Central Africa	36
Southern Europe	58,2	Southeast Asia	49,0	South Asia	43,5		

This year's biggest loser is Rwanda. The country fell by 17 places due to deteriorations in its economic and sociocultural indicators. Nevertheless, it remains one of the highest-ranked African countries. Other African countries to suffer major setbacks were Mali and Benin. In Europe, the countries to lose the most ground were the Balkan nations of Bosnia and Herzegovina and Kosovo. For Bosnia and Herzegovina, this is due to a decline in political indicators; Kosovo experienced a sociocultural decline instead.

Breakdown by region

Performances can also be compared by global region (as demarcated by the UN) if the mean index value of the countries in a region is calculated. Population size will serve to weight the results for each country in a region below.² As can be expected given the global distribution, the strongest economic regions - Northern Europe, North America and Western Europe – are at the top of the global rankings (see Table 3). Northern Europe has managed to defend its top spot from the previous year. The Northern European countries range from fifth place (Denmark) to 41st place (Lithuania), whilst the Western European countries range from third place for Switzerland to 19th place for France. Oceania is in fourth place in the regional comparison, benefiting from the good performances of Australia and New Zealand.

Southern Europe, West Asia, East Asia and Central America were all squarely in the middle. Nevertheless, these regions all performed better than Eastern Europe. Within Africa, only the south of the continent is approaching an average value. Due primarily to political unrest, North Africa remains in crisis. As a result, the four lowest regional averages can still be found in Africa. As shown in Table 3, most of them are Central African nations. None of the countries in the region made it into the top 100; in 112th place, Gabon is the most successful country.

2.3.2 Results of the business and production sub-indices in 2017

The sub-indices of the IBC rate countries based on their potential as a production location or market. Various relevant indicators are standardised and added to the related sub-index (see Image 1). As in previous years, the sub-indices are calculated additively and not multiplicatively. Consequently, there are fewer dramatic differences between the years and extreme results for individual countries are less probable. The results below are presented by continent in order to simplify regional comparisons. In order to facilitate the comparison of countries with a similar level of development, we have limited ourselves to non-OECD countries in the continental comparison (as

in the previous year). The sub-index values of the OECD countries are compared against one another in separate rankings. This way, we can also compare the attractiveness of the developed countries as markets and production locations. A table of the results of the subindices can be found in annex E.

Production location

Amongst the **OECD countries**, the Netherlands is at the top of the IBC production sub-index. This is predominantly due to its central location in Europe and the international focus of its financial policies. The Netherlands is followed by Great Britain, Denmark, Switzerland and Belgium. These are all in the global top 10 production locations Portugal, Greece, Turkey and Mexico are in the bottom places amongst OECD countries. This is mainly due to their weak infrastructure and limited market potential. The biggest loser compared to the previous year was Hungary, which dropped four places.

In Africa, the production sub-index continues to be dominated by Mauritius. Namibia, Botswana and Rwanda are close behind. In a global comparison, however, these countries are amongst the 80 most attractive production locations. The Democratic Republic of the Congo, Zimbabwe, Eritrea and Comoros are at the bottom of the list. These countries are all also at the bottom of the global ranking. However, some changes are noticeable compared to the previous year. For example, Gambia, Malawi and Liberia gained significant ground whilst Uganda and Lesotho fell far behind in the production location rankings.

The production sub-index for Asia is characterised by the outstanding performances of Singapore and Hong Kong. These are in first and second place respectively in global comparison due to the great market potential of both countries as well as their investor-friendly legislation. Taiwan, Bahrain and the United Arab Emirates occupy the other top positions in Asia. The lower end of the Asian production location index features Iran as well as the Central Asian nations of Uzbekistan and Turkmenistan. The biggest losers were India and the Maldives, whereas Vietnam performed best by jumping six places.

In 29th place on the production sub-index, Lithuania is the leading European non-OECD country. It is followed by Latvia, Malta and Montenegro. As in the previous year, Belarus, Russia and Ukraine are at the bottom of the list. Falling four places, Romania was the biggest loser. In contrast, Montenegro secured the strongest improvement in the rankings.

The results of the production index for the countries in Latin America are relatively homogeneous. The best performer was Barbados, followed by Jamaica, St. Lucia and Uruguay. The Latin American production locations with the lowest index values are Argentina, Bolivia and Venezuela. In the case of Bolivia and Venezuela, this can be explained due to their lack of freedom of investment and strictly regulated labour markets. Venezuela is now the most unattractive production location, even in a global comparison. Chile would be the continental leader if it did not belong to the OECD.

The five countries in **Oceania** changed very little compared to the previous year. Samoa performed the best whilst Papua New Guinea was in last place. The Solomon Islands advanced one space.

Business market

As expected, the **OECD countries** were dominant in the business subindex. Of the 15 highest index values, 13 are attributable to OECD countries. This year the business market category is led by Norway which stands out a as a business location through its high consumption expenditure per capita. Norway was followed by Switzerland and the USA, both of which also have a high consumption expenditure per capita. The top five are rounded off by Canada and Germany. Hungary, Israel, Turkey and Mexico occupy the lower ranks. Although it was in last place, Mexico remains in the middle of the field from a global perspective. Now in 18th place, Iceland lost the most ground compared to the previous year whereas Estonia improved by five ranks.

In Africa, nations from the south of the continent are in the upper echelons of the business sub-index. Mauritius is at the top of the list and is even one of the 60 most attractive markets on a global scale. South Africa is in second place, followed by its neighbours Namibia and Botswana. Libya, the Democratic Republic of the Congo and Sudan are at the bottom of the list. They are joined in the bottom 10 statistically most unattractive business markets in the world by the Central African Republic, Eritrea and the Republic of the Congo. There have been some obvious changes compared to the previous year. Lesotho gained 18 places while Ghana and Tanzania each gained 16. In contrast, Burkina Faso and Burundi both dropped 13 places.

The business market for **Asia** is led by China and Singapore, both of which are also the only non-OECD countries to be in the global top 15. Hong Kong is in third place in Asia. Behind it are smaller states such as Qatar and Taiwan that profited from their high income per capita. India has improved slightly and is now in seventh place. Nepal, Yemen and Afghanistan are at the bottom of the list. Yemen and Afghanistan are amongst the bottom five in the global comparison.

The biggest winners are Bhutan and Azerbaijan which gained ten and nine ranks respectively. In contrast, Jordan and Kazakhstan both dropped by six places.

The **European non-OECD countries** are led by Malta, Lithuania and Latvia in the business sub-index ranking. Globally, both of these countries are in the top 50. They are followed by Croatia, Albania and Bulgaria. Moldova, Russia and Ukraine are at the bottom of the list. Montenegro gained three ranks whilst Kosovo fell by four places and performed much more poorly than in the previous year.

The most attractive markets in **Latin America** are the relatively affluent Caribbean islands of Barbados and the Bahamas. These are followed by Uruguay and Panama. Brazil improved its rank slightly and is now in seventh place in Latin America. In global terms, in 75th place Brazil remains in the middle field due to its poor infrastructure and political instability. Honduras, Bolivia, Haiti and Venezuela were at the bottom of the index. Venezuela is also at the bottom of the global ranking. Only Trinidad and Tobago experienced a significant change, advancing six ranks and returning to fifth place.

Oceania's non-OECD countries are in the upper middle field in the international comparison. The ranks of the countries range from 25 to 53. Samoa performed the best. Papa New Guinea is in last place in the continental comparison. Only Fiji and Vanuatu have changed places since the previous year.

² The allocation of countries to the global regions is set out in annex A.

¹ HWWI (2013): BDO International Business Compass – international location index for

medium-sized companies (published by Michael Bräuninger).

3. IN-DEPTH LOOK AT OPENNESS

3.1 INTRODUCTION

The increasing economic ties between countries as a result of international trade is one of the key trends in recent economic history. From a historical perspective, however, this process has been anything but continuous. As shown in image 3even during the final decade before the outbreak of the First World War there was a phase in which international trade grew almost continuously relative to the global economic output. This first small wave of globalisation was stopped abruptly by the war. In the interwar period, the rapidly developing protectionism of Western countries initially darkened the prospects of global economic integration. The Second World War itself as well as the political tensions directly preceding it in Europe contributed to keeping the exchange of goods low. However, after the Second World War the significance of international trade grew steadily with a never-before-seen level of dynamism. This dynamism was driven crucially by the economic development and opening of the emerging economies, with China at the forefront. Not only does international trade allow countries to specialise in goods based on their production advantages, it also leads to higher product diversity.

The question arising in this context that we aim to address is whether national economies that open themselves up to international trade experience stronger growth than economies that remain relatively closed. The most recent debates on free trade show that perceptions of the benefits of free trade vary starkly. Many argue that the increases in efficiency from the international division of labour and trade cannot be distributed throughout a national economy properly. However, our analysis will not address such issues of distribution. We will limit ourselves to the question of whether countries with liberal trade policies grow faster than countries that impose restrictions on trade with other countries.



By building up trade barriers and imposing restrictions, countries can close their national economies off from international trade. This might happen, for example, because a country wants to protect its developing industry from foreign competition (the infant industry argument) or is reacting to trade barriers imposed by other countries. In our analysis we will generally differentiate between tariff and non-tariff trade barriers. Tariff barriers generally encompass tariffs imposed either on the quantity or value of imported goods. Negative tariffs, for instance on export goods, are also conceivable. These serve as a subsidy with which the product can make its products artificially competitive on the global market. By introducing a tariff, a country improves its position at the expense of one or more other countries. It also distorts world prices and the real terms of trade which show how many import goods.

In contrast, non-tariff trade barriers influence international trade in a more subtle way yet are of a much more international nature. These include 'natural' trade barriers such as the cost of covering the geographical distance between two trading partners or cultural barriers. These barriers are largely unchangeable and will not be considered below. By introducing registration formalities for imports, import quotas or product and quality standards, a country can also positively or negatively influence the trade of specific goods (see Image 4). Even if product and quality standards are not necessarily the result of a trade policy, they will still affect trade flows, for instance, when products that do not meet certain standards are excluded from certain markets.

The direction of global trade flows are influenced by more than tariff and non-tariff barriers. Bilateral or multilateral trade agreements (e.g. free trade agreements) can break down trade barriers between countries and form strategic trading alliances. Examples of trade agreements include the North American Free Trade Agreement (NAFTA), Mercosur and TTIP, which has been the subject of recent debate (see Image 5 for more details). Such trade agreements help eliminate tariffs between regional groups of countries in particular if no consensus can be reached on tariff reductions on a global level (e.g. through the GATT rounds). Trade agreements can therefore be considered a sort of second-best solution compared to global free trade as they can eliminate tariffs between multiple countries bilaterally or multilaterally. Most of the time, it is in the interests of geographically close and/or economically homogeneous countries to mutually cut tariffs through such trade agreements.

A trade agreement leads to increased trade between the participating countries. However, whether this improves or impairs welfare depends on which of the following two effects is dominant (see Viner 1950). Firstly, a trade agreement has a trade creation effect. Due to the elimination of the tariffs under the agreement, products are imported that had been manufactured domestically at a higher cost when the tariffs were in place. Secondly, it has a trade diversion effect. Trade with countries outside of the trade agreement is decreased in favour of trade between the signatories to the trade agreement, e.g. because there are no tariffs on the goods traded between the contractual partners. This decreases global welfare if countries outside of the agreement could actually manufacture the goods more cost-effectively. This is because the im-balance caused by tariffs will result in a loss of global productivity.



Name (abbreviation)	Countries involved	Status
ASEAN Free Trade Agreement (AFTA)	Brunei, Indonesia, Malaysia, Philippines, Singapore, Thailand, Vietnam (from 1995), Laos (from 1997), Myanmar (from 1997), Cambodia (from 1999)	In effect since 1992
Comprehensive Economic and Trade Agreement (CETA)	European Union (EU), Canada	Signed in October 2016 after follow-up talks ratified by the European Parliament in Feb- ruary 2017; still to be ratified by the nation states
African Free Trade Zone (AFTZ)	Angola, Botswana, Burundi, Comoros, Djibouti, Democratic Republic of the Congo, Egypt, Eritrea, Ethiopia, Kenya, Lesotho, Libya, Madagascar, Malawi, Mauritius, Mozambique, Namibia, Rwanda, Seychelles, Swaziland, South Africa, Sudan, Tanzania, Uganda, Zambia, Zimbabwe	Announced and in the pipeline since 2008, talks of expansions since
North American Free Trade Agreement (NAFTA)	Canada, Mexico, USA	In effect since 1994
South Asian Free Trade Agreement (SAFTA)	Afghanistan, Bangladesh, Bhutan, India, Maldives, Nepal, Pakistan, Sri Lanka	In effect since 2004
Southern Common Market (Mercosur)	Argentina, Brazil, Paraguay, Uruguay, Venezuela	In effect since 1991
Transatlantic Trade and Investment Partnership (TTIP)	European Union (EU), USA	Has been in the pipeline since 2013, negotiations are currently on hold
Trans-Pacific Partnership (TPP)	Australia, Brunei, Canada, Chile, Japan, Malaysia, Mexico, New Zealand, Peru, Singapore, USA (until 23 January 2017) and Vietnam	Signed in February 2016, not yet ratified

Such trade agreements are not free from controversy and are often met with resistance by social groups, such as the TTIP talks. There are sometimes two reasons for this: for one, it is often argued that the positive effects of such agreements tend to favour multinational groups over the general population, which in turn raises the question of distribution. Secondly, it is argued that such agreements water down product, quality, environmental, employee and consumer standards if they are pegged to the lowest level between the participating countries.

3.2 CONCEPTS OF OPENNESS

How open is a national economy to international trade? To answer this question, we must first define openness. There is no standard definition for openness, which makes it more difficult to measure it and compare empirical results. It is instead multifaceted and can take on various dimensions. For example, the four freedoms of the European Single Market make it clear that openness itself is not limited to the exchange of goods, but can include the exchange of services, freedom of movement and the free movement of capital and payments.

We see openness as a fundamental stance of a national economy with regard to economic interactions with foreign countries. A country can initiate or boost economic ties with foreign countries, yet it can also close itself off through restrictive political measures. For example, legal regulations can limit the exchange of goods with foreign countries and even prohibit the trading of certain groups of products. Furthermore, by introducing incentives the state can intervene in the global competition, for instance by subsidising certain sectors or nationalising their production. This analysis will be limited to openness in the exchange of goods (also referred to as 'trade openness' or simply 'openness'). Even with this limited consideration, the openness of an economy is based on a range of different factors, although it can be generalised and defined as a low extent of protectionist measures.

Protectionism describes the closing off of a country from the international community. Openness is therefore an alternative to protectionism and can take the form of far-reaching free trade agreements. Protectionist measures encompass both tariff and non-tariff barriers. For example, the imposition of an import or export tariff represents a tariff barrier. All other measures that might inhibit or prevent trade are categorised as non-tariff barriers. These might take the form of quotas, high product standards or extensive import procedures.

It has proven a significant challenge to measure openness empirically. The various aspects of trading have to be aggregated into a quantitative metric in order to make it possible to compare countries based on their openness. As it is difficult to map the various political measures and restrictions in one openness metric, a number of differ-ent methods are presented in the bibliography.

3.2.1 Outcome-based measures

Outcome-based measures enjoy larger-scale application. These consider the volume of international trade of a national economy a result of its trade policies. As, according to the theoretical approach, exports and imports are dependent on trade policy, they can be used in relation to GDP as a measure of openness in the simplest variant. This measures the relationship between imports and exports and national value crea-tion, which can also be referred to as trade intensity. A large percentage speaks for an open country and a smaller for a national economy closed off to international trade. As this measure is constant, countries can be compared against one another in a ranking based on their degrees of openness. This measure is determined by

Trado intoncity –	(Exports + imports)
fidde filtensity =	GDP

Due to its simplicity and the excellent availability of data, this figure is used as an openness metric in many analyses. However, we must remember that its informative value is limited. Its dependency on size is a fundamental problem: according to this metric, smaller countries appear more open because they are naturally more heavily involved in international trade due to their smaller geographical areas. This is under-lined by simply listing the countries currently with the highest and lowest values (see Table 4): although the excellent positions of countries such as Hong Kong and Singapore can be justified in light of their open, pro-business policies, it is questionable that countries such as the USA and Japan should be some of the least open. Each of these countries has one of the largest national economies in the world which account for the majority of international trade. Even if the current political situation suggests otherwise, the USA has been one of the largest drivers of international trade since the end of the Second World War and every year is one of the national economies with the largest volume of international trade.

In a scientific examination, therefore, it is generally accepted that alternative metrics and indicators of openness are needed. One such indicator is the openness metric proposed by Squalli and Wilson (2011). It consists of two components. It factors in the aforementioned trade openness metric which itself comprises the sum of exports and imports in relation to GDP (see equation (1)). It also factors in the share of a country in the average volume of international trade. Therefore, the level of trade of a country is weighted based on its share of international trade. This metric is calculated as follows:

Table 4: Countries with the highest and lowest levels of openness (1) in the world in 2015

Тор 5		Bottom 5	
Hong Kong	4,22	Nigeria	0,31
Luxembourg	3,68	USA	0,30
Singapore	3,67	Pakistan	0,26
Malta	2,83	Brazil	0,23
Togo	2,25	Sudan	0,22

Source: Weltbank (2017)



This adjusted openness metric (combined trade share) presents two significant advantages. Firstly, it precludes an implausible categorisation of countries based on simply looking at exports and imports in relation to GDP. For example, large economies such as the USA have a small trade share relative to their GDP, yet their imports and exports represent a major percentage of global international trade. The adjusted openness metric corrects for the distorting scale effect in the openness metric presented in (1). Additionally, due to the excellent availability of data this metric can be calculated for a number of countries, making it possible to compare them.

We have also taken other steps to eliminate distorting influences from trade intensity. Using structural characteristics such as population counts, land area and GDP per capita, Pritchett (1996) compares the actual trade volume with the theoretical value expected from free trade. If the actual trade volume deviates from the expected value negatively, the effects of less open trade policies can be derived. In turn, a positive deviation indicates a high degree of openness. Frankel and Romer (1999) integrate geographical components into their method. Using a gravitation model of international trade, they correct for the influence of the size of a national economy and of the geographical distance between it and other economies. In theory, there should be a positive correlation between trade and the GDP of a country and bilateral trade should decrease as the distance between the two countries increases. Any deviations from the expected volume of imports and exports are interpreted as a consequence of trade policies.

According to Dollar (1992), trade barriers can also be derived using exchange rate distortions on the foreign exchange market. Using an estimated price level, Dollar estimates how strongly the exchange rate of a currency deviates from the rate of exchange under free trade. The larger the difference, the more closed the economy. Likewise, the analysis of exchange rates at which currencies are traded on the black market is a highly popular approach. A high mark-up compared to standard markets is considered equivalent to restrictions in foreign exchange trading. In turn, these restrictions can be interpreted as trade barriers and can, as in the example presented by Edwards (1992, 1998), be used as a representative metric for the openness of a country.

3.2.2 Policy-based measures

When an openness metric is based on tariff or non-tariff barriers, they can be referred to as policy-based measures. These aim to paint a direct picture of trade policies. For example, average tariff rates between countries are compared in order to draw conclusions as to their degrees of openness. It appears self-evident that fewer high tariffs speak for a more open trade policy. However, the arithmetic mean of the tariff rates, i.e. the simple average, can be misleading as to their actual effects. A high tariff is only crucial if a corresponding volume of the goods is being traded. To take this into account, a weighted average can be formed that bases itself on the quantity of each type of good imported. However, this metric too has its pitfalls as the import quantity of a good can decrease to such an extent because of a very high tariff that the tariff rate is barely factored into the weighted average. Consequently, this metric can overestimate trade openness or underestimate protectionism.

It is also problematic to measure non-tariff barriers as they are already very difficult to define. Ultimately, such metrics have to factor in various types of trade barrier whilst giving reasonable weight to individual measures such as import quotas and product standards. An excellent amount of data is available for the so-called coverage rates. These measure the proportion of import goods that are traded under conditions that resemble non-tariff barriers.

The trade potential examined by Waugh and Ravikumar (2016) provides a theoretical approach. They calculate the potential welfare gains compared to the actual status of a national economy in the event of political reforms or even unrestricted free trade. First of all they calculate country-specific tariffs on one unit of goods and then carry out a welfare analysis with the tariffs lifted. A country whose trade policies are already relatively open can only achieve negligible welfare gains. Relatively closed-off countries can benefit more and have a higher potential.

3.2.3 Index metrics

Another series of openness metrics is based on the concepts presented above and compiles various indicators into an index. However, the exact structure of this index – i.e. what parameters have how much weight – is largely determined by the subjective opinions of the authors. The openness index created by Sachs and Warner (1995) is often cited. Their index categorises countries as either open or closed. They categorise a country as closed if it meets any of the following criteria: The average tariff rate is 40% or more; non-tariff barriers cover 40% or more of trade; the mark-up on black market exchange rates exceeds 20%; there is a state monopoly on major exports or a socialist economic system is in place. However, no comparisons can be made within the groups of open and closed countries.

In its 1987 World Development Report, the World Bank allocates a number of countries to four categories of openness in descending order. It differentiates between countries with an outward orientation and countries with an inward orientation (which close themselves off to international trade). The latter value their currencies higher than economically reasonable, implement strict trade restrictions and carry out numerous import controls. However, as the report only considers the periods 1963-1973 and 1973-1985, its categorisation is of little use to our current analysis. However, it is worthy of note that Hong Kong, Singapore and South Korea were categorised as very open countries even then, which is consistent with current findings from other openness metrics.

The Index of Economic Freedom published by the Heritage Foundation is a more up-to-date source. This index is based on ten pillars (or freedoms), including freedom of trade. In this index, freedom of trade is calculated on the basis of a combination of tariff and non-tariff barriers. For this purpose the trade-weighted average tariff rates are first standardised. A penalty term is then derived from the inverse average tariff rates whose size should reflect the significance of non-tariff barriers.

Finally, references can be made to a range of indices that examine trade openness as a segment of an overall general globalisation metric. The most prominent example of such an index is the Globalisation Index of the Swiss Economic Institute (KOF) in Zurich. Both realised trade flows and metrics for political barriers are factored into the calculation of the economic pillar (Dreher, 2006). However, the trade flows are simply accounted for in relation to economic output, which exposes the index to the criticism we raised above; scale distortion. Other examples in this context include the Global Connectedness Index of the DHL which factors in the trade volume in relation to GDP (DHL, 2016) and the AT Kearney Globalisation Index (AT Kearney, 2016). Besides the usual question of the appropriate weighting of specific indicators, our fundamental criticism of these methods is the blurriness of the conceptual definition of globalisation and therefore the problem with correctly interpreting the index values

It must be noted that no undisputed empirical openness metric currently exists. This is due to the numerous factors that exert an influence as well as to the various views of what openness means. See the compilation by David (2007) for more details. In the section Openness and Growth we carry out a critical comparison of the informative value of specific openness metrics.

3.3 DEGREES OF OPENNESS IN AN INTERNATIONAL COMPARISON

3.3.1 Outcome-based measures

A global trade intensity comparison first enables us to draw conclusions as to the ex-tent to which the economic activity of countries and regions is influenced by international trade. The simplest form of such a metric, the ratio between trade volume and GDP, is unsuitable due to its dependence on the size of a country, as described in the previous section. We will therefore use adjusted trade intensity as a metric as it uses the share of a country in the volume of international trade to correct distortion, as also described above.

The world map in Image 6 first illustrates the current situation (data from 2015). We can see striking differences in a global comparison. In particular, there is a clear gap between the traditional industrialised countries and most developing countries and emerging economies. For example, all of the countries in Western Europe as well as Japan, South Korea and the USA have values that are far above the global average. In this group of countries, the intensity is strongest for Germany, the Netherlands and the USA (in that order). The fact that the USA, a country with a large trade deficit, is ranked so highly, underlines again that this is not an international competitiveness metric as it factors in exports and imports equally. A high trade intensity can also result from a high dependence on imported preliminary work and consumer goods.

However, the global leader is not a Western nation, but rather Hong Kong, followed by Singapore. The two highest-ranked countries in this year's IBC index are also global leaders in terms of integration. This highlights the close links between attractiveness of location and the degree of international connection. Additionally, China is a clear fore-runner amongst the emerging economies. The country now has the fourth-highest adjusted trade intensity in the world. In light of the high values for Malaysia, Thailand and Vietnam too, South Asia appears relatively highly integrated. Likewise, the high degree of integration of Mexico indicates the important role of regional trade agreements (NAFTA in this case) with regard to the economic openness of emerging economies.

Image 6: Adjusted trade intensity of countries in a global comparison



The countries with the lowest trade intensities in the world are in Africa, the Caribbean and Central Asia. Less surprisingly, the numerous small island nations in the Pacific are also poorly integrated into international trade. Amongst the countries with large areas of low population density, Burundi, an East African country, is at the lowest end of the scale, perhaps due to its security troubles alongside its economic indicators. On the Asian continent, the lowest values were attributable to Timor-Leste and Tajikistan. In Europe, the countries with the lowest trade intensities were, not unexpectedly, non-EU member states such as Moldova and Montenegro.

Changes in the recent past are informative in addition to current statistics. Image 7 presents the chronological changes in adjusted trade intensity over the past 15 years under review, both on a global scale and for OECD countries and Least Developed Countries separately.³ We can see a strong upwards trend in global trade intensity between 2003 and the financial crisis. This process can also be observed amongst the weakest economies, albeit not as strong. The drop caused by the crisis in 2009 was initially followed by rapid recovery. However, the trend has been moving downwards at increasing speed since 2012. If we consider the OECD countries, we see that none of the industrialised nations was the main driver of the developments. The major swings must therefore be due to development processes within the group of developing countries and emerging economies. This hypothesis is confirmed by a calculation of the countries with the highest rates of change over the 15-year period, as listed in Table 5. China and Vietnam have by far the strongest growth in adjusted trade intensity over this period. However, exceptional growth was also enjoyed by two African countries, Rwanda and Zambia. On the other hand, in spite of the generally increasing integration of developing countries, extraordinarily dramatic slumps were observed for two other African

ADJUSTED TRADE INTENSITY International Business Compass 2017

<	0,01	(31)	<	0,40	(16)	Data from 2014
<	0,02	(25)	<	1,00	(11)	or earlier
<	0,05	(25)	<	2,00	(12)	
<	0,10	(17)	<	4,00	(11)	
<	0,20	(20)	<	11,00	(7)	

Sources: Weltbank (2017); HWWI (2017)

nations (Nigeria and Swaziland) over the same period. Therefore, the developments remain highly heterogeneous even within the global regions. The same applies to the group of OECD countries: in spite of the relatively modern developments in trade intensity within this group overall, there are individual spikes (downward in this case) for Israel and Canada.

Table 5: Countries with the most positive and negative changes in adjusted trade intensity, 2000-2015

Growth in %			
Тор 10		Bottom 10	
China	+496.8	Israel	-48.2
Vietnam	+476.6	Sri Lanka	-49.7
Rwanda	+323.2	Nigeria	-54.8
Lithuania	+303.7	Bahamas	-54.9
Letvia	+287.2	Indonesia	-54.9
Georgia	+267.1	Canada	-56.4
India	+264.1	Malaysia	-60.7
Laos	+250.5	Guyana	-61.3
Zambia	+248.3	Jamaica	-61.4
Slovakia	+246.4	Swasiland	-70.8

Soures: Weltbank; HWWI (2017)



3.3.2 Policy-based measures

As adjusted trade intensity not only reflects the extent of trade openness, but is also reflected by other factors such as economic developments, it is wise to consider policy-based measures when comparing countries. These measures are a direct reflection of a country's political stance on trade openness.

If we consider the weighted average import tariff rates (for a definition see 3.2.2), the results are somewhat different compared to adjusted trade intensity. Not surprisingly, the import tariff rates in the European Union are all at a similar level due to the elimination of tariffs in the Single Market. In contrast, there are major differences in import tariff rates on the African continent. Central and West Africa in particular have high tariff rates at 11.9% and 10.4% (see also Image 8). However, it must be noted that this metric is not available for as many countries as trade intensity.





Nevertheless, the great advantage of this metric is that it is less dependent on other factors such as economic conditions. This is also shown by a consideration of the changes in average tariff rates since 2000 (see Image 9). Globally, tariff rates have decreased significantly since 2000 and have done so more quickly in the OECD countries than in the Least Developed Countries. Based on the weighted average tariff rate, at 94.63% the largest decrease is attributable to Mauritius followed by the Seychelles and Chile (see Table 6). As with the tariff rates, the non-tariff barriers paint a highly heterogeneous global picture. The average duration of the import procedure that is used as a measure for import restrictions is exceptionally short in the USA, Canada, Australia and in the countries of Western Europe (see Image 10). In contrast, an import procedure takes particularly long in Central African countries and in Central Asia. However, this observation also shows that the geographical location of a country is reflected in this metric. The import procedure takes relatively longer in countries located in the centre of a continent than in countries with direct sea links.

In addition to tariff and non-tariff trade barriers, some of which deliberately represent protectionist measures, the bureaucratic costs for companies can be considered barriers to integration in the broadest sense of the term. For example, if a country has a complex tax system, it will be more difficult for foreign companies to set up there. More specifically, we are only considering crossborder trade, yet when evaluating business markets, international groups often decide whether to export their products to a country or establish a subsidiary in the country in order to supply the market with their products. The latter option is easier in countries with fewer bureaucratic hurdles, for instance in their tax systems.

Table 6: Countries with the strongest declines in average tariff rates (2000-2015)

Unweighted av	verage tariff rate	Weighted aver	age tariff rate
Country	Decline (in %)	Country	Decline (in %)
Mauritius	-93.62%	Mauritius	-94.63%
Marocco	-91.37%	Seychelles	-93.91%
Seychelles	-91.18 %	Chile	-92.89%
Albania	-89.44%	Albania	-90.47%
Chile	-87.00 %	Marocco	-88.28%
Lebanon	-78.21%	Lebanon	-83.63%
Tunesia	-77.00 %	Tunesia	-83.15 %
Jordan	-75.36%	Jordan	-78.96%
Iceland	-74.11%	China	-76.76%
Egypt	-70.07%	Belarus	-76.44%

Sources: World Bank; HWWI (2017)



Image 10: Average duration of import procedures, a global comparison

We will consider a sub-component of tax payment from the Doing Business Index of the World Bank as a measure of bureaucratic costs. We will consider the time it takes to prepare, file and pay corporation, value-added, sales or income tax and social security contributions. This time includes both the time to collect all information necessary to compute the tax payable and file the returns at the tax authority.⁴

When we take this as an indicator of the bureaucratic barriers of a country, it becomes clear that in the Arabian countries – especially the United Arab Emirates – it takes little bureaucratic effort to pay taxes. Yet countries such as Switzerland, Singapore and Hong Kong that are at the top of the IBC index also have low barriers (see Table 7). The situation is different with regard to some South American and African countries where it takes several times more effort than in the industrialised nations. One striking example of this is Brazil with 2,038 hours per year. With an average of 218 hours per year, Germany is in the middle field for this indicator.

3.3.3 Index metrics

Besides the tariff and non-tariff metrics, there are a number of index metrics that attempt to measure trade openness in a variety of ways (see also 3.2.3). Many of these index measures are not currently available or are only available for a limited number of countries, or they are not clearly distinguished from other measures, some of which measure something other than trade openness. As a result, a reasonable, up-to-date comparison cannot be made in many cases.

For this reason, we will limit our analysis to the Trade Freedom Index of the Heritage Foundation. As explained above, this trade openness metric comprises both tariff and non-tariff metrics. The index can therefore be seen as a general or comprehensive measure of the aforementioned trade restrictions, although the weighing method chosen by the Heritage Foundation is rather subjective. In qualitative terms, the descriptive evaluation of this metric is consistent with the findings presented above.

TIME TO IMPORT (in days) World Development Indicators

<	9	(19)	<	25	(15)
<	12	(21)	<	30	(23)
<	15	(24)	<	45	(26)
 <	18	(19)	<	75	(13)
<	22	(20	<	110	(4)

Sources: World Bank; HWWI (2017

Table 7: Time required to pay taxes (2015)

Тор 10		Bottom 10	
United Arab Emirates	12	Brazil	2038
Bahrain	27	Bolivia	1025
Qatar	41	Nigeria	908
San Marino	52	Libya	889
Luxembourg	55	Venezuela	792
Switzerland	63	Chad	766
Singapore	67	Mauritania	724
Saudi Arabia	67	Ecuador	664
Oman	68	Cameroon	630
Hong Kong	74	Rep. of Congo	602

Sources: Weltbank (2017), HWWI (2017).

Image 11: The Heritage Trade Freedom Index, a global comparison (2015)



 $1 \ge 50,00 < 60,00$ (* Sources: Heritage Foundation, HWWI (2017) bobal comparison, trade openness is particuncluding the USA, Canada, Mexico, Peru, and the member states of the European

3.4 OPENNESS AND GROWTH

40,00

50,00

3.4.1 Theory

≥ 20,00 <

≥ 40,00 <

The success of political measures is, for one, dependent on their potential to encourage economic activity and in turn growth. Economic growth, defined traditionally as the increase in the value created by a national economy, is seen as the basis for social welfare in many elements of economic literature. National and international economic and trade policies have been steadily growing in significance in this regard and have to undergo a critical analysis of their effects on welfare in more than just a public debate.

≥ 70,00 <

≥ 80,00 <

(11) ≥ 85,00 < 100,00

80.00

85,00

(55)

(15)

(45)

In a globalised economy, the primary question concerns the effects of various degrees of openness of national economies and their impact on economic growth. If the trade policies of an economy are open, there will be fewer barriers and restrictions for actors to exchange goods and services. At the same time, the more restrictive and radical it makes its trade policies by building tariff and non-tariff barriers, the more closed off a national economy will be from trade with other nations.

The current debate surrounding free trade and protectionism has highlighted the relevance of the correlation between openness and growth. Whereas the advocates of free trade agreements see

As underlined by the global comparison, trade openness is particularly high in countries including the USA, Canada, Mexico, Peru, Australia, New Zealand and the member states of the European Union. North African countries such as Algeria, Libya and Egypt, as well as Angola in Central Africa, are less open under this metric (see Image 11).

If we compare the regions on the Trade Freedom Index, the results are consistent with those of the tariff and non-tariff measures presented above. Under this metric, trade openness is exceptionally high in Europe, North and Central America. Likewise, Oceania has a similar degree of trade openness to Europe and America. On the other hand, trade openness is lower in the African and Asian regions. North and Central Africa and South Asia are at the bottom of the ranking.

Even though the country comparison currently suggests that some countries in Af-rica and the Least Developed Countries tend to be closed off and have little trade openness, the chronological breakdown clearly shows positive development (see Image 12). Between 2000 and 2015, the changes in trade freedom were even more distinct than in the OECD countries.



economic opportunities first and foremost, critics call for increased protection for the economy against foreign countries, fearing a decline in consumer standards and a loss of jobs. The debates surrounding TTIP and the elec-tions in the USA in particular have strengthened calls for protectionist measures. Calls that are becoming increasingly popular amongst some elements of the political parties and population.

In the public debate, international trade and the welfare it generates are often interpreted and publicised as a zero-sum game. In this approach welfare is represented as a symbolic pie that has to be divided between the countries. Where one country makes gains through the free trade of goods, another country always loses. This kind of rhetoric cannot explain the strong improvements in welfare in the emerging economies, especially China, over the past 20 years. According to this logic, there would have to be significant declines in welfare in the rest of the world, even in industrialised nations. It is not supported by empirical data.

In contrast, the data show that international trade is non zero-sum. If they specialise accordingly, both countries can profit from bilateral trade. This is also the cornerstone of the classic trade theory that is outlined below.

The rapid increase in international trade and the role of international organisations such as the World Trade Organisation and the World Bank show the significance attributed to economic theory with regard to political actions since the end of the Second World War. Economists have always asked what impact trade has on the welfare of countries.

For example, the theory examines what adjustment processes result from the opening up of countries and looks at potential gains in efficiency that might have a positive effect on the welfare of national economies. However, despite the many argu-ments in favour of open trade policies, it is also possible to derive reasons for more restrictive measures. Adam Smith presented the theory of absolute cost advantage back in 1776 (Smith, 1776). Trade enables a country to specialise in goods that, in absolute terms, it can produce most efficiently. A country will then have an absolute cost advantage if the production of one unit of goods requires fewer production resources (e.g. labour or capital) than in any other country. By efficiently allocating resources in the production process, the country can then increase production and in turn welfare outside of its own borders.

In the early 19th century David Ricardo added to the theory of absolute cost advantage (Ricardo, 1821). According to his theory of comparative cost advantage, trade is beneficial to nations even if they do not possess an absolute cost advantage in the production of a tradable good. According to Ricardo, the comparative cost advantage is crucial for the efficient use of resources in the production process and not the abso-lute cost advantage. For a national economy, it is a matter of specialising in the production of goods that, in relative terms (i.e. compared to other goods), it can produce more cheaply than foreign countries.

This argument is based on the concept of opportunity costs. In the production process, opportunity costs measure how many fewer units of another good can be produced when resources are allocated. Ricardo argues that trade is beneficial to a country if the country specialises in the production of goods for which the opportunity costs are lower than in other countries. Unlike Smith, this comparison is relative and not absolute.

This theory is highly significant, especially with regard to developing countries. In many cases such countries will not have an absolute cost advantage. If we consider the comparative cost advantages, however, these countries too can improve their welfare by opening up to international trade. The theory presented by Ricardo states that trade is equally beneficial to industrialised, emerging and developing nations.

Both Ricardo and Smith suggest that countries specialise due to differences in na-tional productivity. In contrast, the factor proportions theory presented by Heckscher-Ohlin (Ohlin, 1934) recommends that countries that are trading with one another specialise on the basis of differences in factors of production. According to Heckscher-Ohlin, a country can improve its welfare if it specialises in goods that require a more relatively more intensive use of the abundant production factor (e.g. labour) in the country to manufacture.

If, for example, a country possesses relatively more labour than capital in relation to its trading partners, it should specialise in labour-intensive products. In turn, a country that possesses relatively more capital than labour should specialise in the production of capital-intensive goods. As the prices of goods and factors (e.g. employee wages) converge in this model under free trade, the owner of the most abun-dant factor in each country benefits. According to the model, the owners of the less abundant factor are considered amongst the losers of specialisation, in relative terms. Overall, however, both countries profit from specialisation.

At this point it must be noted that the aforementioned theories imply a higher income. By efficiently allocating resources in the production process, the overall potential can be tapped and more goods can be produced overall. The efficient allocation of production resources also makes it possible to make better use of potential opportunities for growth. Therefore, trade can have a positive effect on the growth rate of an economy.

Paul Krugman (1979) proposes another means of explaining improvements in welfare through trade. Companies are in monopolistic competition with one another. They produce generally similar products (e.g. cars), yet the individual products differ from company to company in terms of their characteristics (e.g. design and perfor-mance). These differentiated goods reflect the desire of consumers for diversity and provide companies with demand for their specific product, thus facilitating a limited monopolistic position and granting leeway to set prices.

In his theory, Krugman assumes size advantages in production, i.e. positive economies of scale. Unit costs decrease as the production expands. Therefore, a good can be produced more cost-effectively if the business market grows. For the consumer, this results in a decrease in price and in turn an increase in actual earnings.

If a national economy opens itself to trade with foreign countries, the aforementioned scale effects will be generated. For companies, trade is equivalent to an increase in the size of a business market which will enable them to benefit from positive economies of scale. Simultaneously, the range of available products increases due to imports from foreign companies. As the fall in prices will force companies out of the market whose production costs are higher than the new sales prices, Melitz and Ottaviano (2008) argue that a selection process then occurs whereby only companies that can produce efficiently remain in the market. As a result, the total level of productivity increases within an economy and causes incomes to rise. Consumers benefit from a wider range of products and higher actual earnings.

According to the so-called 'new growth theory', openness to international trade can have a positive effect on economic growth due to a range of factors. Through potential transfers of technology and knowledge in particular, the opening of a market can have a positive effect on a national economy (Grossman and Helpman (1991)). For in-stance, a company can benefit from new production technologies that can be integrated into its own industry through trade. Additionally, knowledge of foreign products can be accumulated and, for example, used to manufacture replicas without the country having to invest large sums of its own money in research and development. One example of this is known as reverse engineering which attempts to reconstruct a finished product and then put it into domestic production. China, which has benefited greatly from the local activities of foreign companies since opening its market, is an example of how positively technology and knowledge transfers can affect economic growth.

The introduction of tariffs or other non-tariff barriers such as export or import quotas – which would directly conflict with open trade policies – is considered disadvantageous in this context. A tariff would result in a price increase that would have a negative effect on purchasing power. The implementation of protectionist measures can indeed have a positive effect on domestic companies in import sectors, yet in doing so the state is supporting inefficient structures in the medium and long terms and is preventing (sometimes important) adaptation processes that could improve the welfare of the entire population. Although the concepts presented above largely consider trade liberalisation in a positive light, the theory also suggests critical points. The infant industry argument (Hamilton (1791), List (1856)) refers to the protection of domestic industries that are not yet competitive, yet will become competitive in future given suitable development opportunities and growth (for a theoretical analysis see Baldwin (1969) and Grossman and Horn (1988)). The objective of protectionist measures is to protect a domestic industry from foreign competition until that industry can survive the global competition without state assistance.

However, it is difficult to identify such industries. The state is therefore at risk of protecting industries that will be unable to demonstrate the desired level of competitiveness over time. Inefficient protectionist measures then build up and will disadvantage the local population in the long term. As, once implemented, it is very difficult to lift protectionist measures in the face of resistance by lobbies, unwanted path dependencies that limit leeway for trade policies emerge.

Critics of open trade policies also cite specialisation in specific goods as a negative argument. Sectors with varying potential for growth can lead to long-term specialisation if increases in price and productivity are barely possible or difficult. Developing countries that specialise exclusively in agricultural products can also encounter difficulties if the weather causes crops to fail. In light of the increasing global economic interdependency, critics of free trade argue that a country is at risk of making itself excessively dependent on other countries and no longer being able to produce its own essential goods such as staple foods in emergencies. Critics recommend a certain degree of protectionism in order to remain independent as a nation.

In summary, the economic trade theories present varying channels of effect that attribute a positive influence on growth and welfare to trade openness. At the same time, reasons are presented that justify at least a certain degree of protectionism. However, theory alone cannot be used to discuss the unequivocal correlation; empirical findings must also be considered.

3.4.2 Current empirical findings

The empirical literature provides a range of methods of examining the correlation between openness and growth. The majority of academic studies conclude that there is a positive link between openness and the growth of a national economy. They differentiate between non-recurring growth spurts that result in higher levels of income and production, with growth rates remaining stable (the level effect), and an increase in the growth rates themselves that has a positive effect on the ongoing development of income in a country (the growth effect).

However, the correlation between trade openness and growth is not so easy to outline methodologically. Fundamentally, there are two reasons for this. Firstly, as described above, the individual openness metrics have weaknesses as they do not measure the aspect in its entirety. Secondly, it can theoretically also be argued that there is an inverse effect, i.e. the effect of growth on trade openness, for instance because economically prosperous countries do not have to worry as much about international competition. Stronger growth could therefore also lead to more open trade policies. As this mutual status makes it more difficult to isolate and estimate one of these two effect directions, it is referred to as an endogeneity or causality problem. The varying methodological solutions to this problem in the empirical literature and our choice of openness metric and the period to observe have led to highly different results and assessments.

The sometimes insufficient availability of data also poses a problem as observations have to be available for a number of countries across an extended period. Otherwise, estimates produce findings that are of little statistical significance. It must also be noted that many other factors closely related to openness can influence growth. As this can result in distortions in the results of estimates, it is not always possible to clearly and unequivocally determine the effect of open trade policies. Examples include political stability, the functionality of the institutions of a country and its geographical and cultural conditions. Furthermore, the varying degrees of development of national economies and world regions raise the question of whether trade policy measures will have the same effect in every country or whether the analysis has to differentiate between industrialised, emerging and developing countries. Baumol (1986) describes the idea of 'convergence clubs' in empirical growth research. Countries with similar measurable characteristics develop along a group-specific growth path. The international heterogeneousness of countries implies that the effects trade openness too will vary by national characteristics.

Below is a selection of studies on this subject. Given the number of studies in this field, we make no claim that our selection is complete. It is possible to differentiate between methods that examine a direct correlation between openness and growth and methods that explain this correlation through the increase in general productivity. We also cite works that critically question the positive influence of openness on growth.

Grossman and Helpman (1991) consider technological advancements and argue that an international knowledge transfer represents a positive effect of trade on productivity. Using a real exchange rate distortion index, Dollar (1992) observes a negative correlation between distorted exchange rates and growth rates. According to the theory known as the law of one price, distortions can be used as an indicator of trade restrictions. Dollar therefore concludes that there is a negative correlation between trade restrictions and economic growth.

The economists Sachs and Warner (1995) also observe a positive correlation between openness and growth in their index which classifies countries as either open or closed (see 3.2.2). In their analysis they show that the growth rates in open countries are 2.45% higher on average than the growth rates in closed-off economies. Edwards (1998) carries out a comprehensive analysis. He tests the correlation between nine indicators of economic openness and economic growth. In addition to the index created by Sachs and Warner (1995) and the Outward Orientation Index published by the World Bank in its 1987 World Development Report, Edwards analyses the average tariff rates on industrial goods and the scale of non-tariff trade restrictions. His results point to a positive correlation between openness and growth.

Taking the potential inverse effect of growth on trade openness (endogeneity as described above) into consideration, Frankel and Romer (1999) carry out an estimate with instrumental variables and even factor geographical components into their model. Using this method they are able to shed more light on the extent of the influence of openness on economic growth and isolate it from other explanatory parameters more effectively. In line with the previous literature, their tests too point to a positive correlation between openness and growth. Irwin and Tervio (2002) and Brunner (2003) apply the method of Frankel and Romer on a larger scale and produce similar findings. Examining the period from 1960 to 1992, Brunner measures a strong influence on the level of income yet only identifies a negligible, non-robust influence on growth rates (level vs growth effect).

Using new data, Wacziarg and Welch (2008) were able to expand the index created by Sachs and Warner (1995) to range from 1950 to 1998 and observed that countries which liberalise their trade experience an average increase of 1.5% in growth rates. Simultaneously, the proportion of GDP attributable to exports and imports increases by an average of 5%. In the 1980s, they conclude, the Sachs and Warner index very clearly splits into open and closed economies. In contrast, this was barely the case in the 1970s and was insufficiently relevant in the 1990s.

According to Freund and Bolaky (2008), if certain regulatory criteria are met, growth increases by 0.5% for every 1% by which the volume of trade increases. They argue that lower market barriers for companies are a decisive factor in this context. They also emphasis the importance of innovative companies and conclude that welfare improvements are due primarily to the reallocation of resources within a sector.

In more recent research, Huchet-Bourdon et al. (2011) differentiate between exports of high-quality and low-quality goods in their assessments. Whereas the exporting of high-quality goods proves stimulating for growth, the exporting of low-quality goods can have a negative effect on growth. The diversification of the exported products also plays a role, which makes it possible to derive clear recommendations regarding political measures in developing countries. These recommendations advise politicians to support as many diversified sectors as possible, train and qualify workers through educational schemes and support investments in research and development.

In the regression analysis carried out by Alragas et al. (2015), they use the composite openness metric proposed by Squalli and Wilson (2011) which combines the share of exports and imports in the GDP with the share of trade in the entire volume of global trade (see 3.2.1). Based on random samples from 182 countries, they conclude that openness had a positive effect on growth between 1971 and 2011.

In spite of the large number of empirical studies that point to a positive correlation between openness and growth, however, the academic dispute is far from settled. Rodriguez and Rodrik (2001) recently showed why the evidence of a supposedly positive correlation can be considered incomplete.

In their often-cited paper, the economists point out weaknesses in the studies that had been published so far. For example, with regard to the real exchange rate distortion index used by Dollar (1992), they criticise the fact that the law of one price has been assumed to be valid. There are a number of reasons why this might not be the case, which is why the conclusion regarding the openness of an economy appears questionable. Using a more current data set, they also repeat the calculations for a more recent period and produce the opposite results to Dollar (1992). Besides a critical evaluation of the results of Sachs and Warner (1995), Edwards (1998) and Frankel and Romer (1999), they make reference to the fact that many of the openness metrics correlate with other metrics that can be used to explain growth, which is why the results of regression analyses become distorted or corrupt.

In their analysis, Harrison and Hanson (1999) are unable to identify any robust correlation between the Sachs and Warner (1995) and long-term growth. In his examination of historical data from 1870, Vamvikidis (2002) concludes that openness has only had a positive effect on growth from 1970 onwards. He even identifies a negative correlation for the period between 1920 and 1940. In the cases of developing countries, argues Yanikkaya (2003), there is a positive correlation between trade barriers and economic growth as long as their protected industries have a comparative advantage.

Therefore, both theoretically and empirically the question remains open as to the ef-fects of open trade policies on the growth of a national economy. In summary, it can be said that the majority of studies carried out so far point to a positive correlation between openness and growth, although the methodology and data availability must be improved before this can be proven empirically. In the words of David (2007): 'Despite the significant questions raised in recent years concerning both methodology and the robustness of the conclusion of a positive correlation between openness and economic growth, it is generally agreed that, at worst, the relationship between openness and growth is bounded below by zero and that, more likely, it is the case that increasing trade openness leads to increases in economic growth and income levels.".' We make our own contribution to this literature below. On the basis of theoretical considerations, we develop an empirical model that we will test using current global data.

3.4.3 An independent empirical assessment

As shown by the previous sections, the correlation between openness and growth can have a highly diverse character. For one, this concerns the basic question of the direction of effect: does trade openness really influence economic growth or is the causality reversed? It could be argued that prosperous economies are more inclined to open themselves to international trade as they consider themselves sufficiently competitive. A reverse causality such as this could be interpreted erroneously as the effect of openness on growth in the data. Economic theories have discussed a range of channels of effect through which openness could potentially influence growth. In the empirical literature, this range is reflected in the number of different models developed to measure the correlation. In this context, it seems important to select a method that is consistently anchored in theory to correctly interpret the results of the estimate.

We will therefore use the neoclassical growth theory as a framework for our analysis. The basic framework of this theory is the illustration of the overall production potential (i.e. the potentially achievable value creation) of an economy as the function of several factors. Firstly, the number of production factors the economy has is counted. We mainly interpret this as the number of workers on various qualification levels (unqualified, highly qualified), the total value of real capital (machines, production buildings, vehicle fleets etc.) and the supply of natural resources in the economy. Productivity, i.e. how much output can be generated with a given number of production factors, is another type of variable. In the context of the neoclassical growth theory, the total factor productivity is an indicator of overall productivity, i.e. of the effectiveness with which the production factors are used in production. On a second substantial level, we can introduce it as a function of various variables. One aspect it reflects is technological advancement and in turn the influence of endeavours in the field of research and development. The quantity and quality of public infrastructure also influence factor efficiency on a basic level. With regard to the significance of political stability and the regulatory framework to the efficiency of an economy, it should also apply to political institutions.

In the following we want to test whether the openness of an economy can produce a similar effect. The economic theories presented in 3.4.1 will deliver a few indicators for this. For instance, the productivity gain resulting from comparative specialisation as part of the opening of an economy should be reflected in an increase in total factor productivity. If, at the same time, growing business markets lead to a larger-scale utilisation of size advantages and/or increasing product diversity, this would have a similar effect on productivity in qualitative terms. Finally, the theory of technology adoption through trade would be another way for openness to boost efficiency in the medium term. On the other hand we have the sceptical theories also presented above which argue that, under certain circumstances, trade can impair productivity, in order that the results of our analysis do not appear trivial from the outset. Image 13 illustrates our model framework as a graph.

In the estimate this takes the form of two equations. We initially estimate a neoclassical production function with the GDP of a country as a variable to be explained and its various production factors as explanatory variables. In order to preclude distortion of the analysis due to the difference in size between countries, all variables will be measured per capita. The findings can be used to determine the total factor productivity at a specific moment as a residuum. For these, the correlation with the openness of a country and with the other measurable explanatory variables is determined in a second estimating equation.⁵ We must still explain how precisely we will measure openness in this method. In the descriptive section of the study we listed a series of different practical measures. There is no consensus in the empirical literature regarding which of these metrics provides the best indicator as part of a growth analysis. Due primarily to the high availa-bility of data, many authors favour the simple trade intensity (trade volume in relation to GDP) of a country as an openness metric (see (1)). However, the scale distortion described in 3.2.1 works against this metric. Fundamentally, we believe it is questionable to use outcome-based metrics such as trade intensity for such an analysis. This is because with these metrics, the risk of mutual causality seems extraordinarily high, for instance if an economic boom strengthens exports in particular and in turn increases trade intensity. Statistically speaking, such an effect would be difficult to differentiate from the measured effect of openness on economic growth and would result in a distortion. Additionally, these metrics do not provide any direct starting point for political recommendations as trade intensities are not only influenced by government intervention in trade, but also by structural and geographical factors that are hard to control. We have therefore chosen average tariff rates as a policy-based openness metric for our growth analysis. Besides their intuitive interpretation, one advantage of tariff rates over other policy-based metrics is the relatively high availability of data.



Our analysis is based on a global data set. The analysis horizon is from 2000 to 2015 (the most recent date for which the necessary data are available). As a result, we have a maximum of 16 data points per country (depending on country-specific availability). This provides us with a relatively high number of observations for a macro data set, enabling us to compensate to a certain extent for the sporadic data gaps occurring for many developing and emerging nations in particular. Nevertheless, it must be noted that the panel is not balanced and that the countries with fewer data gaps (primarily industrialised countries) are weighted disproportionately.

Using this data set, we tested our model correlation in various function variants. Only the first levels are consistent. The GDP per capita is estimated as the function of four different variables, each of which is intended to reflect the production factors in the economy (more or less approximately): the percentage of the population of working age (proxy for labour), the rate of matriculation in tertiary education (proxy for human capital), the net investments in real assets (proxy for capital) and the area of arable land per capita (proxy for natural factors). Besides their relevance, the most important criterion in the selection of the indicators was the global availability of data. As shown by the regression table in annex C, all four variables have a significantly positive effect on GDP per capita. The total factor productivity (TFP) was then derived from this information as a residuum. For the second level of the estimate we selected a simple function form for the correlation between TFP and tariff rate (as is often the case in the literature) and applied the following indicators as additional variables influencing the TFP: the political stability of the country, its regulatory quality (both measures of the institutional dimension) and a chronological trend as a proxy for general technological advancement.⁶ The underlying assumption of this formula is that in every country, a 1% increase in tariff rates always leads to an x% change in TFP. We estimate that this 'x' can represent a value of around -0.02 (see the regression table in annex C). Therefore, a 1% increase in a country's average import tariff rate would result in a -0.02% change in its TFP. As TFP and GDP per capita move proportionately under otherwise identical conditions in our model method, this value is equivalent to the effect on economic output.

This initially appears to be a relatively moderate effect. Statistically, the measured correlation is also of little significance. Both could be due to a generally low effect size, yet could also indicate that the real correlation does not have a simple log-linear nature as posited here and in many other methods. In the next step we therefore tested a quadratic relationship as the simplest form of non-linearity. As shown by the estimated coefficients in annex C, a number of things actually support the greater plausibility of such a relationship: the



coefficients of both the basic and quadratic terms are different from zero. The signs of the coefficients are most interesting: the coefficient of the basic term is positive and the coefficient of the quadratic term is negative. This implies an inverse parabolic relationship between tariff rates and GDP per capita, i.e. tariff increases have a positive effect on GDP from a low starting level and a negative effect on GDP fro a high starting level.

Ultimately, for this analysis the crucial point is the tariff rate at which the signs of the effects change. The most intuitive way to interpret this is with a graph. In Image 14 we have listed the percentage changes in the GDP per capita of a country which we believe would result from a deviation in the average tariff rate from its global mean (5.4% in 2015). The value range of average tariff rates roughly corresponds to the current range of values in a global comparison of countries. We can see that from a tariff level of around 1.5%, a tariff increase would have negative effects on economic output, while a tariff increase would have a positive effect if the level were lower. Therefore, increased isolation only appears to be a promising political strategy for a limited number of countries with relatively low tariff levels. However, the tariff increase in these countries cannot be too high, otherwise the effect will be reversed. For the other countries, the results appear to confirm the simple estimate that tariff increases would always have negative consequences.

The issue of the economic backgrounds of these results must still be resolved. The observation that the direction of the effect of a tariff increase is dependent on the initial tariff level can be explained in a number of ways. Generally speaking, such changes in direction often occur when multiple effects with conflicting directions of effect overlap. The trade theories presented in 3.4.1 which postulate some positive and some negative relationships with economic growth could

represent such channels of effect. The interpretation would then be that, if economies were already highly open, a further decrease in tariffs would have few positive effects from specialisation, higher product diversity etc., and that negative aspects such as the decline of import sectors would dominate instead. The opposite would apply to economies that are currently relatively closed: they still have great opportunities to benefit from specialisation and despecialisation due to tariff increases would thus be particularly damaging.

On the other hand, such global results might also simply reflect regional differences in terms of tariff levels and competitiveness. As we saw in the previous section, there are currently major discrepancies in the average tariff levels between countries from different regions of the world. It will therefore be informative to determine whether the quadratic relationship stands up when we differentiate our estimates by region. This was carried out in another stage. As the limited number of data points per region reflects the strongest restriction from a statistical standpoint, our differentiation between regions is deliberately rough and broad. Specifically, we define OECD countries as an economic region which therefore encompasses the traditional industrialised nations. We consider this reasonable in light of the relatively high homogeneousness of the group. The rest of the groups each comprise the non-OECD countries on a continent. As the number of observations per region is still not consistently high, we have not estimated our model completely separately for each region; instead, we have merely factored interaction terms between tariff levels and regional affiliation into our estimate. This way, we are only estimating the correlation between tariff levels and GDP per capita by region. The estimated coefficients used in this model are also listed in annex C. In this case too, the results are best interpreted in graphs similar to Image 14.



Image 15 shows that an inverse parabolic relationship represents the general rule, yet some regions differ dramatically in terms of its form. Only an exceptionally narrow range of tariff levels shows a positive relationship between tariff rate increases and GDP per capita for the non-OECD countries in Europe (including Russia) and Asia/Oceania. Statistically, the coefficient of the related basic term is also not significantly different from zero, which means that there is no unequivocal statistical evidence for this positive effect. In contrast, for the wide range of tariff levels the effects of a tariff rate increase in these two regions are clearly highly negative. Generally speaking, this fits in well with the history of the development of many countries in these regions. The highly successful growth of the countries in East and Southeast Asia (China in particular) over the past two decades is mainly attributed to the countries' openness to international competition in that period of time (e.g. Baharumshah and Rashid, 1999). The story is similar for many countries in Eastern Europe following the integration

of Eastern and Western markets. In this regard our results confirm the major significance a decrease in tariff levels had on the growth strategies of these countries.



Image 16: Present-day simulation of the effects of a 5% and 10% increase in average tariff rates

Source: HWWI (2017)

The other three regions are different. Here too the effect of higher tariff rates on growth is very negative from a medium to high starting level, although this negative effect is much less drastic than for the non-OECD countries in Europe and Asia due to its scope. Additionally, the negative effect only becomes manifest from a noticeably higher tariff level. It is most significant for the non-OECD countries in America (i.e. Cen-tral and South America, excluding Chile). For countries in this region, a negative effect is only expected from a minimum tariff level of around 7%. However, the moderate tariff rates –in South America at least – are already at a relatively high level (see 3.3.2), or at least a significantly higher level than in North America and Western Europe. This could impair the relevance of the results.

In this context, the final stage of the analysis involves the running of a small, exemplary simulation. On the basis of the predominant tariff levels in the individual countries, we can calculate the economic effects of an x% tariff rate increase on the basis of the results of our estimate and compare them between countries. This paints a more accurate picture of the current changes to be expected in the economic output of countries through an increase in protectionist tendencies. Specifically, we consider two cases: an increase in the average import tariff rate by 5% and by 10%. Each simulation is also based on the underlying model of Image 15 with regional differentiation. Image 16 presents the results of the two simulations in the form of two world maps.

The aforementioned regional divergence is also obvious in the simulated scenarios. According to the simulation, a 5% increase in import tariff rates would have a negative impact on economic output, especially in Asian and Eastern European countries. A negative effect was also measured for the countries in Africa, with the exceptions of Namibia and Botswana. In contrast, the model forecasts a (weak) positive effect on economic output for all OECD countries as well as the economies in South America. In the case of the OECD countries, this is due primarily to the currently very low tariff levels; in the case of the South American countries, it is due to the different relationship as described. As the 10% scenario shows, the results are different when the tariff rate increase is higher. A decrease in GDP is forecast even for Europe, the USA and most of the countries in South America. As before, the worst negative effects would be expected to occur on the Asian continent.

In conclusion, it is important to stress that the results of these simulations are mainly intended to illustrate regional differences and that the results for some countries should be interpreted with a grain of salt: some of the results are largely dependent on the regional differentiation chosen. Fundamentally, our model also has some limitations, most of which are related to the limited availability of data. For example, we were unable to also test the effects of non-tariff barriers on growth as, in light of the gaps in the available data, the number of observations would have been too low and too strongly focused on industrialised countries. It is also important to understand that the measured effects of a tariff rate increase always only represent isolated effects, i.e. no reciprocal effects from other variables that would be likely to occur in reality are taken into consideration. For instance, the policy responses of trading partners that would be expected in the event of a tariff rate increase cannot be factored in, which means that a form of indirect influence of trade policies on economic strength is not taken into account. It must also be made clear that the measured correlations are based on historical data. Future changes in the structure of international trade, such as those that might result from the implementation of innovative production



Abbildung 17: Present-day simulation of the effects of a 5% and 10% increase in average tariff rates

Source: HWWI (2017)

As explained above, our analysis does not factor in the consequential effects of tariff rate changes or the potential responses by trading partners. The results should therefore be understood to show what global heterogeneousness exists in the potential effects of trade restrictions and which regions of the world could most likely expect stronger growth through tariff rate reductions.

3.5 SUMMARY OF THE IN-DEPTH LOOK

res would primarily affect exporters of plastics and metals.

This year's in-depth look has been motivated by the current political debate surrounding the effects of free trade and its opposite, protectionism, on welfare. Theoretically, both arguments for and against trade restrictions can be presented. Empirically, the results are mostly dependent on the definition and actual measurement of trade openness.

technologies such as 3D printing, should also have retroactive effects

on the economic implications of tariffs. If, in future, certain end pro-

ducts are more frequently produced by consumers on their own pre-

mises, international trade would focus more strongly on the trading of

raw materials. In this case, we must assume that protectionist measu-

In a global comparison, trade openness proves to vary greatly. Additionally, the results of our analysis indicate that the influence of trade openness on factor productivity and economic growth is dependent on how high the level of trade openness of a country is. Whereas countries with high average tariff rates can benefit from tariff reductions, countries that already have very low tariff rates cannot expect any additional growth stimuli by lowering their rates.

- ³ These and all cross-national values below are independently calculated averages of national
- values, in which regard the individual countries are weighted by their proportional population. ⁴ For more details, see http://www.doingbusiness.org/Methodology/Paying-Taxes.
- ⁵ Technical details on the estimating equation and methodology are available in annex C
- ⁶ Due to the insufficient availability of data, especially for developing countries, it is not possible to factor in supplementary indicators, for instance in order to map infrastructural quality.

4. CONCLUSIONS

Overall, the total ranking of the IBC 2017 has not changed significantly compared to the previous year. With the exceptions of Singapore and Hong Kong, the top 10 places are once again occupied exclusively by OECD countries. Singapore knocked Hong Kong off the top spot again while Switzerland fell back to the top three. Within the leading group, Germany showed the greatest improvement by advancing four places and is now in the top 10. Otherwise, within the top 30 France, Israel and Cyprus all made significant gains. The movements in the middle field and at the bottom of the ranking were considerably larger. Cape Verde, Namibia and Gambia are the three Africa countries that improved best in this year's IBC, each due to increases in multiple sub-pillars. At the same time, Rwanda, Mali and Benin in Africa lost the most ground. With Bosnia and Herzegovina and Kosovo, two countries in the European Balkans also experienced significant setbacks. In the comparison of world regions, Northern Europe, North America and Western Europe performed best this year again, whereas most of the African regions were at the bottom of the global comparison.

This year's in-depth look at openness initially showed how greatly the countries of the world differ in terms of the extent to which they practise protectionism. This is largely irrespective of how one conceptualises openness. North America and Europe appear to be the most open regions in the world, both when applying an indicator based on real trade flows and when utilising direct measures of political and administrative barriers. The highest tariff rates and lowest trade intensities are currently to be found in Africa as well as in the Caribbean, Central Asia and parts of South America. Trade intensity in China and Vietnam has increased the most by far. With regard the lowering of tariff rates, North African countries in particular have excelled over the past 15 years. Additionally, our statistical analysis of the correlation between tariff level and eco-nomic output showed that from a global perspective, higher import tariffs are linked to lower GDP per capita for the average country. We can therefore confirm the results of a majority of the available research literature. However, through a differentiated analysis we have also confirmed that the nature of the correlation is dependent on both the initial level of the tariffs and on the economic region under review. According to our estimates, if the initial tariff rates are very low then the expected effects of a tariff rate increase would still be positive. The effect only becomes negative when the tariff rate reaches a certain level. Again, when this is the case it is region-specific. The effect is almost universally estimated to be negative for the countries in Asia and Eastern Europe, whereas positive effects would be expected for Latin America even if the initial tariff level were relatively high. Our exemplary simulation results show that, based on the current levels, an increase in tariff restrictions could have highly diverse effects from region to region. One likely cause of this differentiated effect is the existence of various - sometimes opposed - variables through which increasing openness can influence a national economy. Another likely cause is the heterogeneousness of the economic structures which affects different countries differently in the form of trade policy adjustments. Ultimately, the same applies to trade policy as to most other sectors of economic policy: nothing is black and white and policy recommendations should always be based on the specific circumstances.

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ANNEX A COUNTRY OVERVIEW

Africa		
East Africa	EAF	Ethiopia, Burundi, Djibouti, Eritrea, Kenya, Comoros, Madagascar, Malawi, Mauritius, Mozambique, Rwanda, Zambia, Tanzania, Uganda, Zimbabwe
Central Africa	MAF	Angola, Equatorial Guinea, Gabon, Democratic Republic of the Congo, Republic of Congo, São Tomé and Príncipe, Chad, Central African Republic
North Africa	NAF	Egypt, Algeria, Libya, Morocco, Sudan, Tunisia
Southern Africa	SAF	Botswana, Lesotho, Namibia, South Africa, Swaziland
West Africa	WAF	Benin, Burkina Faso, Côte d'Ivoire, Gambia, Ghana, Guinea, Guinea-Bissau, Cape Verde, Liberia, Mali, Mauritania, Niger, Nigeria, Senegal, Sierra Leone, Togo

Asia		
Central Asia	CAS	Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan, Uzbekistan
East Asia	EAS	China, Hong Hong, Japan, Mongolia, North Korea, South Korea, Taiwan
South Asia	SAS	Afghanistan, Bangladesh, Bhutan, India, Iran, Maldives, Nepal, Pakistan, Sri Lanka
Southeast Asia	SEAS	Brunei, Cambodia, Indonesia, Laos, Malaysia, Myanmar, Philippines, Singapore, Thailand, Timor-Leste, Vietnam
West Asia	WAS	Azerbaijan, Bahrain, Georgia, Iraq, Israel, Yemen, Jordan, Qatar, Kuwait, Lebanon, Oman, Saudi Arabia, Syria, Turkey, United Arab Emirates, Cyprus

Europe		
Eastern Europe	EEU	Bulgaria, Moldova, Poland, Romania, Russia, Slovakia, Czech Republic, Ukraine, Hungary, Belarus
Northern Europe	NEU	Denmark, Estonia, Finland, Ireland, Island, Latvia, Lithuania, Norway, Sweden, UK
Southern Europe	SEU	Albania, Bosnia and Herzegovina, Greece, Italy, Kosovo, Croatia, Malta, Macedonia, Montenegro, Portugal, Serbia, Slovenia, Spain
Western Europe	WEU	Belgium, Germany, France, Netherlands, Austria, Switzerland

America		
North America	NAM	Canada, USA
Caribbean	CAR	Bahamas, Barbados, Dominican Republic, Haiti, Jamaica, St. Lucia, Trinidad and Tobago
Central America	САМ	Belize, Costa Rica, Guatemala, Honduras, Nicaragua, Panama
South America	SAM	Argentina, Bolivia, Brazil, Chile, Ecuador, El Salvador, Guyana, Colombia, Paraguay, Peru, Surinam, Uruguay, Venezuela

Oceania		
Oceania	OCE	Australia, Fiji, New Zealand, Papua New Guinea, Solomon Islands, Samoa, Vanuatu

ANNEX B OVERVIEW OF VARIABLES

Variable	Definition	Description	Source
Population	Total population	All inhabitants, regardless of legal status or citi- zenship, with the exception of refugees who have no fixed residence in the country of asylum and who are normally counted as part of the popula- tion of their country of origin.	2015 World Bank, World Devel- opment Indicators Online.
Population growth	Average population growth rate	The annual growth rate is derived from the nth root of the total growth rate, where n is the number of years in the period under review.	2011-2015 World Bank, World Development Indicators Online.
GDP per capita	GDP per capita adjusted for purchasing power	Gross domestic product – the total value of all goods (goods and services) converted into purchasing power parities	2015 IMF, World Economic Outlook Database. ⁷
Unemployment rate	Unemployment rate (%)	The percentage of job-seekers in relation to all employees	2015 IMF, World Economic Outlook Database. ⁸
National debt	Gross national debt (% of GDP)	Gross national debt relative to GDP; reflects the total government loans in the national currency less repayments.	2015 IMF, World Economic Outlook Database. ⁹
FDI per capita	Average FDI per capita	Average inflow per capita from foreign direct investments (FDI)	2011-2015 World Bank, World Development Indicators Online.
Inflation	Inflation (%)	Annual percentage change in average consumer prices	2015 IMF, World Economic Outlook Database.
Consumption expenditure per capita	Household consumption expenditure per capita (in constant USD 2000)	Average household consumption expenditure per capita. The consumption expenditure of private households is the market value of all goods and services purchased by the households, including long-life goods.	2015 World Bank, World Development Indicators Online. ¹⁰
Political stability	Between -2.5 and 2.5	Reflects the probability that the government will not be destabilised or topped by unconsti- tutional or violent measures, including politically motivated violence and terrorism.	2015 World Bank, Worldwide Governance Indicators.
Regulatory quality	Between -2.5 and 2.5	Reflects the perceived ability of the govern-ment to formulate and implement reasonable policies and regulations that will permit and encourage the development of the private sector	2015 World Bank, Worldwide Governance Indicators.
Rule of law	Between -2.5 and 2.5	Reflects the perceived extent to which market participants trust in and follow the laws of the land, especially the quality of contractual execu- tion/enforcement, property rights, the police, the judiciary and the probability of crime and violence	2015 World Bank, Worldwide Governance Indicators.

Variable	Definition	Description	Source
Control of corruption	Between -2.5 and 2.5	Reflects the perceived extent to which public influence is used for private gain, including petty and serious forms of corruption as well as the 'possession' of the state by elites and private interests	2015 World Bank, Worldwide Governance Indicators.
Health	Life expectancy at birth	Life expectancy at birth (index with a minimum value of 20 years and the observed maximum from between 1984 and 2014)	2015 UNDP, Human Development Index.
Education	Average academic education	Average academic education (index of mean years of schooling (adults) and expected years of schooling (children))	2015 UNDP, Human Development Index.
Freedom of business	Between 0 and 100	Measures the general restrictiveness of regu- lations and the efficiency of the state in the regulatory process (indicator of the level of bureaucracy)	2015 Index of Economic Freedom, Heritage Foundation.
Freedom of trade	Between 0 and 100	Lack of trade barriers that impede the exporting and importing of goods and services	2015 Index of Economic Freedom, Heritage Foundation.
Freedom of investment	Between 0 and 100	Scale of limitations on flows of investment capital	2015 Index of Economic Freedom, Heritage Foundation.
Freedom of work	Between 0 and 100	Legal and regulatory conditions of the job market in a country	2015 Index of Economic Freedom, Heritage Foundation.
Infrastructure	Between 1 and 5	Quality of the trading and transportation infrastructure (e.g. ports, railways, roads, IT)	2015 World Bank data, Logistics Performance Index.
Aggregate tax rate	Tax rate on commercial profits (%)	Percentage of taxes and contributions applicable to commercial profits, less deductions and relief	2015 World Bank data, World Development Indicators Online.
Market potential	Real market potential	Sum of the economic output of every country in the world weighted by the bilateral distance of trade	Own calculation
Costs of labour	Based on the GDP per capita adjusted for purchasing power	GDP converted to purchasing power parity	2015 IMF, World Economic Outlook Database.

⁷ Supplemented by data from the World Bank and the CIA.

⁸ Supplemented by data from the CIA and the African Development Bank.

⁹ Supplemented by data from the World Bank.

¹⁰ Supplemented by data from the World Bank.

ANNEX C TECHNICAL ANNEX

1. DATA SET AND CLEANSING

Overview of the variables used in our estimation

Term	Contents	Unit	Source
GDP	GDP per capita at purchasing power parity	US dollar	World Development Indicators, World Bank
SCHOOL	Gross matriculation rate in tertiary education	Per cent	World Development Indicators, World Bank
WORKPOP	Percentage of 15-64 year olds in the population	Per cent	World Development Indicators, World Bank
COUNTRY	Area of arable land per capita	Hectare	World Development Indicators, World Bank
INVEST	Net investments in non-financial assets per capita	US dollar	World Development Indicators, World Bank
TFP	Total factor productivity	Non-dimensional	Own calculation
POLSTAB	Political stability indicator (see annex B)	Index	Worldwide Governance Indica- tors, World Bank
YEAR	Year observed	Non-dimensional	-
TARIFF	Average weighted tariff rate on imports	Per cent	World Development Indicators, World Bank
REGQUAL	Indicator of regulatory quality (see annex B), adjusted by aux- iliary regression (see estimate methodology)	Index	Worldwide Governance Indica- tors, World Bank
DUM_OECD	Dummy for identifying OECD countries	Binary	-
DUM_AMER	Dummy for identifying non- OECD countries in America	Binary	-
DUM_AFR	Dummy for identifying African countries	Binary	-
DUM_ASIA	Dummy for identifying non- OECD countries in Asia	Binary	-

All indicators from external sources were adjusted for statistical spikes as follows before being added to the analysis: all values outside of the spread *Mittelwert*±2*·Standardabweichung* were filtered out.

2. EMPIRICAL MODEL

In its basic form, our empirical growth model consists of the following two equations:

 $\ln GDP_{it} = \beta_0 + \beta_1 \cdot SCHOOL_{it} + \beta_2 \cdot WORKPOP_{it} + \beta_3 \cdot LAND_{it} + \beta_4 \cdot \ln INVEST_{it} + \varepsilon_{it}$ (1)

 $\mathsf{TFP}_{it} = \gamma_0 + \gamma_1 \cdot \mathsf{POLSTAB}_{it} + \gamma_2 \cdot \mathsf{YEAR}_{it} + \gamma_3 \cdot \mathsf{ln} \; \mathsf{TARIFF}_{it} + \gamma_4 \cdot \mathsf{REGQUAL}_{it} + \upsilon_{it} \; (2a)$

Equation (2) is altered as follows in its expanded versions:

Version with quadratic relationship:

$$\begin{split} \mathsf{TFP}_{it} = & \gamma_0 + \gamma_1 \cdot \mathsf{POLSTAB}_{it} + \gamma_2 \cdot \mathsf{YEAR}_{it} + \gamma_3 \cdot \mathsf{In} \; \mathsf{TARIFF}_{it} + \gamma_4 \cdot (\mathsf{In} \; \mathsf{TARIFF}_{it})^2 \\ & + \gamma_5 \cdot \mathsf{REGQUAL}_{it} + \upsilon_{it} \; (\mathsf{2b}) \end{split}$$

Version with quadratic relationship and regional interaction:

$$\begin{split} \mathsf{TFP}_{it} &= \mathsf{Y}_0 + \mathsf{Y}_1 \cdot \mathsf{POLSTAB}_{it} + \mathsf{Y}_2 \cdot \mathsf{YEAR}_{it} + \mathsf{Y}_3 \cdot \mathsf{ln} \; \mathsf{TARIFF}_{it} + \mathsf{Y}_4 \cdot \mathsf{DUM}_{-} \; \mathsf{OECD} \cdot \\ \mathsf{ln} \; \mathsf{TARIFF}_{it} + \mathsf{Y}_5 \cdot \mathsf{DUM}_{-} \mathsf{AMER} \cdot \mathsf{ln} \; \mathsf{TARIFF}_{it} + \mathsf{Y}_6 \cdot \mathsf{DUM}_{-} \mathsf{AFR} \cdot \mathsf{ln} \; \mathsf{TARIFF}_{it} + \mathsf{Y}_{7} \cdot \\ \mathsf{DUM}_{-} \mathsf{ASIA} \cdot \mathsf{ln} \; \mathsf{TARIFF}_{-it} + \mathsf{Y}_8 \cdot (\mathsf{ln} \; \mathsf{TARIFF}_{it})^2 + \mathsf{Y}_6 \cdot \mathsf{REGQUAL}_{it} + \mathsf{u}_{it} \; (\mathsf{2c}) \end{split}$$

3. ESTIMATE METHODOLOGY

We created our estimate in a multi-stage procedure. Our strategy consists of four steps.

Step 1: Estimate of equation (1) in the form of a fixed effects model (with countries are fixed effects)

Step 2: Calculation of TFP as residual term::

 $\widehat{\mathsf{TFP}}_{it} = \mathsf{In} \mathsf{GDP}_{it} - (\widehat{\beta}_1) \cdot \mathsf{SCHOOL}_{it} + (\widehat{\beta}_2) \cdot \mathsf{WORKPOP}_{it} + (\widehat{\beta}_3) \cdot \mathsf{LAND}_{it} + (\widehat{\beta}_4) \cdot \mathsf{INVEST}_{it})$

Step 3: Auxiliary regression to minimise colinearity problems – the World Bank Regulatory Quality index is regressed to the logarithmised tariff rates and the resulting unexplained section is factored into the model as the indicator REGQUAL.

Step 4: Estimate of equation (2) in the form of a fixed effects model (with countries are fixed effects).

4. ESTIMATE RESULTS

Equation (1) regression table:

Dependent Variable: GDP	Coefficient	Standard error	t-value	P-value
SCHOOL	0.008	0.000	19.76	0.000
WORKPOP	0.039	0.003	14.81	0.000
COUNTRY	0.130	0.035	3.68	0.000
INVEST	0.062	0.006	9.86	0.000
_CONS	5.972	0.154	38.75	0.000
R ² within				0.571
R ² between				0.592
R ² overall				0.561
Number of observations				962

Equation (2b) regression table:

Dependent Variable: In TFP	Coefficient	Standard error	t-value	P-value
POLSTAB	0.046	0.010	4.00	0.000
YEAR	0.006	0.001	6.30	0.000
Ln TARIFF	0.047	0.010	-2.12	0.009
(Ln TARIFF) ²	-0.026	0.006	-4.39	0.000
REGQUAL	0.117	0.019	6.39	0.000
_CONS	-4.741	1.703	-3.62	0.000
R ² within				0.175
R ² between				0.640
R ² overall				0.644
Number of observations				962

Equation (2a) regression table:

Dependent Variable: TFP	Coefficient	Standard error	t-value	P-value
POLSTAB	0.042	0.010	4.00	0.000
YEAR	0.005	0.001	6.30	0.000
Ln TARIFF	-0.020	0.010	-2.12	0.034
REGQUAL	0.121	0.019	6.39	0.000
_CONS	-4.741	1.703	-2.78	0.005
R ² within				0.156
R ² between				0.669
R ² overall				0.667
Number of observations				962

Equation (2c) regression table:

Dependent Variable: TFP	Coefficient	Standard error	t-value	P-value
POLSTAB	0.048	0.010	4.66	0.000
YEAR	0.006	0.001	6.73	0.000
Ln TARIFF	0.005	0.024	0.19	0.850
DUM_OECD* Ln Tariff	0.056	0.024	2.32	0.020
DUM_AMER* Ln Tariff	0.087	0.034	2.56	0.011
DUM_AFR* Ln Tariff	0.055	0.025	2.20	0.028
DUM_ASIA* Ln Tariff	-0.007	0.027	-0.25	0.801
(Ln TARIFF) ²	-0.023	0.008	-3.01	0.000
REGQUAL	0.117	0.019	6.39	0.000
_CONS	-4.741	1.703	-3.62	0.000
R ² within				0.191
R ² between				0.557
R ² overall				0.598
Number of observations				962

ANNEX D TOTAL RANKING INDEX

Country	Conti-	Index		Economic	:	Political-le	egal	Socio-cult	ural	
	nent						General	conditions		
		Rank	Change	Value	Rank	Value	Rank	Value	Rank	Value
Singapore	AS	1	1	82.80	1	80.93	1	96.61	7	72.59
Hong Kong	AS	2	-1	80.54	2	77.06	7	94.19	8	71.98
Switzerland	EU	3	1	78.69	7	67.05	3	95.58	1	76.05
Netherlands	EU	4	-1	77.99	3	76.65	8	93.39	17	66.28
Denmark	EU	5	1	76.23	11	63.41	5	94.92	5	73.60
Norway	EU	6	-1	75.75	9	63.81	9	92.82	6	73.38
Ireland	EU	7	0	75.13	4	70.23	10	91.90	19	65.72
Germany	EU	8	4	74.19	6	69.54	14	91.22	21	64.39
Great Britain	EU	9	-1	74.18	8	63.89	12	91.56	12	69.78
New Zealand	ос	10	1	74.02	33	55.72	2	96.27	3	75.59
Australia	ОС	11	-1	73.57	22	57.64	15	90.85	2	76.04
Canada	NAM	12	-3	73.55	13	61.30	11	91.83	11	70.70
Belgium	EU	13	0	72.93	5	70.15	18	86.00	22	64.31
USA	NAM	14	1	72.74	14	61.28	22	83.42	4	75.29
Sweden	EU	15	-1	72.54	15	61.00	6	94.63	18	66.13
Austria	EU	16	0	71.13	19	57.99	13	91.23	14	68.02
Iceland	EU	17	1	69.56	30	56.06	16	88.38	15	67.92
Finland	EU	18	-1	69.55	21	57.67	4	95.27	28	61.22
France	EU	19	6	67.43	18	59.43	27	79.23	20	65.12
Japan	AS	20	0	67.28	62	50.84	19	83.85	9	71.44
Qatar	AS	21	-2	66.60	23	57.55	42	72.22	10	71.08
Taiwan	AS	22	-1	66.23	12	62.89	23	80.85	39	57.13
Czech Republic	EU	23	3	65.18	29	56.12	24	79.78	26	61.85
Israel	AS	24	5	64.87	45	53.31	36	75.23	13	68.09
South Korea	AS	25	2	64.86	10	63.70	43	71.93	31	59.56
United Arab Emirates	AS	26	-4	64.73	16	60.82	40	72.94	30	61.13
Malta	EU	27	-3	64.57	35	55.10	20	86.60	35	58.44
Cyprus	AS	28	5	63.52	17	59.67	28	79.00	49	54.37
Chile	LAM	29	1	63.41	52	52.24	21	86.49	34	58.47
Estonia	EU	30	-2	63.28	20	57.85	17	86.66	74	50.53
Brunei	AS	31	-8	63.13	36	54.94	37	74.83	29	61.19
Oman	AS	32	-1	62.98	46	52.83	47	70.99	16	66.59
Slovenia	EU	33	-1	62.86	25	56.60	34	76.74	38	57.19
Poland	EU	34	0	60.68	47	52.69	32	77.61	47	54.64
Italy	EU	35	0	60.49	51	52.25	45	71.58	33	59.16
Malaysia	AS	36	1	60.37	28	56.20	52	67.93	37	57.65
Bahrain	AS	37	-1	60.04	39	54.53	57	64.16	25	61.86

Country	Conti-	Index			Economic	:	Political-le	egal	Socio-cult	ural
	nent						General o	conditions		
		Rank	Change	Value	Rank	Value	Rank	Value	Rank	Value
Barbados	LAM	38	13	60.00	65	50.41	29	78.83	50	54.36
Latvia	EU	39	0	59.99	34	55.68	33	77.31	77	50.14
Portugal	EU	40	3	59.51	49	52.54	26	79.27	73	50.59
Lithuania	EU	41	-3	59.48	32	56.03	25	79.53	94	47.22
Spain	EU	42	0	59.43	37	54.80	35	76.36	76	50.16
Slovakia	EU	43	-3	59.37	41	54.19	39	74.15	61	52.08
Samoa	OC	44	4	59.20	70	49.50	53	66.41	23	63.11
Hungary	EU	45	-4	59.15	56	52.12	41	72.67	46	54.64
Kuwait	AS	46	-2	58.68	31	56.04	82	57.40	24	62.80
Georgia	AS	47	3	58.36	48	52.56	46	71.42	56	52.95
Mauritius	AF	48	-2	57.85	83	48.38	30	78.79	71	50.79
Uruguay	LAM	49	-4	57.71	104	46.62	31	78.07	57	52.80
Saudi Arabia	AS	50	-1	56.65	26	56.46	83	55.69	36	57.82
Romania	EU	51	-4	56.35	68	49.83	51	68.23	60	52.62
Bahamas	LAM	52	1	56.22	73	49.20	54	66.25	48	54.53
Turkey	AS	53	7	55.99	40	54.34	70	59.51	51	54.29
St. Lucia	LAM	54	1	55.89	101	47.04	49	68.87	53	53.90
Bulgaria	EU	55	-3	55.73	38	54.55	59	63.29	78	50.14
Montenegro	EU	56	0	55.38	43	53.83	56	64.43	85	48.97
Panama	LAM	57	1	55.08	61	51.09	58	64.11	68	51.02
Costa Rica	LAM	58	-4	54.75	111	45.95	44	71.69	80	49.81
Vanuatu	OC	59	13	54.34	86	48.33	69	59.85	42	55.46
Trinidad and Tobago	LAM	60	1	54.31	77	49.01	73	59.17	43	55.24
Croatia	EU	61	-4	54.26	55	52.13	48	70.03	114	43.75
Jamaica	LAM	62	9	53.92	50	52.44	65	61.94	89	48.28
Fiji	ОС	63	15	53.55	125	45.00	84	55.60	27	61.38
Jordan	AS	64	-2	53.42	98	47.23	64	62.01	63	52.05
Namibia	AF	65	17	53.38	88	48.12	55	65.44	88	48.29
Thailand	AS	66	3	52.86	42	54.14	91	53.46	69	51.02
Colombia	LAM	67	8	52.80	91	47.94	72	59.38	64	51.71
Peru	LAM	68	-3	52.69	85	48.34	74	58.89	66	51.38
Azerbaijan	AS	69	10	52.53	60	51.28	108	50.30	41	56.20
Cape Verde	AF	70	20	52.43	108	46.26	50	68.51	104	45.47
Kosovo	EU	71	-12	52.37	27	56.37	92	53.39	91	47.72
Kazakhstan	AS	72	-8	52.32	64	50.72	103	51.35	45	55.00
Botswana	AF	73	-7	52.32	103	46.91	38	74.15	129	41.18
Mexico	LAM	74	-11	52.28	78	48.98	85	55.28	58	52.77
Mongolia	AS	75	-5	51.95	57	52.05	90	53.89	79	49.97
Albania	EU	76	-3	51.70	58	51.86	61	62.74	124	42.47
Armenia	AS	77	-3	51.64	63	50.73	66	61.82	112	43.91
Greece	EU	78	-10	51.28	99	47.17	62	62.14	100	46.02
Serbia	EU	79	-2	51.28	72	49.28	63	62.09	111	44.07
Dominican Republic	LAM	80	3	50.98	105	46.57	75	58.42	86	48.68
Macedonia	EU	81	-5	50.92	44	53.47	67	61.38	133	40.23
Belize	LAM	82	4	50.58	118	45.48	98	52.44	52	54.26
Vietnam	AS	83	8	50.15	71	49.38	110	50.00	67	51.08

Country	Conti-	Index			Economic	:	Political-le	egal	Socio-cult	ural
	nent						General	conditions		
		Rank	Change	Value	Rank	Value	Rank	Value	Rank	Value
Rwanda	AF	84	-17	50.07	121	45.34	60	62.79	110	44.10
China	AS	85	2	49.97	53	52.23	115	48.00	81	49.78
Solomon Islands	ос	86	16	49.87	90	48.11	124	46.82	44	55.05
Belarus	EU	87	2	49.81	79	48.85	133	44.65	40	56.67
El Salvador	LAM	88	-7	49.78	122	45.30	68	60.78	106	44.80
Bhutan	AS	89	14	49.62	132	44.36	81	57.44	90	47.94
Sri Lanka	AS	90	3	49.59	140	43.69	95	53.04	59	52.63
Lebanon	AS	91	7	49.52	120	45.38	131	45.08	32	59.37
Philippines	AS	92	-4	49.49	84	48.36	93	53.25	95	47.06
Bosnia and Herzegovina	EU	93	-13	48.98	66	50.41	77	57.66	132	40.43
Ghana	AF	94	7	48.96	93	47.77	79	57.59	123	42.67
Moldova	EU	95	-11	48.69	74	49.15	102	51.48	103	45.62
Brazil	LAM	96	-4	48.48	138	43.78	96	52.86	83	49.23
Maldives	AS	97	-12	48.43	75	49.11	122	47.17	84	49.05
Kyrgyzstan	AS	98	-1	48.29	115	45.61	125	45.98	54	53.68
Nicaragua	LAM	99	-3	47.93	139	43.75	87	54.58	99	46.10
Indonesia	AS	100	7	47.64	81	48.68	109	50.26	109	44.20
Tunisia	AF	101	4	47.56	82	48.41	123	47.07	93	47.22
Timor-Leste	AS	102	4	47.55	54	52.23	132	44.86	101	45.88
Surinam	LAM	103	-9	47.50	128	44.89	114	48.01	82	49.73
Paraguay	LAM	104	-5	47.38	107	46.41	86	54.95	127	41.70
Morocco	AF	105	-1	47.24	110	46.01	71	59.47	138	38.53
Guatemala	LAM	106	-11	47.22	96	47.56	99	52.42	125	42.24
Cambodia	AS	107	2	47.22	119	45.42	113	49.01	92	47.30
Papua New Guinea	ОС	108	2	46.93	123	45.12	139	43.07	55	53.18
Russia	EU	109	-9	46.72	67	49.95	143	40.13	70	50.88
South Africa	AF	110	-2	46.43	69	49.60	76	57.71	156	34.98
Ecuador	LAM	111	0	46.20	116	45.60	140	42.03	65	51.44
Gabon	AF	112	9	45.94	143	43.43	111	49.57	105	45.03
Zambia	AF	113	1	45.77	114	45.79	88	54.55	139	38.38
Tanzania	AF	114	3	45.47	150	42.48	101	51.56	120	42.93
Laos	AS	115	8	45.47	124	45.09	134	44.55	96	46.80
Egypt	AF	116	8	45.39	92	47.86	128	45.28	119	43.15
Honduras	LAM	117	3	45.00	137	43.79	106	50.60	130	41.14
Uganda	AF	118	-6	44.95	151	42.35	112	49.24	116	43.56
Guyana	LAM	119	-3	44.93	134	44.23	119	47.34	117	43.32
Malawi	AF	120	2	44.71	153	41.91	107	50.58	126	42.15
Madagascar	AF	121	7	44.60	152	42.26	116	47.93	113	43.80
São Tomé and Príncipe	AF	122	4	44.51	129	44.65	94	53.11	145	37.19
Iraq	AS	123	8	44.40	100	47.12	154	36.63	72	50.69
Argentina	LAM	124	-9	44.20	170	38.32	138	43.30	62	52.06
Liberia	AF	125	10	44.12	24	56.96	135	44.26	160	34.07
India	AS	126	-7	44.10	113	45.82	118	47.38	135	39.51
Kenya	AF	127	6	43.84	148	42.84	126	45.52	118	43.20
Benin	AF	128	-15	43.55	133	44.36	97	52.57	155	35.43
Senegal	AF	129	-11	43.52	156	41.65	78	57.61	158	34.34

Country	Conti-	Index			Economic	:	Political-le	egal	Socio-cult	ural
	nent						General	conditions		
		Rank	Change	Value	Rank	Value	Rank	Value	Rank	Value
Bangladesh	AS	130	-3	43.48	117	45.58	142	40.33	107	44.70
Algeria	AF	131	-2	43.44	87	48.18	152	36.84	97	46.17
Tajikistan	AS	132	0	43.12	126	44.95	153	36.67	87	48.65
Swaziland	AF	133	4	42.96	106	46.56	89	54.28	166	31.37
Ukraine	EU	134	-4	42.68	112	45.84	151	37.09	102	45.71
Burkina Faso	AF	135	-10	41.89	145	43.31	100	51.85	163	32.74
Djibouti	AF	136	-2	41.84	147	42.93	117	47.42	150	35.99
Gambia	AF	137	17	41.63	168	38.70	105	51.19	148	36.43
Uzbekistan	AS	138	6	41.56	94	47.73	166	29.94	75	50.22
Nepal	AS	139	1	41.43	80	48.73	158	34.21	122	42.67
Pakistan	AS	140	2	41.38	76	49.01	149	38.03	143	38.02
Bolivia	LAM	141	2	41.36	160	40.75	144	39.71	115	43.72
Togo	AF	142	-4	41.26	155	41.77	121	47.27	152	35.58
Burundi	AF	143	-7	40.91	127	44.95	145	39.71	140	38.38
Iran	AS	144	11	40.38	97	47.42	165	30.10	98	46.12
Ethiopia	AF	145	0	40.37	144	43.32	150	37.33	131	40.67
Niger	AF	146	0	40.30	161	40.59	127	45.38	153	35.53
Côte d'Ivoire	AF	147	-8	40.20	130	44.58	104	51.35	169	28.39
Haiti	LAM	148	-7	39.54	142	43.44	147	38.39	146	37.07
Nigeria	AF	149	2	39.47	109	46.08	161	33.93	136	39.33
Lesotho	AF	150	8	39.34	141	43.65	80	57.53	173	24.25
Comoros	AF	151	-2	39.05	172	33.06	130	45.17	134	39.89
Myanmar	AS	152	-4	39.02	154	41.83	159	34.18	128	41.55
Guinea	AF	153	-1	38.87	166	39.54	141	40.66	147	36.55
Mozambique	AF	154	9	38.69	159	40.75	137	43.40	162	32.76
Sierra Leone	AF	155	-5	38.55	146	43.05	120	47.32	170	28.14
Cameroon	AF	156	0	38.42	157	40.94	148	38.08	149	36.37
Angola	AF	157	-4	38.38	163	40.48	146	39.36	154	35.49
Afghanistan	AS	158	3	38.21	102	47.02	164	30.47	137	38.93
Republic of Congo	AF	159	-2	38.12	164	40.20	156	36.09	141	38.17
Equatorial Guinea	AF	160	-1	38.11	131	44.45	162	33.27	144	37.42
Democratic Republic of the Congo	AF	161	10	35.67	59	51.52	170	24.58	151	35.85
Turkmenistan	AS	162	0	35.63	149	42.53	163	30.66	157	34.69
Mali	AF	163	-16	35.46	135	43.90	129	45.22	174	22.46
Mauritania	AF	164	1	35.39	167	39.17	136	43.91	172	25.77
Yemen	AS	165	-5	35.37	171	37.88	155	36.31	164	32.16
Guinea-Bissau	AF	166	-2	35.19	162	40.54	160	33.97	165	31.64
Chad	AF	167	-1	34.45	165	39.59	157	34.83	167	29.65
Zimbabwe	AF	168	0	33.38	158	40.85	167	26.77	161	34.01
Central African Republic	AF	169	3	33.04	95	47.63	168	26.65	168	28.41
Libya	AF	170	-3	31.64	136	43.80	173	16.89	121	42.82
Venezuela	LAM	171	-2	31.26	173	31.20	171	22.03	108	44.45
Eritrea	AF	172	-2	30.99	174	31.14	169	25.08	142	38.10
Sudan	AF	173	0	27.82	169	38.59	172	20.73	171	26.93
North Korea	AS	174	0	25.10	89	48.11	174	9.63	159	34.11

ANNEX E

RANKING FOR BUSINESS AND PRODUCTION SUB-INDICES

Country	Produc	tion lo	cation	Busines	s mark	et
	Value	Rank	Change	Value	Rank	Change
AFRICA						
gypt	57.66	8	-1	43.42	14	13
Algeria	49.12	31	-5	39.69	33	2
Ingola	45.25	41	-11	41.05	26	-11
quatorial Juinea	43.95	45	-10	41.21	25	5
thiopia	46.73	36	-5	37.32	41	-2
nin	57.29	10	8	41.43	24	-12
otswana	61.11	3	-1	51.05	4	-1
ırkina Faso	55.90	13	6	40.56	29	-13
urundi	53.70	21	13	37.51	38	-13
mocratic Repub- of the Congo	38.71	48	3	30.88	50	-1
jibouti	53.98	18	-4	37.18	42	5
òte d'Ivoire	53.85	19	5	41.63	23	-9
itrea	37.56	50	-1	35.27	47	1
ibon	53.70	22	-7	41.89	20	1
ambia	53.72	20	26	40.14	31	1
ana	59.56	5	1	43.59	13	16
linea	48.86	33	7	38.13	36	9
inea-Bissau	45.07	43	-1	39.78	32	-6
meroon	45.45	39	-1	35.52	45	-2
ipe Verde	57.41	9	-1	46.05	8	-1
nya	56.11	12	4	38.24	35	-1
moros	36.42	51	-3	43.66	12	1
sotho	46.61	37	-17	47.36	6	18
eria	49.76	28	15	42.09	19	3
oya	45.35	40	-11	32.65	49	-5
adagascar	49.30	30	7	41.80	22	6
alawi	59.01	7	16	45.94	10	10
ali	51.03	26	1	36.57	43	-2
orocco	55.28	14	-3	45.90	11	-2
auritania	49.32	29	-1	40.91	27	9
auritius	65.73	1	0	54.20	1	1
ozambique	45.20	42	3	40.70	28	-10
amibia	63.48	2	1	51.50	3	1
iger	47,86	35	4	37,42	40	0

Country	Product	tion loo	ation	Busines	s mark	et
	Value	Rank	Change	Value	Rank	Change
AFRICA						
Nigeria	54.04	17	-4	37.44	39	3
Republic of Congo	42.56	46	-2	35.42	46	-8
Rwanda	60.28	4	1	42.97	16	-11
Zambia	53.28	23	-6	45.98	9	2
São Tomé and Príncipe	52.41	25	0	46.90	7	-1
Senegal	52.80	24	-2	43.32	15	-7
Sierra Leone	50.45	27	6	42.23	18	1
Zimbabwe	38.61	49	-2	38.06	37	0
South Africa	59.04	6	-2	51.70	2	-1
Sudan	40.16	47	-6	27.39	51	0
Swaziland	56.38	11	-2	48.03	5	5
Tanzania	54.26	16	5	42.61	17	16
Тодо	49.11	32	4	41.82	21	-4
Chad	48.14	34	-2	35.99	44	2
Tunisia	55.22	15	-5	38.79	34	-3
Uganda	45.67	38	-26	40.48	30	-7
Central African Republic	44.05	44	6	33.47	48	2

Country	Product	tion loc	ation	Busines	s mark	et
	Value	Rank	Change	Value	Rank	Change
ASIA						Ŭ
Afghanistan	51.59	35	2	29.88	44	0
Armenia	63.64	16	0	46.22	22	-3
Azerbaijan	60.64	17	4	48.04	20	9
Bahrain	72.91	4	1	50.03	17	1
Bangladesh	54.55	33	0	37.93	39	-4
Bhutan	57.44	25	3	45.22	24	10
Brunei	70.89	7	-1	58.76	8	0
China	60.40	19	3	72.83	1	2
Georgia	68.27	11	1	49.67	18	5
Hong Kong	92.56	2	0	69.41	3	-2
India	55.71	29	-5	59.35	7	2
Indonesia	55.39	31	0	50.05	16	-1
Iraq	56.97	27	-4	40.12	33	7
Iran	44.75	42	-2	37.16	40	3
Yemen	51.44	36	0	31.60	43	-1
Jordan	65.16	14	-3	44.27	27	-6
Cambodia	58.36	23	2	45.71	23	1
Kazakhstan	59.62	20	-2	44.84	26	-6
Qatar	71.77	6	-2	64.38	4	3
Kyrgyzstan	58.70	22	4	38.93	38	0
Kuwait	66.95	12	1	54.52	12	0
Laos	52.37	34	1	44.20	28	3
Lebanon	58.77	21	-2	41.79	32	-2
Malaysia	69.29	9	-1	56.59	10	0
Maldives	55.35	32	-5	43.33	30	-5
Mongolia	60.50	18	-1	46.24	21	6
Myanmar	50.48	37	1	39.79	35	1
Nepal	47.10	39	2	36.56	42	-3
North Korea	46.61	40	-1	39.44	36	1
Oman	68.46	10	0	54.74	11	0
Pakistan	56.02	28	2	36.75	41	0
Philippines	58.30	24	-4	44.99	25	-3
Saudi Arabia	65.47	13	1	53.05	13	0
Singapore	96.72	1	0	71.02	2	0
Sri Lanka	50.18	38	-4	43.90	29	-3
Tajikistan	45.68	41	1	39.96	34	-1
Taiwan	74.88	3	0	63.47	5	-1
Thailand	63.69	15	0	49.47	19	-3
Timor-Leste	55.69	30	-1	50.21	15	2
Turkmenistan	36.62	44	0	43.14	31	-3
Uzbekistan	40.08	43	0	38.97	37	-5
United Arab	72.87	5	2	63.39	6	-1
Emirates						

Country	Produc	tion loo	cation	Busines	s mark	et
	Value	Rank	Change	Value	Rank	Change
ASIA						
Vietnam	57.13	26	6	52.05	14	0
Cyprus	69.60	8	1	57.83	9	-3

Country	Product	tion loc	ation	Busines	s mark	et
	Value	Rank	Change	Value	Rank	Change
EUROPE						
Albania	64.05	11	1	54.33	5	1
Bosnia and Her- zegovina	63.45	12	-2	50.59	9	0
Bulgaria	67.54	5	1	53.12	6	2
Kosovo	67.28	7	1	48.52	11	-4
Croatia	67.29	6	-1	56.19	4	0
Latvia	71.98	2	-1	56.44	3	-1
Lithuania	72.75	1	1	58.80	2	1
Malta	71.17	3	0	61.17	1	0
Macedonia	64.15	10	1	48.35	12	0
Moldova	55.86	13	0	45.56	14	-1
Montenegro	68.94	4	3	52.13	7	3
Romania	66.89	8	-4	50.89	8	-3
Russia	51.97	15	0	43.59	15	-1
Serbia	65.86	9	0	50.09	10	1
Ukraine	50.71	16	0	35.74	16	0
Belarus	55.12	14	0	46.62	13	2

Country	Produc	tion lo	cation	Busine	ss mark	æt	Country	Produc	tion lo	cation	Busine	ss mark	et
	Value	Rank	Change	Value	Rank	Change		Value	Rank	Change	Value	Rank	Change
LATIN AMERICA							OECD						
Argentina	41.95	23	-1	47.04	13	0	Australia	76.67	17	2	72.54	10	4
Bahamas	61.61	5	3	53.80	2	-1	Belgium	87.16	5	-2	70.65	13	2
Barbados	66.02	1	0	54.46	1	1	Chile	70.68	29	0	56.54	29	1
Belize	55.96	14	0	46.32	15	-1	Denmark	88.05	3	1	72.28	11	1
Bolivia	36.46	24	1	42.95	23	1	Germany	86.50	6	0	73.40	5	-1
Brazil	55.00	15	0	49.79	7	2	Estonia	75.04	20	0	59.48	23	5
Costa Rica	58.65	11	-1	49.67	8	-2	Finland	77.42	16	-2	69.01	16	0
Dominican Re-	59.11	9	0	48.77	11	-3	France	76.45	18	-1	68.17	17	1
public							Greece	63.59	32	0	56.87	27	2
Ecuador	48.40	21	-1	45.54	19	0	Great Britain	89.28	2	0	71.41	12	-7
El Salvador	58.17	12	-1	49.27	10	-3	Ireland	83.83	8	0	69.28	15	-4
Guatemala	54.43	17	-1	46.28	16	2	Iceland	72.37	24	3	67.32	18	-11
Guyana	54.47	16	1	43.27	21	-1	Israel	74.55	21	1	54.59	31	0
Haiti	48.71	20	3	38.50	24	-3	Italy	72.35	25	0	66.13	19	0
Honduras	47.81	22	-1	43.07	22	1	Japan	82.71	10	0	72.84	8	2
Jamaica	65.08	2	2	49.33	9	1	Canada	85.57	7	0	74.24	4	4
Colombia	60.57	7	0	43.94	20	2	Mexico	60.09	33	0	49.73	33	-1
Nicaragua	52.09	18	0	45.91	18	-2	New Zealand	77.73	15	1	72.59	9	8
Panama	59.94	8	-2	51.83	4	-1	Netherlands	92.05	1	0	73.28	6	3
Paraguay	49.22	19	0	46.18	17	0	Norway	78.62	13	2	79.99	1	2
Peru	58.77	10	2	48.59	12	0	Austria	83.21	9	0	70.31	14	-1
St. Lucia	64.13	3	0	51.55	6	-2	Poland	71.13	27	-1	56.82	28	-4
Suriname	56.10	13	0	46.79	14	1	Portugal	68.36	30	0	62.67	21	0
Trinidad and Tobago	60.71	6	-1	51.77	5	6	Sweden	79.99	12	0	73.18	7	-1
Uruguay	63.84	4	-2	53.09	3	2	Switzerland	87.59	4	1	78.12	2	-1
Venezuela	35 44	25	-1	26.29	25	0	Slovakia	71.32	26	2	58.20	26	-1
· citezacta	55.14	25	'	1 20.25		, ,	Slovenia	73.07	23	0	62.15	22	0

Country	Production location			Business market					
	Value	Rank	Change	Value	Rank	Change			
OCEANIA									
Fiji	55.27	3	0	58.09	4	-2			
Papua New Guinea	48.80	5	-1	54.39	5	0			
Solomon Islands	49.00	4	1	59.26	3	0			
Samoa	64.07	1	0	63.85	1	0			
Vanuatu	59.24	2	0	61.98	2	2			

Canada	05.57	/	0	14.24	4	4
Mexico	60.09	33	0	49.73	33	-1
New Zealand	77.73	15	1	72.59	9	8
Netherlands	92.05	1	0	73.28	6	3
Norway	78.62	13	2	79.99	1	2
Austria	83.21	9	0	70.31	14	-1
Poland	71.13	27	-1	56.82	28	-4
Portugal	68.36	30	0	62.67	21	0
Sweden	79.99	12	0	73.18	7	-1
Switzerland	87.59	4	1	78.12	2	-1
Slovakia	71.32	26	2	58.20	26	-1
Slovenia	73.07	23	0	62.15	22	0
Spain	73.71	22	-1	64.46	20	0
South Korea	76.42	19	-1	58.95	25	2
Czech Republic	77.94	14	-1	58.96	24	-1
Turkey	66.05	31	0	51.63	32	1
Hungary	70.96	28	-4	56.27	30	-4
USA	81.99	11	0	77.55	3	-1

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