

center for global studies bonn

BONN POWER SHIFT MONITOR

global power shift report 2005 - 2015



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Prof. Dr. Xuewu Gu
Director of Center for Global Studies Bonn

FOREWORD

Dear Reader,

Since its foundation in 2010, the Center for Global Studies (CGS) of the University of Bonn has focused its research on the phenomenon of power shifts in the 21st century. As a result, the original Bonn Power Shift Monitor (BPSM) was created in 2011 to record shifts in central sectors of state power over time. Complemented by the publication series “Global Power Shift – Comparative Analysis and Perspectives” and a monthly newsletter update, the CGS combines quantitative and qualitative research to deepen our knowledge and spark broad discussion about power and its nature under the conditions of globalization.

In 2018, we took the occasion of the 200th anniversary of the University of Bonn to upgrade the Bonn Power Shift Monitor to the next level. We revised the indicator system and reduced it to eight central hallmarks of power. Based on this, we developed a power calculation measure that is able to inform about relative shifts in global power as well as country-specific trends. Based on the three principles of simplicity, transparency and accessibility, we decided to include freely available data only and apply an unpretentious calculation method. A complete upgrade of the web version of the BPSM and this particular jubilee publication complete the makeover of the Monitor. Yet we are not at “the end of history”, to borrow the words of Francis Fukuyama, but rather at a new starting point for research and debates about global power shifts to which we cordially invite you!

In this spirit, the present jubilee publication is dedicated to initiate a new broad-based discussion about power shifts between the most powerful states in the world and their consequences for the future world order. As a selection, we concentrate on the nineteen individual member states of the Group of Twenty (G20) to exemplify the shifts in global power during the years from 2005 to 2015. We start with a review of the global trends, first between the selected countries. Thereafter, we turn to the patterns of change within and between eight power indicators. To exemplify the analytical value of the BPMS, we have selected seven country profiles from our updated web archive. The country reports of the United States of America, China, Germany, Russia, the

United Kingdom, Brazil, and South Africa may also be found online in addition to the other thirteen member states of the G20 in this year’s power shift review. The methodology chapter at the end of this publication offers you the chance to explore the details of our power shift measurements. As fresh data is expected to be available by next year, we hope to attract your attention and feed the power shift debate with our tool on a long-term basis.

We would like to thank all our partners in Germany and around the world, who placed their trust in our work over the past years. We are particularly grateful to Christiane Suchanek, who in her function as project manager developed and implemented the upgrade of the Bonn Power Shift Monitor. Special thanks to Andrej Pustovitovskij for layout, web design and report production. Special thanks also to Hendrik W. Ohnesorge, Enrico Fels, Sebastian Trautwein and Ying Huang for their unwavering support and precious advice during the BPSM revision and drafting process. Additionally, we thank Marion Romagna, Franziska Hebel, Thomas Spinrath, Milena Niesen, Alba Meier and all other people directly or indirectly involved in the project.

On behalf of my entire team, I sincerely hope that you enjoy reading this BPSM jubilee report!

Prof. Dr. Xuewu Gu

Director of the Center for Global Studies

Executive Summary

Those who have power make the rules. Within a state hierarchy, the powerful are identifiable by the authority of their respective office. But between states, the concept of power is a controversial issue – particularly for political science scholars. Over the last years, research on power has broadened and deepened, but the debate has not ended. Quite the contrary, measurements on power have been so contested that they have narrowed their scope to sub-categories of power such as soft power, innovative power or military power. Indicated by their names, these indices fail to reveal the multifaceted nature of state power which is more and more neglected in research. The Center for Global Studies (CGS) presents a new eclectic model to explore and measure power. The revised BPSM combines different perspectives and has filtered out eight indicators of state power. In our context, power of a nation can be defined as the ability to assert state interests and preferences in international affairs by drawing from beneficial resources that may vary in different decision-making situations. The new BPSM is a tool to explore the hallmarks of power, cross-validate scientific findings and provide strategic insights into the patterns, scope and nature of power shifts around the globe.

A major concern of states is not only their status quo position, but also their future for which they desire a better, not to say the best possible place in the pecking order of a globalized world. Traditional power measures degrade the issue of shifts to second class. First, they showcase a ranking of the most powerful states. Then – if at all – they discuss the developments of this power score. The Bonn Power Shift Monitor, as evident in its name, turns this research direction upside down. Based on eight selected indicators¹ of state power, the Monitor uncovers the shifts in the categories in both relative and absolute terms. While questioning the robustness of a state's power base, the approach still enables statements about the most powerful countries. By concentrating on power shifts, the BPSM identifies the domestic and transnational influences on the pace and scope of the shifts which will ultimately determine the world of tomorrow.

The heavyweights in the global arena are usually in the spotlight of stakeholders in politics or economy as well as in society or academia. Commonly known as the G20, these 19 states plus the European Union boast the largest economic market on earth and are of major political importance as global rule-setters. Since the Bonn Power Shift Monitor concentrates on power shifts between states, the European Union as an international organization *sui generis* is excluded from the analysis in the present issue.

The striking trends in power shifts among the 19 nations between 2005 and 2015 are presented in the first section of this publication. Followed by an analysis of trends across the BPSM categories, the chapters provide an overview of the dynamic pattern of power alterations visible in just one decade. Thereafter, a selection of seven BPSM country reports illustrates the analytical opportunities of our approach. The profiles of the United States of America, the People's Republic of China, Germany, the United Kingdom, Russia, Brazil and South Africa are also available online in addition to the other G20 member states' reports and further analyses. As we have based the BPSM on the principles of transparency and accessibility, we decided to include freely available data only and apply an unpretentious calculation method as presented in the methodology chapter at the end of this publication. These requirements gave rise to the selection of the decade from 2005 to 2015 as the period under investigation.

The selected time frame allows for the study of alterations in the distribution of global power. At the same time, the tool itself is designed to be constantly updated and extended as new data become available in the future. Therefore, the new BPSM provides a useful approach to delve into the topic of global power shifts, to carry out substantiated analyses and to invite you to customize it for your own research.

In this jubilee publication of the Bonn Power Shift Monitor, we will showcase

1 The indicators are presented in the methodology chapter.


1. ... that the United States of America is still the most powerful country in the world.
2. ... that the United States of America is also the top power loser of the 2005 to 2015 review.
3. ... that during the same time period, China is the top gainer of power.
4. ... that the global order is shifting towards bipolarity as China's catching up with the United States' aggregated power level is projected for as early as the 2020s.
5. ... that without exception all traditional "Western" powers in the G20 have lost global power since 2005.
6. ... that Asia has become the most powerful region of origin among the individual G20 member states.
7. ... that even though the Latin American members of the G20 cannot keep up with the pace of the Asian rise, they have likewise expanded their global influence since 2005.
8. ... that in terms of middle power hierarchy, a significant rearrangement can be detected.
9. ... that the distance between the power levels of the individual G20 states has narrowed since 2005, whereas the disparity of power distribution on a regional level has grown.
10. ... that there is no single country among the G20 that has lost absolute weight on an aggregated level.

Based on these findings, we recommend to further intensify research on patterns of global power shift. The results should encourage the scientific community to discuss the future of power and its impact on the global order as we know it today. Furthermore, the BPSM advises policymakers to recognize their state's current position in the global system of states and use this knowledge to create a balanced framework for global decision-making. The rapid power shifts in an age of globalization have a great impact on the world we live in. Yet everybody should be advised to be cautious with predictions about perceived power clashes between cultures or nations. Thoughtless statements may harness dangerous decision-making, so it is up to everyone at the table to realize the implication of power transition and to do their best for cooperative global politics.


Power Shifts between

The nineteen individual states of the G20 are the starting point for our power shift analysis. We selected these major economies as they are key decision-makers in regional and global governance. A first glance at these nineteen major states (G19) reflects their preponderance in all aspects of power. From 2005 to 2015, these states gained weight in only three out of five Bonn Power Shift indicators: GDP, merchandise export and top companies. In the remaining five categories, their aggregated change rate lags behind the global trend which deprives them of some shares representing their shifting power status in international affairs.


GDP

Global Change Rate: +75.6 %
G19 Change Rate: +76.89 % 
G19 Global Shares: 2005 – 72.39 %; 2015 – 72.92 %
Top-Gaining Country: China
Relative Trends: 5 out of 19 gained global shares
Absolute Trends: all G19-states increased their GDP

Merchandise Exports

Global Change Rate: +56.76 %
G19 Change Rate: +59.81 % 
G19 Global Shares: 2005 – 59.70 %; 2015 – 60.86 %
Top-Gaining Country: China
Relative Trends: 9 out of 19 gained global shares
Absolute Trends: all G19-states exported more goods

Service Exports

Global Change Rate: +82.49 %
G19 Change Rate: +77.91 % 
G19 Global Shares: 2005 – 56.37 %; 2015 – 54.96 %
Top-Gaining Countries: China & India
Relative Trends: 6 out of 19 gained global shares
Absolute Trends: all 19 states exported more services


Military Troops

Global Change Rate: -3.86 %
G19 Change Rate: -9.98 % 
G19 Global Shares: 2005 – 51,31 %; 2015 – 48,05 %
Top-Gaining Country: Mexico
Relative Trends: 8 out of 19 gained global shares
Absolute Trends: 8 out of 19 increased their troops

Defense Spending

Global Change Rate: +22.38 %
G19 Change Rate: +21.58 % 
G19 Global Shares: 2005 – 82.05 %; 2015 – 81.52 %
Top-Gaining Country: China
Relative Trends: 10 out of 19 gained global shares
Absolute Trends: 15 out of 19 increased expenditures

Top Universities

G19 Change Rate: -4.67 % 
G19 Global Shares: 2005 – 75.0 %; 2015 – 71.5 %
Top-Gaining Country: Great Britain
Relative Trends: 8 out of 19 gained global shares
Absolute Trends: with 143 top-rated universities, the G19-states lost 7 ranking places compared to 2005

Top Companies

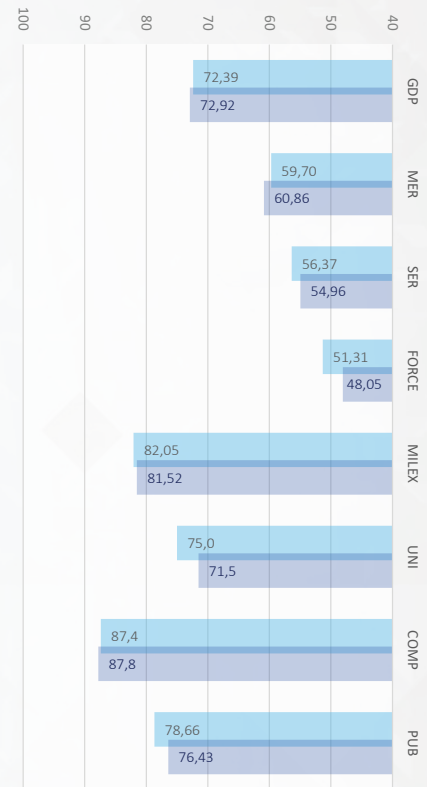
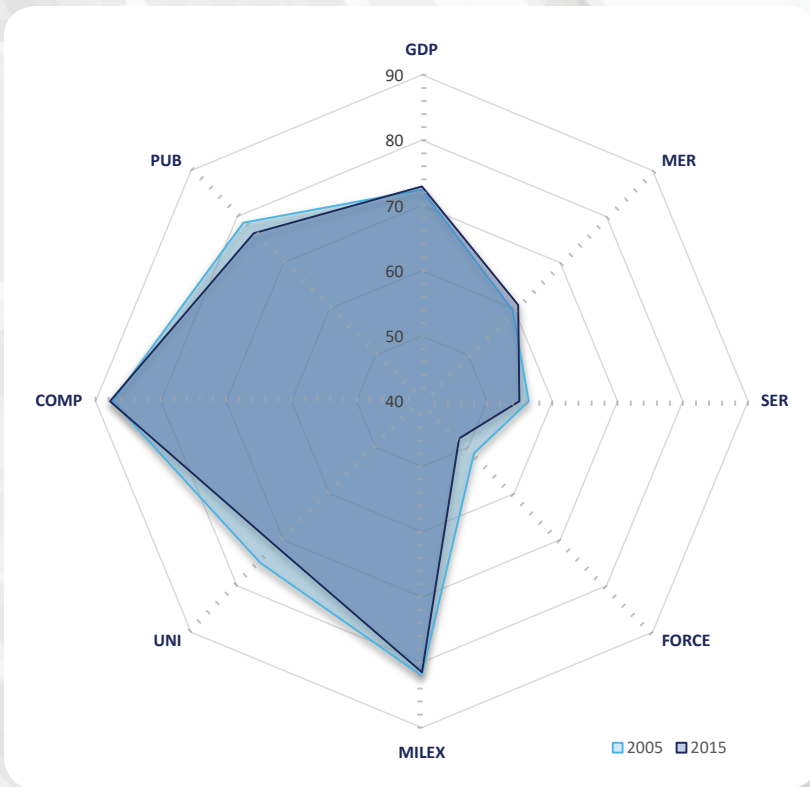
G19 Change Rate: +0.46 % 
G19 Global Shares: 2005 – 87.4 %; 2015 – 87.8 %
Top-Gaining Country: China
Relative Trends: 8 out of 19 gained global shares
Absolute Trends: with 439 companies on the list, the G19 states won 2 ranking places compared to 2005

Publications

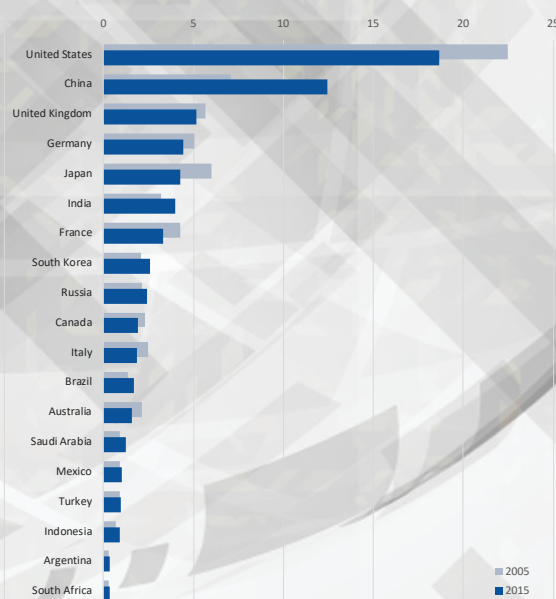
Global Change Rate: +55.63 %
G19 Change Rate: +51.22 % 
G19 Global Shares: 2005 – 78.7 %; 2015 – 76.4 %
Top-Gaining Country: China
Relative Trends: 12 out of 19 gained global shares
Absolute Trends: 18 of 19 published more articles; JPN

2005 and 2015 at a Glance

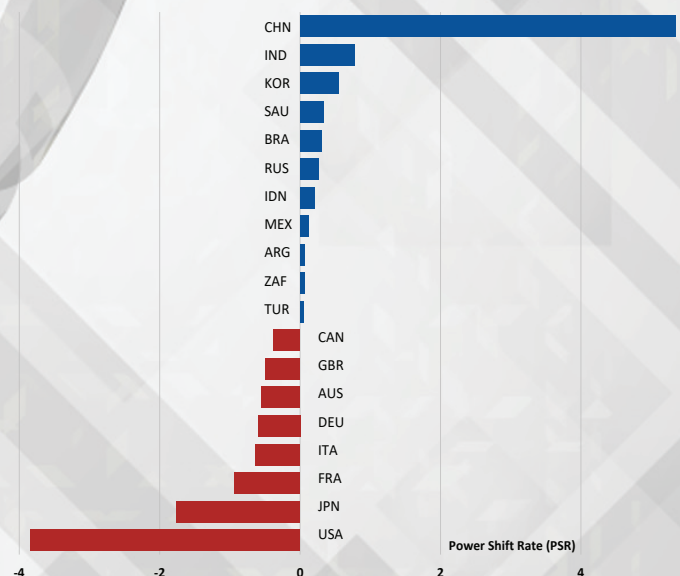
Global Shares of the G19 States per Indicator



Power Scores of the G20 States



Power Shift Ranking 2005 to 2015 states



Cross-Country Comparision

A Power Shifting Decade

Globalization, the financial crisis, and political turbulences have left their mark on the world we live in. State power is shifting on multiple levels and has already reshaped economic but also political and social relations around the globe. While a sense of shifting power between and beyond states has been increasingly propagated over the last years, “there is a serious lack of scientifically funded measurements to confirm or deny the perceived global power shift”.¹ The Bonn Power Shift Monitor aims at filling the gap by providing a theory-based, systematic investigation of power shifts. The Monitor examines the nature of global power shifts between 2005 and 2015 of the globally leading states, illustrating the multifaceted alterations the world has experienced within the last decade. By merging the eight categories of service exports, merchandise exports, GDP, military expenditures, armed forces, top-rated universities, publication output, and the world’s largest companies, the Monitor provides guidance in the complex configurations of

“There is a serious lack of scientifically funded measurements to confirm or deny the perceived global power shift”
Xuewu Gu 2010: 53

international power arising from the combination of hard, soft and structural sources reflected by our selected indicators. In order to complete the picture, we supplement the international figures with the country trend to gauge the specific development.

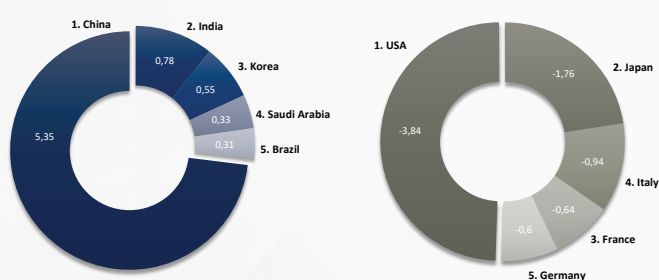
The 2005 to 2015 decade saw major advances in technology, communication, and science. Yet the world saw not only years of prosperity, but also a grave global recession that pushed

some states to their limits. Even in 2015, the world economy had not fully rebounded from the financial crisis.² The collapse hit hard on the highly industrialized

and interdependent states, especially the United States of America, but also curbed the trajectory of growth in the so-called developing countries. Already in the pre-crisis years, the developed states were challenged by emerging economies which were not only provided with new opportunities and increasingly caught up, but also demanded a corresponding voice in international affairs.

On the aggregated level, the Bonn Power Shift Monitor finds that the traditional highly developed countries³ on the rating list are, with the exception of South Korea, among the power losers of the period under review. Thus, the United States (-3.84), Japan (-1.76) and France (-0.94) have surrendered the largest shares of power expressed by the Power Shifts Rates (PSR) applied here. On the other side, the lucky winners are China (+5.35), India (+0.78), and the Republic of Korea (+0.55). Saudi Arabia, Brazil, Russia, Indonesia, Mexico, Argentina, South Africa and Turkey present positive power trends, indicating that developing and transition countries have been among the power winners of the last decade.

Top 5 Power Gainer vs. Loser of 2005-2015



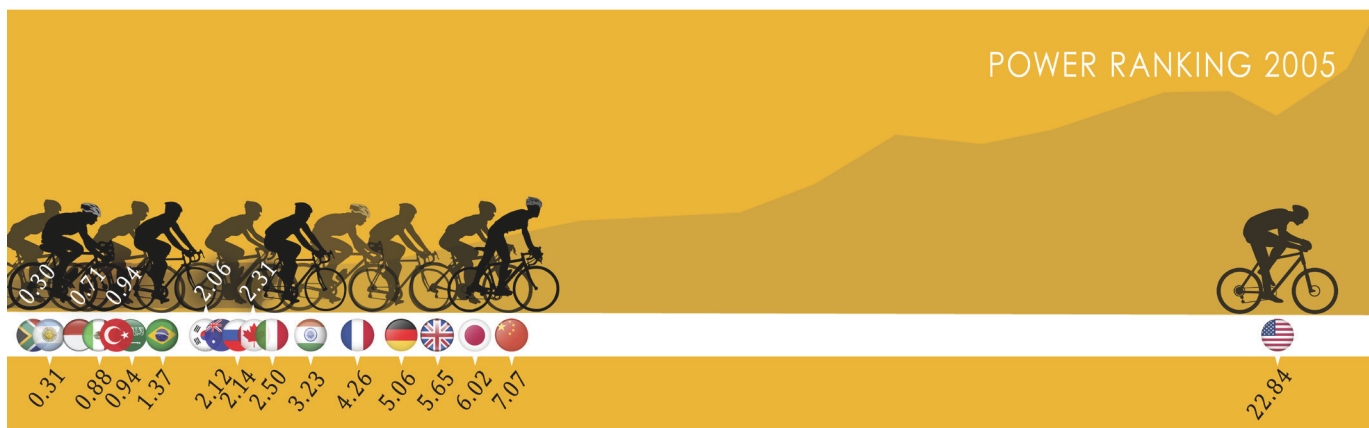
state power.

In our understanding, political power in international affairs is inherently linked to the relative position of a state in the global system. While resources do not directly translate into political power, there is nevertheless a strong link between relative strength and agenda setting or the assertion of interests. Therefore, we apply a share-based understanding of

¹ Gu 2010: 53

² United Nations Conference on Trade and Development Report 2015: 1

³ This refers to those countries which were already rated highly developed by the United Nations Human Development Index at the turn of the millennium.



Different Paces of Power Shifts

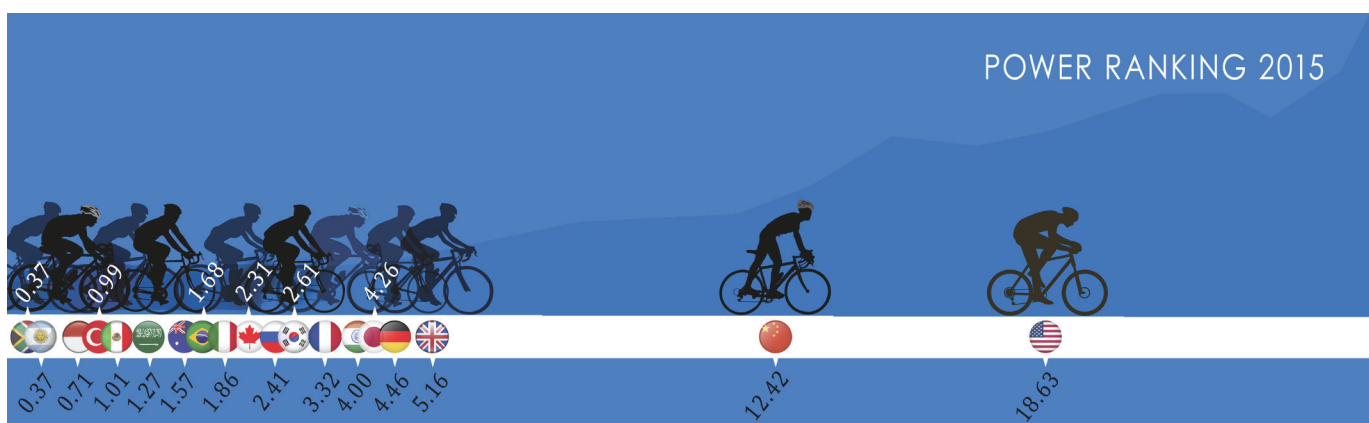
Power shifts among the world's leading economies take place with different dynamics in terms of pace and intensity. Taking together the shifts of all 19 member states of the G20, we note that the losses were in sum higher than the gains on a global level. This overall negative aggregate hints at the development rates of states beyond the G20 that increasingly demand a greater say in world politics. Breaking down the aggregate, the Bonn Power Shift Monitor finds that the positive and negative shifts are unequally distributed among the leading states under review.

Turning to the positive shifts of the 2005 to 2015 period, China, as the strongest riser, makes up almost 66 percent of all gains. By contrast, the other Asian risers India, Korea, and Indonesia account for one fifth of the observed power gains. The Latin American triple team of Brazil, Mexico, and Argentina show a substantially lower speed in their rise as only around 6.2 percent of all power gains are assigned to them. Thus, the period from 2005 to 2015 constitutes an era of Asian power rise – with Japan being the only exception among the G20. As the second largest power loser, the country alone accounts for almost one fifth of the recorded power losses of the individual G20 states. Nonetheless, the United States surrendered more than twice that volume and make up more than 40 percent of the measured losses. The four European individual member

states of the G20, Germany, France, Great Britain, and Italy, have also been affected, though on a smaller scale, as they together account for 29.1 percent of the discarded shares.

In fact, the United Kingdom shows the greatest power resilience. Since 2005, the island state has lost less than nine percent of its power base. Japan – the state of the least power resilience – suffered a loss of thirty percent in its BPSM Power Score, which in turn underscores London's persistence. To illustrate: In 2005, Japan was the third most powerful country among the G20 member states with a score of 6.02, only the United States and China had higher Power Scores. The United Kingdom was placed fourth with a Power Score of 5.65. By 2015, Japan had slipped down to fifth place with a score of 4.0, whereas London maintained its third rank with a BPSM Power Score of 5.2. Therefore, a rearrangement in the hierarchy of these traditional powerhouses due to different levels of persistence has taken place.

On the positive side, Turkey is the country with the slowest power progress as it has enlarged its Power Score by only +5.5 percentage points. The fastest gaining states are China and Saudi Arabia. China enlarged its Power Score by more than three fourths from 7.07 in 2005 to 12.42 in 2015. Saudi Arabia expanded its power base by more than one third from 0.94 to 1.27 over the same years. The pace of power development needs to be measured at a country's starting position and

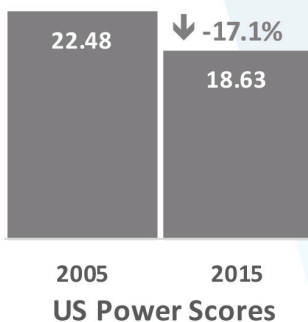


Power Shifts between 2005 and 2015

10 Key Findings

1

The **United States of America** is still the most powerful country in the world.



The **United States** is the top power **loser** in the 2005 to 2015 BPSM review.

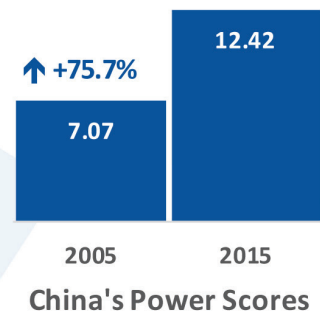
It has lost the most shares in four out of eight categories: GDP, military expenditures, top companies, and scientific publications.

2

3

China is the top power **gainer** in the 2005 to 2015 BPSM review.

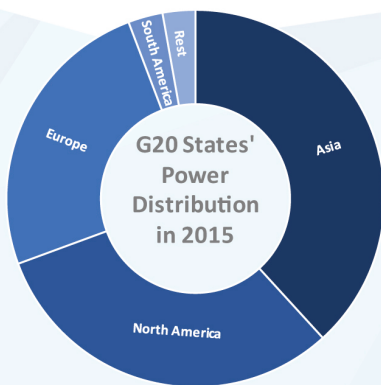
It has won the most shares in five out of eight categories: GDP, merchandise exports, service exports, military expenditures, top companies, and scientific publications.



4

The global order is shifting towards **bipolarity** as China's catching up with the United States' aggregated power level is projected for as early as the 2020s.

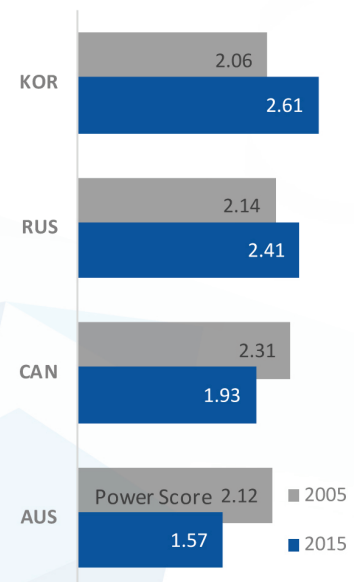
5 Without exception, all traditional **“Western”** powers in the G20 have **lost** power shares since 2005, as they cannot keep up with the rise of the emerging powers.



6 The **Asian members** of the G20 show the greatest thrust in power growth (except for Japan), so that Asia has surpassed the three North American G20 states in power.

7 The **Latin American** members of the G20 cannot keep up with the pace of the Asian rise, but have expanded their global influence since 2005.

8 The **middle power hierarchy** has been **rearranged**: The emerging middle power South Korea surpassed the power levels of the traditional middle power Canada and Australia and even that of Russia.



9 The **distance** between the power levels of the G20 individual states has narrowed since 2005, whereas the disparity of power distribution on a regional level has grown.

10 There is **no country** among the G20 that has lost absolute weight on an aggregated level, but Italy has come close to stagnation in view of the country's specific development rate.

compared to other power sums and trends in order to gauge the nature of power shifts.

Unbalanced Power Development

In a cross-country comparison, the Bonn Power Shift Monitor records an unbalanced development of power. In a relative view, the most balanced upturn is found for China and Brazil, both of which have gained shares in seven out of eight BPSM categories. China has only lost weight in the category of armed forces, Brazil in the category of GDP (PPP). In an absolute view, Brazil even is the riser with the most symmetrical absolute development, as it has increased its domestic figures in all eight categories considered, whereas China also decreased its absolute armed personnel.

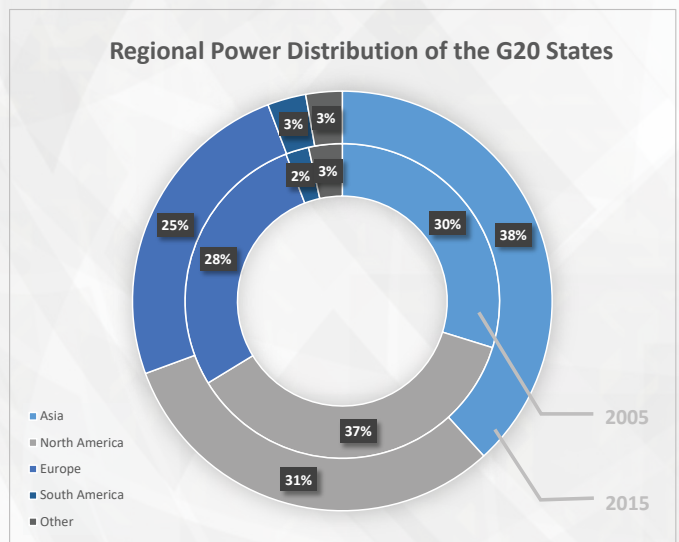
Opposed to this, the BPSM detects comprehensive power losses for France and Japan. While no country has gained global weight in all BPSM categories, the two traditional powers have indeed lost shares in all eight aspects considered. Then again, they do not tail off in absolute figures in all categories, but rather even record progress in some aspects. In fact, there is no country that has regressed in its domestic figures in all categories considered. Japan shows the weakest picture as its country-specific numbers decreased in five out of the eight categories, but for GDP, merchandise and service exports, even Tokyo presents a domestic growth trend.

Power Loss Is Not Demise

Taking a closer look at the results, the loss of relative state power cannot be equated to stagnation or decline within the countries. Quite the contrary and without exception, each reviewed state has managed to improve its internal capacities in absolute terms as expressed by the average of all categories. The correspondent Rate of Country Change (CC) is a longitudinal measure for each state's performance – the higher, the better. Only Italy with a CC-Rate of only +0.79 and Japan with +3.05 tend more to domestic stagnation rather than progress on an aggregated level. Even the United States as the world's biggest loser of power shares boasts the second highest Rate of Country Change among the power losers after Australia. Yet these absolute changes are well below the rates of the risers. Turkey is the riser with the slowest pace of 48.26, which is still significantly higher than Australia's respective result of 32.42. This highlights a central element of the power shift debate: The relative loss of global shares is not to be equated with a state's decay, but oftentimes an expression of smaller growth.

This is also reflected in the absolute Power Scores of the top winners and losers. Even though the United States, Japan, and France have lost significant shares, they are still placed at the top of the individual G20 members. The five most powerful states among the G20 members of 2015 are the United States of America (Power Score 18.63), China (12.42), the United Kingdom (5.16), Germany (4.46), and Japan (4.26). The weakest states on this list are Mexico (1.01), Turkey (0.99), Indonesia (0.92), Argentina (0.37), and South Africa (0.37). These figures underline that the traditional Western powers are still at the global top, though China has ascended to the highest ranks. Furthermore, the figures highlight the wide range of power levels in the G20 alone.

The United States maintains a leading edge as the primary global powerhouse, but the gap to second placed China has narrowed since 2005. India and South Korea have both managed to ascend to higher ranks by increasing their Power Scores. Nevertheless, the Bonn Power Shift Monitor does not primarily concentrate on the ranking positions, as power shifts evidently alter the distribution of assets. As a result, countries such as the United Kingdom or Germany move up one rank from 2005 to 2015 in absolute power terms, although they lose



power as expressed by smaller Power Scores. In contrast to this, among the twelve countries which did not change their position or even descend in the ranking of power, there are six states that gained power shares.⁴

Power Distribution Is Changing

In contrast to static power rankings, power shifts allow us to analyze the tendency of the redistribution of power, which projects future constellations on the proportion of change. On

4 CHN, SAU, TUR, IDN, ARG, ZAF.

average, the distance⁵ between the power values has decreased, i.e. the rated states have approximated their levels of power. Again, this underlines that the original power hierarchy is gradually dissolving and has transformed into a more equal footing.

Roughly speaking, the approximation between the individual G20 member states has happened on two stages. The main shift can be assigned to a power approximation between Beijing and Washington. While the latter accounted for 32 percent of power among the 19 states under review in 2005, its share was reduced to less than 27 percent in 2015. Conversely, China scaled up from around 10 percent to almost 18 percent over the same years. This is accordingly visible in their respective Power Scores: The United States boasted a score of 22.48 in 2005, which reduced to 18.63 in 2015. As aforementioned, China grew from 7.07 to 12.42.

The second stage of power approximation has taken place in the persecutor field of the two main powers. Within the chasing pack, the distance between the power levels of the states has shortened. This is particularly due to the aforementioned losses of traditional powers such as the United Kingdom, Japan or France as opposed to rising levels of secondary powers such as South Korea, India or Brazil.

This also hints at the changes in power distribution on a regional level: The Asian members of the G20 have gained the most shares since 2005. With this, they have surpassed the Americas in their power sum. The European members of Germany, France, Italy, Great Britain, and Russia again present greater persistence in their power levels as they made up one fourth of the G20 states' power in 2015, thus suffering a decline of only three percentage points. The South American countries, Brazil and Argentina, have also enlarged their regional weight. As they have gained not less than one percentage point, their power development pace stays behind that of the Asian G20 states. Interestingly, the difference in power distribution between the regions has increased, whereas it has decreased in a cross-country comparison.⁶

The shift in the distribution of global power may result in altered dynamics in world politics. First, the approximation of the United States' and China's Power Scores points at the evolution of a bipolar world order which seems to be arriving

faster than previously assumed. Nevertheless, in terms of political leadership, China still has to obtain a similarly sophisticated authority as the United States. Second, due to the power convergence at the top, the distance to the chasing pack has shortened. Thus, regional leading powers may gain more leverage in international decision-making. Third, the unequal power shifts show that the power transition among the world's leading economies does constitute a zero sum game, but rather hints at rising states outside the current G20 forum. Fourth, the Asian rise underscores a geographic shift of power among different world regions.

5 The standard deviation of the G19 Power Scores has fallen steadily from 4.98 in 2005 to 4.54 in 2015.

6 The standard deviation of the G19 regional power has increased from 15.93 in 2005 to 16.33 in 2015.

A Close-Up of BPSM Categories

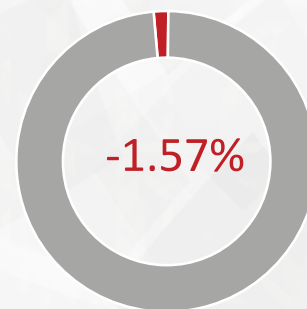
Recently, public attention is often directed at power shifts between the giants China and the United States of America. The Bonn Power Shift Monitor, however, takes into account the shifts among the 19 leading countries, the individual G20 states, in order to assess the dynamics and patterns of power shifts around the globe. The aggregate of all changes of these G19 states suggests that they marginally lost international power from 2005 to 2015 as expressed by a negative Power Shift Rate (PSR) of -1.11. In other words, the Power Score of the rated states decreased by 1.57 percentage points. In detail, the aggregated Power Score derived for the reviewed states was 70.36 in 2005 and 69.26 in 2015. As this score has a maximum of 100 standing for maximum shares in all categories considered, the 19 selected nations clearly hold the lion's share of global power assets. The negative Power Shift Rate signals that the relative power losses of certain countries (e.g. the United States) were not fully compensated by the gains of others (e.g. by China). Breaking down the Monitor, the nineteen countries produce or accumulate global shares between 48 to 88 percent in the rated categories reflecting the superior position of this small fraction of states.

Beyond the BPSM aggregated scores, such as the Power Score, the individual categories present different dynamics of change. In the categories of GDP, merchandise exports, and the world's largest companies, the states under review have managed on average to increase their global share. Opposed to this, combined shares dropped for service exports, armed forces personnel, military expenditures, scientific publications, and top-rated universities. The slightly negative Power Shift Rate presented before underlines that the gains could not make up for the relative losses in the categories. Yet in absolute terms, the 19 leading states boast increases in all indicators except for military personnel and top-rated universities.

In a cross-indicator comparison, the scientific publications indicator is the one with the most countries improving their global weight. From the 19 states under review, twelve have increased their global share, while only seven have lost weight in international comparison. In absolute terms, however, all but Japan managed to publish more scientific articles over

the course of the 2005 to 2015 period. Nevertheless, in the categories of GDP (PPP), merchandise and service exports, all 19 states under review increased their absolute figures. On a global scale, these categories do not show a similarly uniform picture. As the growth of some countries did not correspond to the global average, several countries have lost international weight in all three categories. The GDP (PPP) category even records 13 out of 19 countries with decreased global shares. As a result, cross-indicator figures signal that proportionate power

Power Shift 2005-2015



has shifted in irregular patterns, whereas absolute measures paint a brighter picture as in five out of the eight categories more countries have progressed rather than regressed.

Enhanced Economic Performance

In each of the economic categories (GDP, merchandise exports, and service exports), the selected states produce more than half of the global volume. Concerning GDP, these countries account for more than two thirds. In sum, the G20 member states managed to increase their GDP from \$47.5 trillion to \$84 trillion which is a decennial rate of change of almost 76 percent. With this, these countries slightly increased their relative economic weight in a global view, generating almost 73 percent of the world's GDP. However, the positive Power Shift Rates of the developing countries on the list cannot be ascribed to rising figures in this category as only five of them – China, India, Russia, Indonesia, and Turkey – significantly expanded their shares over the decade. Nevertheless, the rising GDPs at purchasing power parity (PPP) express improvements in the living standards of the rated states as all of them exhibit positive growth rates.

A similar pattern can be observed for merchandise and service exports, although they vary in their aggregated development. While the monitored states expanded their global shares of merchandise exports by 1.16 percent, they lost 1.42 percentage points of the global service exports. In total numbers, the states increased commodity exports from \$6.3 trillion to \$10 trillion between 2005 and 2015, which accounts for a rate of change of almost +60 percent. With this, the reviewed countries have gained weight in international comparison by cracking the 60-percent benchmark of worldwide exported commodities in 2015. China boasts the highest growth rate of almost +200 percent, which translated into an expansion of +6.51 percentage points in market shares. This expansion becomes even more impressive when comparing it to the second placed India. The most populous democracy in the world boosted merchandise exports by around +170 percent over the review period, which translated into a market share expansion of +0.67 percentage points.

Turning to service exports, the G19 increased their sales from \$1.5 trillion in 2005 to almost \$2.7 trillion in 2015. On a global scale, this development lags behind the average pace resulting in lower shares (-1.42 percentage points) for this category. Nevertheless, these states produce more than half of worldwide exported services in 2015 (around 55 percent). India has the highest growth rate in this category with an increase of almost +200 percent, translating into an expansion of +1.24 percentage points of its global share. In relative terms, however, it lags closely behind China, which increased its market weight by +1.51 percentage points.

The United States, which lost more than 4 percentage points of international GDP shares, increased both merchandise and service exports in relative and absolute terms. In regards to service exports, the United States (+1.43 percentage points) had the second highest wins in global market shares after China (+1.51 percentage points). US goods are increasingly demanded around the globe, which contradicts the narrative of a corrosive global reach.¹ In addition, while the United States'

GDP decreased in relative terms, it grew by almost +38 percent between 2005 and 2015, which again questions the claim of decline.

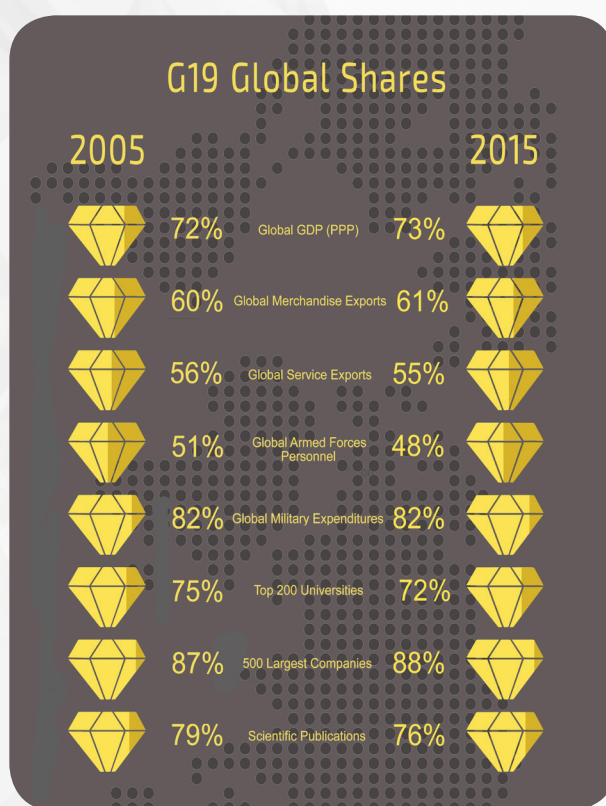
Defense Trends: Quality over Quantity

The BPSM records a reduction of armed forces personnel on the payroll of the reviewed states. No indicator included in the BPSM has seen a greater decrease and figures exceeded the global average reduction of military forces twofold. In 2005, the rated states provided more than half of the world's armed manpower counting over 14.6 million personnel. Within a decade, the number was cut down to around 13.2 million, corresponding to 48 percent of the military forces around the

globe. The steepest reduction in relative terms can be recorded for China with a loss of 2.8 percentage points of international shares, thus shrinking its active personnel by approximately a quarter. In terms of the domestic size, Germany has managed the largest decrease of almost 40 percent which equates to a loss of 0.35 percentage points of global shares. In contrast to this, eight out of the 19 states have increased their military forces in both relative and absolute terms: Mexico, Saudi Arabia, Russia, Brazil, Indonesia, Argentina, South Africa, and Australia.

However, the downscaling of armed forces personnel cannot

be viewed as a signal for demilitarization, as defense spending shows a reverse trend. The G19's military expenditures rose from \$1.1 trillion in 2005 to \$1.37 trillion in 2015 – an increase of almost +22 percent. The numbers hint at a modernization tendency among the leading nations focusing on military quality instead of quantity in human resources. On a global scale, the examined countries alone account for more than 80 percent of all defense expenditures. According to the Stockholm International Peace Research Institute (SIPRI), the thirteen largest military spenders are among the states under review of the BPSM, headed by the United States with 36 percent of the global spending in 2015. Within the G20 context, only the United Kingdom, Italy, the United States and Japan – which are all among the top 10 of the world's largest military spenders –



1 Cox 2011: 6

have decreased their military budget over the review period.² The steepest budget expansion has been implemented by China, Saudi Arabia, Russia, Indonesia, and Mexico. While China focused on the modernization instead of expansion of its military, Saudi Arabia, Indonesia, Russia, and Mexico combined the extension of defense staffing with budgeting on high levels. This trend points towards shifts in military might which have the potential to challenge established patterns of hard power.

Hubs of Innovation and Growth

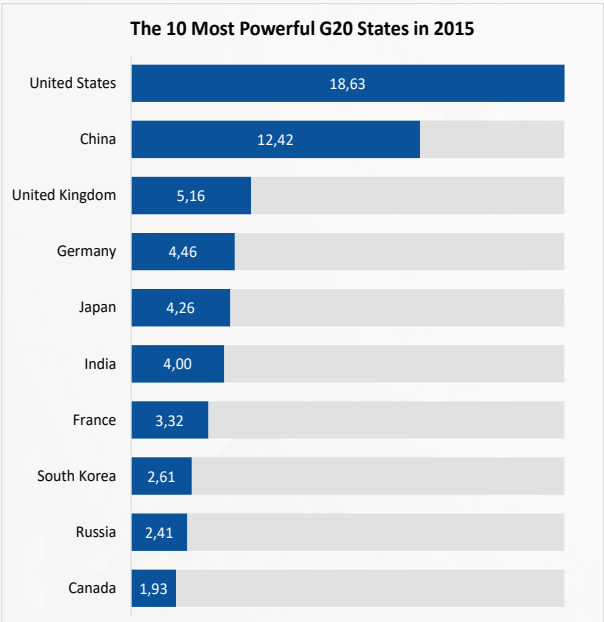
Turning to the microeconomic forges of development, the BPSM categories of top-rated universities, the world's largest companies, and publication output underscore the G20's status as hubs of innovation and growth. In each category, more than two thirds of the entities or articles can be assigned to the monitored countries alone.

Although the vast majority of top-ranked universities was located in the examined states in 2015, their number decreased from 150 leading faculties in 2005 to 143 ten years later, which still accounts for 71.5 percent. In relative terms, this means a loss of 3.5 percentage points. Only two countries, Indonesia and Turkey, do not feature any universities among the global top 200 in 2005 and 2015. Argentina, Saudi Arabia, and South Africa managed to place one institute on the list, thus

than it did in 2005, while the United Kingdom can proudly announce a plus of six entries on the ranking with a total of 30 in 2015. With this number, it still lags behind the United States with 49 top-rated universities, though the latter lost six entries. The United States is not alone with this negative trend as six other countries also lost academic reputation indicated by their number of leading universities.³ The biggest loser, Australia, saw more than half of its universities struck from the global top ranking (from 17 to 8).

While the BPSM records a slightly negative tendency regarding top-rated universities, the opposite is true for the world's largest companies located in the examined states. In 2005, 437 of the 500 companies on the Fortune Global 500 list were located in these 19 states alone. In 2015, figures slightly increased to 439, equal to almost 88 percent of the world's largest corporations measured by revenues. The plus in leading companies seems to represent a more positive pattern for the reviewed states in comparison to the development of the university ranking. Among the G19, only two countries, Argentina and South Africa, do not host any Fortune 500 enterprises. Likewise, both states did not boast any top-rated universities, which underscores a micro-structural power lack. In contrast, Indonesia, which also did not have any top-ranked universities, provided a breeding ground for two companies on the Fortune's list in 2015. Again, eight of the 19 states have gained ranks on the list, while seven have been ousted. The biggest winner is China, managing to increase the number of top corporations from 16 in 2005 to 98 in 2015. Australia, Canada, France, Germany, Japan, Great Britain, and the United States, however, have lost entries on the list. Similar to the changes on the university index, the United States holds the largest share among companies in the Fortune ranking, while still losing the most entries with 175 companies in 2005 and 128 in 2015.

Scientific progress is one key correlate to economic growth, which is one reason why a growing number of developing countries has increased expenditures for education, research, and development over the last decade. The BPSM explores the progress of these efforts by not only tracking the number of leading universities and companies, but also of scientific publications. The volume of the latter signals the dissemination of knowledge and the presence of an educated citizenry in the respective country, which affects



belonging to the eight countries in the BPSM which increased their total number of top-rated universities. South Korea and Great Britain recorded the greatest increases. The Asian riser lists four universities more on the ranking (7 in total) in 2015

3 Comparing 2005 to 2015, India, Russia, Australia, Italy, France, Japan, and the United States have lost entries from the QS ranking of the top 200 universities.

both individual prosperity and global state competitiveness.

Over the period under review, the surveyed states increased their publications volume by more than +55 percent. As this growth rate lags behind the global average, the individual G20 member states have lost more than two percentage points of their world share. Nevertheless, these 19 states still publish more than two thirds of the scientific articles counted worldwide. Taking a closer look at these numbers, twelve countries have gained relative shares, whereas all but Japan have even increased their publication output in absolute terms. Similar to the above-stated changes, China has managed to gain the most global proportions (+6.72), while the USA has lost the most (-7.02). Considering the dimensions of relative and absolute changes, three developing countries stand out in their positive development: Indonesia, Saudi Arabia, and India. These countries managed to increase their publication output enormously. Frontrunner Indonesia boasts an internal change rate of +830 percent; to be precise, the number of Indonesian publications grew from only 545 in 2005 to 5,071 in 2015. Still, this number is only a fraction of the United States' preeminent output with more than 429,000 scientific articles published in 2015.

Moving Away from the Age of Unipolarity

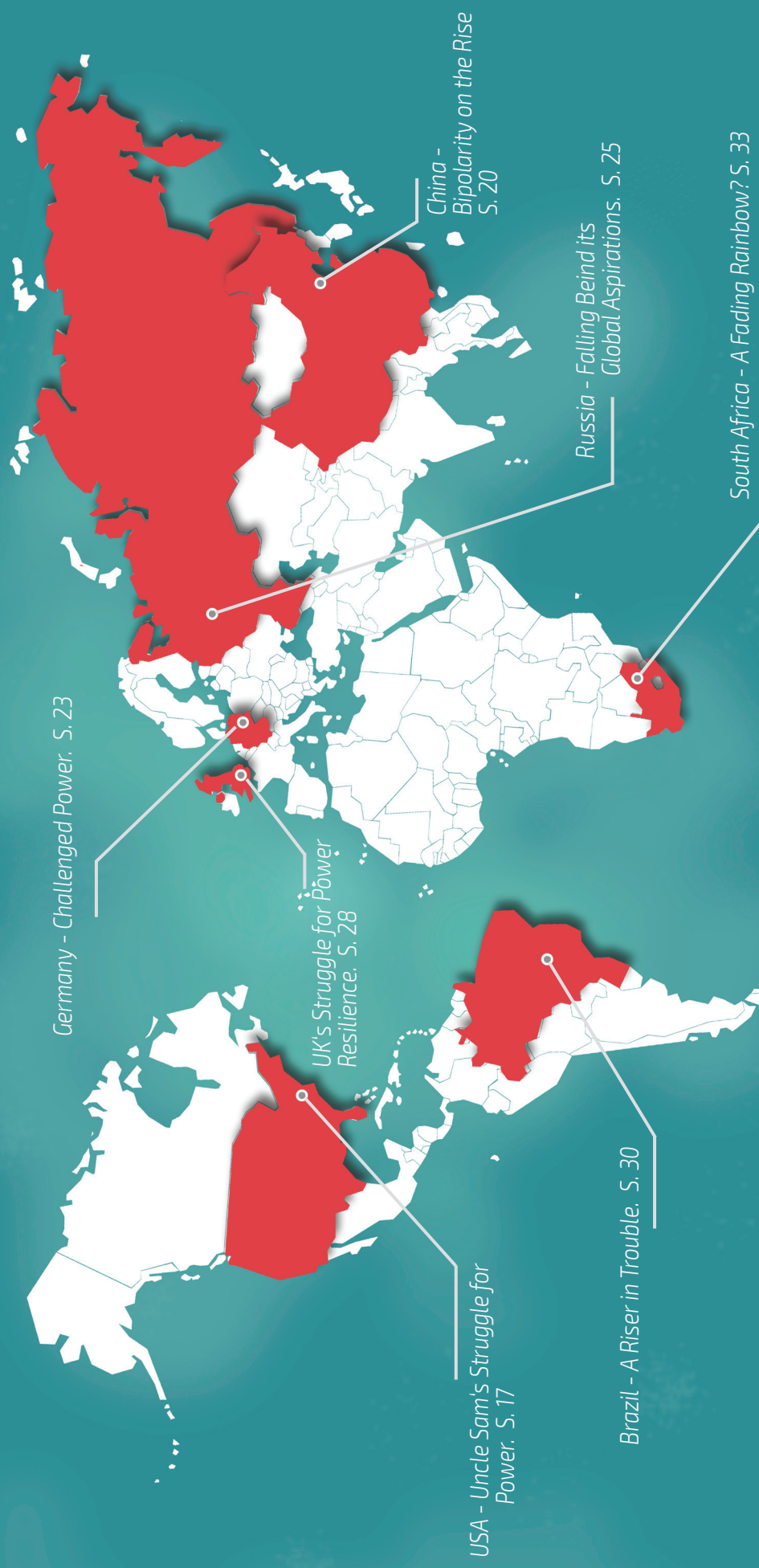
The Bonn Power Shift Monitor challenges traditional views on power distribution and development among the globally leading states. The traditional highly developed countries such as the United States, Japan, Germany and Great Britain still hold favorable positions in the international network of states. This is, however, increasingly changed by rising nations, as we find some alterations in the power hierarchy of the G19 in a 2005- 2015 review alone. There is already broad agreement that China, symbolizing the "return of Asia"⁴, has shifted power to its advantage over the years and even more rapidly in the age of globalization as signaled by the BPSM figures. Yet all emerging countries reviewed have added to their weights on a global scale over the period of observation, thus meeting traditional powerhouses on an increasingly equal footing.

While the current debate most prominently focuses on issues of "American Decline" and the "Rise of China", when taking into account the shifts projected by the BPSM, the debate and political agenda has to look beyond the issue of uni- and bipolarity and concentrate on the issue of a more equal say among the chasing pack of secondary powers, particularly in the middle power array that keeps converging in its political

and economic weight. The classic powers still have a leading edge, especially in terms of structural power, compared to rising states. As the world is moving towards the industrialization and sophistication of those formerly left behind, this gap between the old leaders and new risers is reduced or even closed. Therefore, in times of global power shifts, the leading pack of states should seek to invite the newcomers to the negotiation table and shape the future according to their shared interests.

Selected Countries Reports

The next pages offer the seven selected BPSM country profiles for the 2005 to 2015 power shift review. The reports for the United States of America, the People's Republic of China, Germany, the United Kingdom, the Russian Federation, Brazil, and South Africa may also be found online in addition to the other thirteen member states of the G20 as well as further analyses of the Center for Global Studies (CGS). We hope that this selection will pique your curiosity and deepen your meaning of global power shifts within and between the leading states of our globalized world.



USA

Uncle Sam's Challenged Primacy

The United States is the most powerful country in the world. This fact still remains after several years of power decline as it is widely perceived in the scientific community and beyond. The Bonn Power Shift Monitor counts a Power Score of 18.63 for the United States in 2015, which is significantly higher than the Chinese score of 12.42 and more than three times higher than that of the third ranked United Kingdom (5.16). However, the United States has suffered grave losses of global shares illustrated by the most negative Power Shift Rate (-3.84) among the individual G20 states. In other words, the United States has lost more than 17 percent of its power base since 2005. This iterates the widespread notion of a global power shift that leads to at least a bipolar world order with China as the rising Asian pole on the other front.

Having said that, the BPSM also notes that the relative decline cannot be equated to a decay, as the United States boasts a significantly higher country growth rate (CC +20.96) than other industrialized powers such as Germany, Canada, Great Britain, France, Japan or Italy. Nevertheless, the White House cannot rest on its reputation as a global leader as it is challenged in domains where the US traditionally enjoys a preeminent position, particularly in knowledge and innovation.

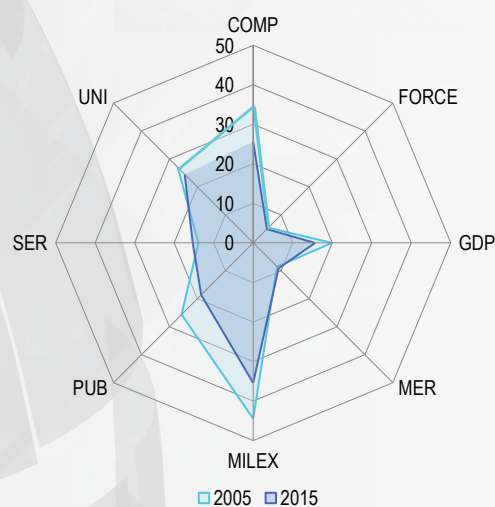
Military Hegemon

The United States has repeatedly been crowned the strongest military power in the world. Yet the Bonn Power Shift Monitor raises concerns about the sustainability of this assessment due to a significant reduction in absolute and relative figures in the hard power categories military spending and armed forces. Washington certainly dedicates by far the most resources compared to other countries. Even in 2015, the US alone accounted for more than one third of global spending. Committing \$596 billion for its military in 2015, Washington emphasized its hard power lead compared to a second placed

China with a volume of \$214 billion. Still, in 2005, the US proportion was significantly higher: it accounted for more than 44 percent of the global volume with a budget of around \$611 billion. Thus, the BPSM notes a more than nine percentage point loss of relative weight (MC).

In general, military expenditures were on the rise between 2005 and 2010 when they peaked at around \$759 billion.

USA's Global Shares

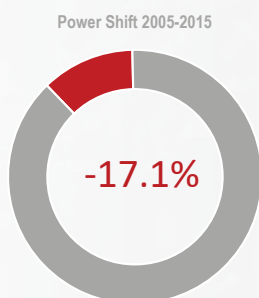


Comparing the 2015 level to this peak, defense spending was cut by more than one fourth. The budget is thus hardly keeping up with Washington's numerous missions around the globe.¹

The armed forces category further questions the notion of US hard power superiority as it only commands the fourth largest number of troops on the list. China, India and Russia presented larger armies in 2015 - China and India having even more than twice as many troops as the US. The White House employs more than 1.3 million armed forces personnel constrained by its population size. The breakdown of the figures reflects the modesty of this number, as it is by far the smallest

¹ Vörös 2016: 4

category of the US in the BPSM with less than five percent of the global volume. The challenged military hegemony is further



illustrated by two facts: firstly, Russia only recently surpassed the American force size in 2015; and secondly, the qualitative assessments of the Heritage Foundation warn against declining military capabilities and even assess the US' military power

as overall "weak".² As President Trump has promised greater resources for military modernization, the BPSM expects a greater emphasis on military buildup in the coming years.

Shifting Leverage

In economic terms, the competitive pressure between Washington and Beijing has heightened over the years. In two categories, GDP (PPP) and merchandise exports, China managed to surpass the US during the review period, whereas Washington expanded its lead in service exports. Many observers have interpreted the 2008 financial crash as the beginning of an American decline. While the BPSM notes a drop in the corresponding categories, it does in no way confirm the view of decay, but detects an ever-flourishing US economy. In relative terms, however, the plus in merchandise (MC +0.56 percentage points) and service trade (MC +1.43 percentage points) did not compensate for the decreased share in GDP (MC -4.3 percentage points) that emphasize again shifting leverage in international affairs.

When China surpassed the United States in GDP (PPP) measures in 2015, the question of declining a US primacy was reinforced. Despite grave losses in international weight, the US economy grew by more than one third over the period of inquiry. The US rate after 2009 was considerably higher than that of Japan (rank 4 of GDP) or Germany (rank 5) stressing its remarkable recuperation from the financial crisis in contrast to portrayals of decline. Up to today, Washington profits from the dollar's role as the world's predominant reserve currency, its vast natural resources and skilled labor underscoring unique hard, soft and structural power advantages.³ This is stressed by the relative and absolute extension of merchandise and service export figures.

The first grew by more than two thirds over the period

of observation to an export volume of \$1.5 trillion. From 2005 to 2008, Germany was the world's export champion in merchandises. It was first surpassed by China in 2009 and then by the United States in 2010. Since then, Washington has managed to outsell its NATO partner and has stayed significantly ahead of its trading volume. This reflects the competitiveness of the US economy in comparison to other fully-fledged industrialized countries. While that already hints at US key strengths, the service exports category points to its leverage in a globalized, knowledge-intensive world. Though the illustration of US global shares would not call for optimism, the examination of this category's plus clearly does. Over the research period, the United States more than doubled its service exports volume and also increased its leadership in relative terms. It exported double the volume than second placed Great Britain (\$351 billion), so that the United States has stayed the world's principal provider of diverse services. As usually compared to China, the United States traded more than three times more services than the Asian riser – stressing a strong structural advantage in human capabilities.

Frontrunner in Innovation

All three categories of innovation and structural hubs underline the primacy of the United States. Silicon Valley is an unrivalled global center of technology innovation and development – a symbol for an extraordinary combination of innovative soft, hard and structural power in the US. Being the nucleus of international business and knowledge networks is outlined by its preeminent position in the categories of top companies and universities. Nonetheless, Washington suffered great losses in both rankings. The company's category is of particular importance as it fields the greatest drop in relative and absolute figures: Washington lost more than a quarter of its global Fortune 500 businesses over the review period. Nevertheless, with 128 companies, the country had 30 more entries than China in 2015. Being home to global leaders such as Apple, Microsoft and Google exemplifies the dominant position of the United States in a technology-driven global economy.

Similarly, US universities are not only educational hubs, but international brands that educate the world elite and attract the best brains around the globe. In this category, the BPSM similarly notes the US' leading position with 49 elite institutes, but also records a negative, though irregular trend as Washington presents five less top universities in 2015 than in 2005. Nonetheless, it has significantly more leading universities than any other G20 state. In 2015, the US had 19

2 The Heritage Foundation 2015; 2018: 21
3 Lieber 2012: 89

entries more than second ranked United Kingdom and an even greater distance to Germany (11 top universities) or China (7). Among the top 10 faculties of the QS ranking, five are based in the United States alone. The Massachusetts Institute of Technology – MIT (1), Harvard University (2) or Stanford University (3) symbolize the global fame of US universities as leaders in research and education.

This is corroborated by the fact that US scientists publish more scientific articles than any other scientific community. The BPSM notes a strong shift in relative terms as the United States lost shares due to an enormous publication boost by Chinese researchers. On the one hand, this iterates the leading edge of the US in knowledge production and global dissemination. Having said that, the rapid development of China's scientific capabilities illustrates a qualitative catch-up process which was previously unrecognized. Publishing more than 411,000 research papers in 2015 (17.8 percent of the global volume), China came close to the US output of more than 429,000 (18.6 percent). This underlines a narrowing gap between these two major knowledge powers and becomes even more significant as the countries ranked next lag far behind that level. India, in third place in this category, reaches only slightly more than one fourth of the US' publication level. Washington thus stays at the forefront of cutting-edge science, technology and innovation⁴ which is the foundation for its leading position as well as unique soft, hard and structural power capabilities in a globalized economy.

The Heart of Global Networks

Writings about the shift of US international power tend either to be overly optimistic by overemphasizing its dominant position or too pessimistic by stressing relative losses due to rising powers, most prominently China. The BPSM concludes that the United States clearly is the heart of global networks, particularly in education and technological innovation which are key components of the knowledge-intensive global economy. Nevertheless, the primacy of the United States is shrinking as it is already surpassed by its main competitor China in some areas. It is oftentimes argued that China's power rise stays behind the American lead especially in qualitative regards of human capabilities and wealth. The BPSM, however, finds the US advantage in these terms particularly challenged, as China has not only expanded its economy, but also its living standards as access to education and wealth for broad sections of the population have increased.

The US is the current world leader in hard, soft and

structural terms, its military is rated the strongest in the world, Hollywood remains the core factory of American dreams and

The United States' leading edge in the BPSM 2015 ranking



ideas disseminated around the globe, and its brands in business and education remain renowned hubs. However, the data shows a diminishing US dominance. Its current primacy is built upon its core position in international regimes and networks best exemplified by the dollar or NATO. Yet its increasing abandonment of multilateral diplomacy, which originally accelerated the US hegemony, in addition to a volatile foreign policy prompts challenges to its traditional partners that may further affect the White House's weight in international affairs. As the leader of the free world, Washington has enjoyed and worked hard for its current achievements in the global system. This is clearly visible in the United States' leading position in five out of the eight BPSM categories. However, if we extrapolate the current trend based on BPSM figures, it seems likely that Beijing will catch up with Washington's level of power in the early 2020s. The forecast challenges statements of renowned scientists like Joseph Nye, who predicted that the US will remain more powerful than any single state in the coming decades.⁵ With China's growth slowing down and the US boasting solid growth rates, it remains to be seen if the global order will stabilize at some sort of bipolarity or move away from the power structures we know and currently live in.

CHINA

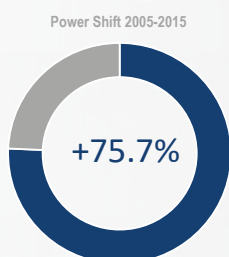
Bipolarity on the Rise

The Bonn Power Shift Index reveals that China's power significantly increased between 2005 and 2015. Within just a decade, China managed to increase its power by 75.7 percent based on our indicators, presenting also the highest Power Shift Rate (+5.35) of the nineteen countries under review. China is the top power gainer in five out of eight categories (GDP, merchandise exports, service exports, military expenditures, top companies, and scientific publications). With this shift, China holds the preeminent position in the categories GDP, merchandise exports, and armed forces. Its most important power gain is observed in the category top companies, as China houses the second leading businesses in the world after the United States and has thus overtaken Japan, France, Germany and Great Britain since 2005.

China is increasingly catching up to the world leader, albeit not fully attaining the United States' power level. In comparison: While the USA boasts a Power Score of 18.63 in 2015, China has grown up to 12.42 points emphasizing the narrowing gap between the two countries. This suggests that the global world order is moving towards bipolarity with two power centers in the West and the East.

Economic Leadership

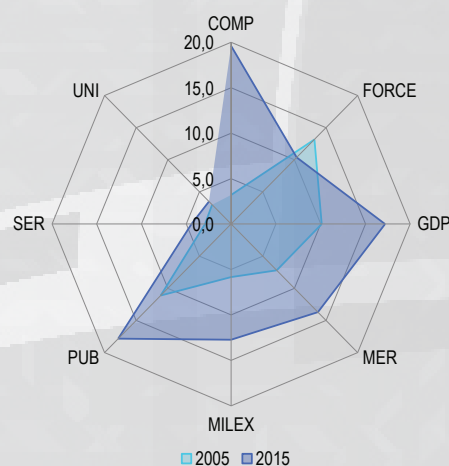
The BPSM reveals the magnitude of China's rise since only 2005. During these years, China has almost tripled its GDP (MC +7.07 percent), merchandise exports (MC +6.51 percent) and service exports (MC +1.51 percent) which translated to greater weight in these domains on the international level. The upturn is closely related to China's WTO accession in 2001 that enabled "the workshop of the world" to enter a new phase in globalization and trade relations, but also expanded its export dependency.



1 Poon 2014: 2

As a result, China has not only caught up to the United States, but has even overtaken its leading position in GDP measured by purchasing power parity and merchandise exports. More specifically, China exported 13.71 percent of all global

China's Global Shares



merchandise while the United States traded as much as nine percent. These numbers signal that China has shifted economic power in its favor which enables it to pursue far-reaching trade and infrastructural programs, the most prominent of which is the One Belt One Road Initiative. The New Silk Road reminds of ancient times of Chinese supremacy which is also part of the "Chinese Dream" envisioned by Xi Jinping aiming to restore the country's status as a leading power.²

While China has taken the lead in merchandise trade, it is by far not the greatest service exporting country. Though it has considerably increased its global weight, China finds itself behind the United States, Great Britain, Germany and France. This points at the strategic advantage of traditional "Western" powers in immaterial and knowledge-intensive sectors which is nevertheless increasingly challenged by China. The boom of globally leading companies signals China's evolving internal market as well as international competitiveness. No other country in the BPSM has managed to raise more leading

2 Sullivan 2014: 12

businesses in the review period than China. In 2005, there were only 16 Chinese corporations under the Global Top 500. In 2015, there were already 98 entries – an increase of unrivalled 512 percentage points. Finding many domestically orientated firms on the list seems to be unsurprising regarding China's growing population size and purchasing power. On the other hand, technological companies like Lenovo or Huawei stress its competitiveness in knowledge-intensive sectors on global markets.

Considering its flattening growth rates during the past years, the sustainability of its rise seems questionable. Having said that, its growth rates are still remarkable in contrast to the developed countries, signaling that China has not yet reached its full potential.

Upward Mobility for Millions

Economic upswing has also translated into upward mobility for hundreds of millions of Chinese related to e.g. vast investments into research and education, as well as social reforms. Combined with more than quintupled government spending in education under the Hu administration, China's society and economy is gradually shifting towards sophistication.³

This seems to be reflected by the top universities and scientific publications categories of the BPSM. The former observes the improvement of scientific reputation with the Zhejiang University entering the Top 200 ranking, so that China housed a total of seven leading universities in 2015.

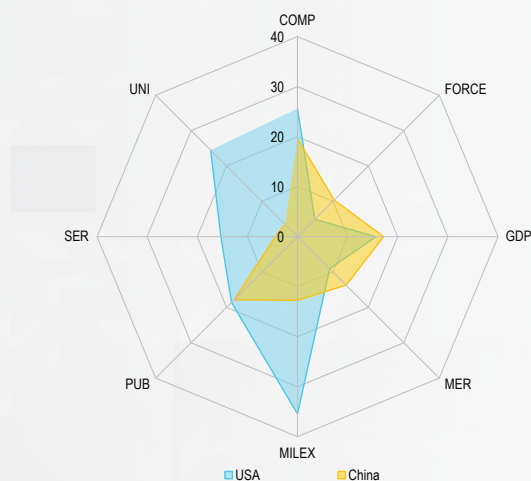
Although the number of top-rated universities has changed only incrementally, the number of scientific publications more than doubled between 2005 and 2015. On the international level, China almost reached the level of the US output with a total of 411,268 scientific articles in 2015 (USA: 429,139). In relative numbers, this is an increase of 6.72 percentage points since 2005 in global shares with Chinese publications counting for 17.6 percent of all S&E articles (USA: 18.61 percent). With this, China has become the second largest publisher of scientific articles in the world and even the largest producer in the field of engineering articles.⁴ This figure stresses China's rapidly developing capabilities that translate into a structural economic transition from the primary to unfolding secondary and services sectors.⁵ Moreover, the figures indicate that China

3 OECD 2016: 15

4 National Science Board (NSB) 2018: 8

5 Destatis 2017

Comparison of Global Shares in 2015

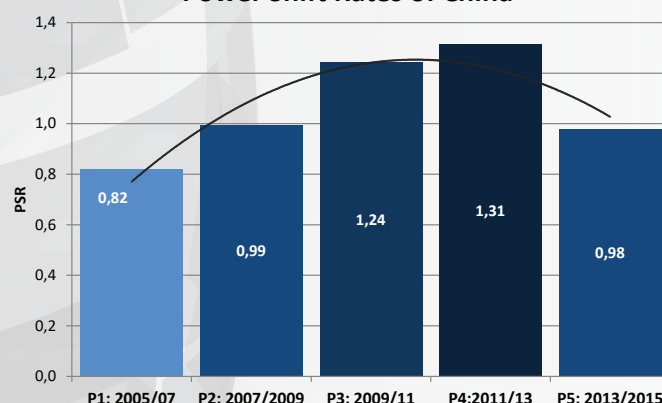


is becoming a research and development nation with the capabilities to invent the technologies of tomorrow, wiping off its former reputation as a copy-and-paste-country.

Military Modernization

Turning to the hard power military categories of the BPSM, two divergent trends are revealed: The number of armed forces decreased, whereas military spending increased. Though China decreased its troops by almost 25 percent, it still has the largest force in the world commanding more than 10 percent of the global armed forces. India closely followed the Chinese level in 2015, presenting a force size smaller by only 44,000 troops. Given its qualitative military capacities, observers estimate that China still lags behind the United States' defense capabilities, yet its modernization strategy does not go unnoticed.⁶

Power Shift Rates of China



Its military expenditures have more than doubled over the review period (ICR +166.96 percent). Allocating more than \$214 billion in 2015, China is the second largest defense spender in the world, but does not account for even half of the United States' expenditures of \$596 billion. In other words,

6 Rachman 2018: 10

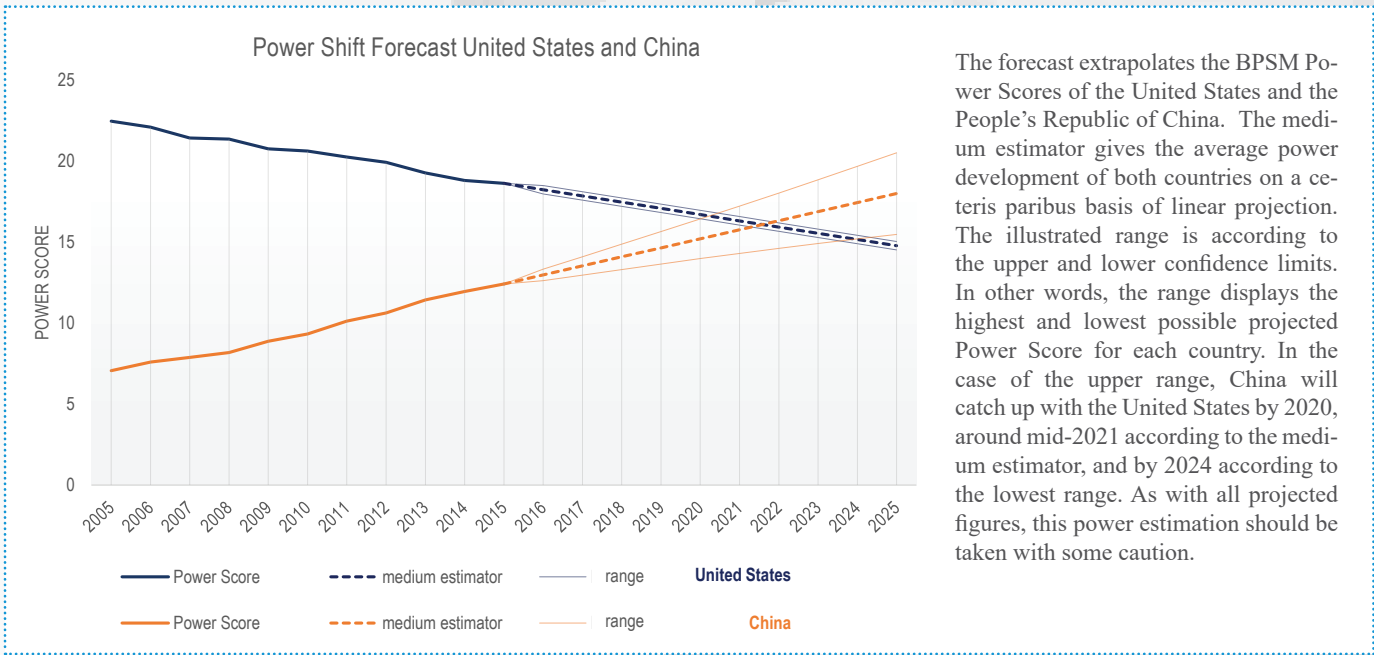
China spends as much as 12.7 percent of the global defense expenditures, whereas the United States contributes more than 35 percent. The Chinese Ministry of Defense underlines the issue of modernization in its Whitepaper⁷ emphasizing e.g. cyber defense and maritime capabilities. The magnitude of this modernization effort becomes clear looking at the third largest military spender Saudi Arabia that contributed just more than five percent to the global volume.

Bipolarity within Reach

Over the last years, China has risen to the global top. Even though it has not overtaken the United States as the world’s political hegemon, it certainly has the potential to rise up to its side in the near future. Projecting the BPSM aggregated scores, China will catch up with the United States in the 2020s. In contrast to the uncertainty of this forecast, the Monitor notes that in certain economic domains, China has already replaced the United States as the world leader which signifies an extraordinary increase in hard, soft and structural power. Owing to this preeminent position in the international system, China can increasingly voice and assert its interests and attract other countries to follow its lead.

7 Ministry of National Defence: 2015

Nevertheless, China still has to manage a multitude of internal and external challenges that endanger the sustainability of its rise, as well as reaching the next level of development. Party leader Xi Jinping has thus proposed numerous reforms countering corruption, modernizing the military and restructuring the economy, whose impact on China’s future power and its BPSM position still needs to be seen.



GERMANY

A Challenged Power

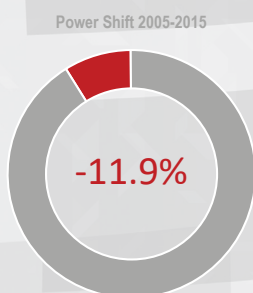
Germany is often perceived as one of the most powerful states in Europe. Based on the Bonn Power Shift Monitor, it is indeed the fourth most powerful country in the G20 after the United States, China and Great Britain. However, the Monitor also reveals that its Power Score has significantly declined over the last years affecting seven of the eight categories considered. Top-rated universities are the only positive category of the Monitor, but this positive mark could not compensate for Berlin's losses in other BPSM categories. For its development in the 2005 to 2015 period, Germany thus receives a negative Power Shift Rate of -0.6 which downgrades the country among the power losers of the Monitor to rank 15 out of 19. This rate illustrates an overall decline of 11.9 percent in the country's power.

Top Education despite Challenges

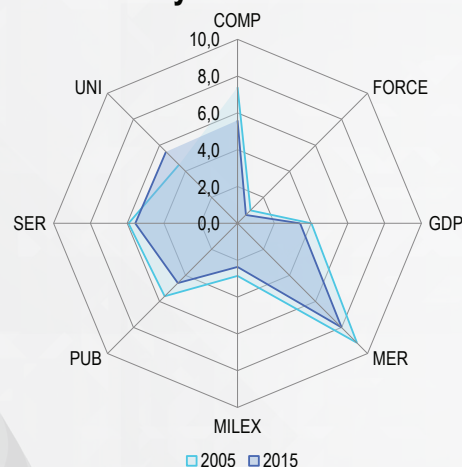
The only category in which Germany managed to increase its global share is top-rated universities. Here, the number increased from nine in 2005 to 11 in 2015, among them e.g. the University of Bonn. Its high scientific reputation is particularly visible in this category as only the United States and Great Britain present more universities on global rankings than Germany. Due to its increase and other states' losses in this category, Germany managed to surpass Australia, Japan

and Canada over the review period which each possessed eight top-rated universities in 2015. Having the third most globally renowned universities among the individual G20 states thus points to a structural

advantage in research and knowledge production. This should not be confused with a leading edge, as the distance to higher ranked Great Britain (with 30 elite universities in 2015) remains remarkably vast. Having said that, housing eleven renowned educational hubs in contrast to one, like Italy, is still a notable plus for Germany's soft and structural power.



Germany's Global Shares

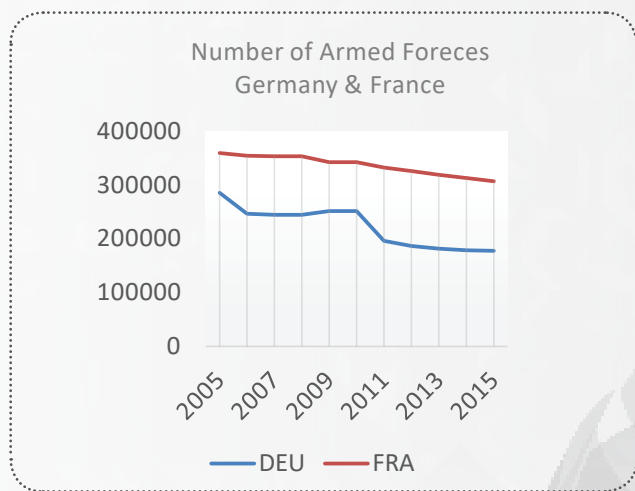


Crumbling Competitiveness

The BPSM reveals that Germany's leading edge on global markets has started to crumble. Considering the number of publications and top businesses, Germany has lost significant shares over the last decade. While Germans scientists published almost 30 percent more articles in 2015 (105,754) than in 2005, the overall global share in publications declined as the increase did not keep pace with the global trend. Yet Germany does not stand alone with this challenge as a similar pattern is visible for traditional knowledge producer like France and Great Britain. In this category Germany and Great Britain competed for fourth place among the individual G20 states over the review period. Germany succeeded and even surpassed Japan in scientific publications, but as India has enormously increased its output, Germany finds itself behind the Eastern riser.

Turning to the world's largest companies, there were 37 German corporations on the Fortune 500 list in 2005, but only 28 in 2015. This signals a loss of economic momentum and has the greatest impact on Germany's negative power shift rating in the 2005-2015 balance. Though Germany achieved sixth place among the G20 states, China and Great Britain managed to overtake Germany in this category. Furthermore, France continuously presents more Fortune 500 entries which very much relativizes the impression of a German structural edge.

This is further reinforced by other economic indicators like GDP and exports. The Monitor records decreasing international shares in service exports (-0.37 percentage points), merchandise exports (-1.18 percentage points) and GDP (-0.61 percentage points) – thus confirming that the German economy lags (at least



relative to other countries) behind the pace of globalization. This affects Germany's leading position particularly compared to emerging economies as it has already started to shift downwards, although the European power still belongs to the top performers in the world. For example, Germany was the merchandise export powerhouse in 2005, but was surpassed by China (in 2009) and the United States (in 2010).

In absolute terms, however, the country has experienced an overall positive trend. It managed to bring down high unemployment rates with the "Agenda 2010"-reform of previous chancellor Gerhard Schröder and even compensated the global financial crisis better than most of its European neighbors.¹ The economy shows healthy growth rates, which are the highest for GDP, merchandise exports and service exports among the European G20 individual states, though these are by far smaller than those of rising economies like China or Korea. As Germany's power is largely dependent on its economic weight, especially in regards to exports, the catching up of foreign competitors challenges all faces of Berlin's power.

Neglected Hard Power Capacities

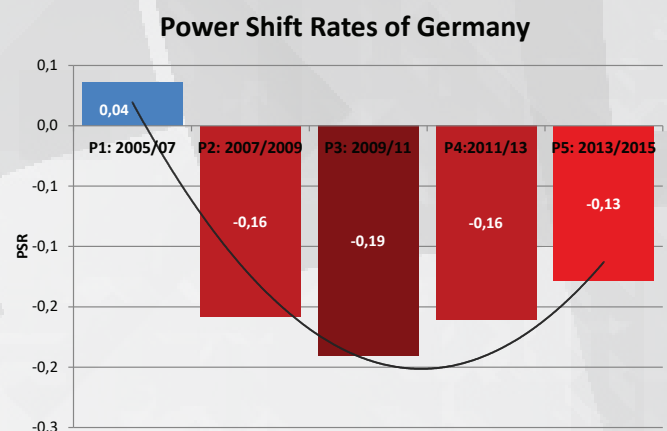
The military categories of the BPSM reveal a striking decrease in hard power capacities between 2005 and 2015. Germany lost global shares in both military spending (-0.49 percentage points) and armed forces (-0.35 percentage points). While the absolute figures reveal an increase in military budgets of 1.47 percent, the force size was reduced by more than two thirds.

Due to its militant past of the Nazi regime, Germany has developed the self-conception of a 'civilian power'. Though this should not be misunderstood as pacifism, the use of force remains a tool of last resort instead of typical foreign policy instrument.² Therefore, military capabilities are usually not even second order when it comes to the pursuit of national interest or discussions about German power. Underinvestment in the Bundeswehr culminated in the 2010 realignment reform that cut spending and military personnel. Since the 2014 NATO summit in Wales, however, there is an increasing awareness that the German forces are falling behind the demands of the alliance. This increased international pressure on Berlin that gradually revised its defense policy, aiming at higher expenditures and the recruitment of more military staff. Still, the numbers of 2015 and the annual reports of the Parliamentary Commissioner for the Armed Forces (Wehrbeauftragter) underline that Germany does not step up to its promises.

In comparison to its allies, e.g. France, the German defense numbers and trends underline its dependence on the alliance as well as its military backlog. Among the European countries, Germany has only higher military investments than Italy, whereas the latter commands more forces.

Powerfull but falling behing

Summing up, Germany still belongs to the world's leading powers. The Power Score of the country, deriving from the market shares of the categories in the model, was always among the five most powerful G20 countries over the period of observation. Yet, the scores reveal an overall decline in Germany's power base which may eventually result in a loss of political influence on the global stage.



Taking a closer look at the power shifts in the last decade, Germany was among the four largest power losers of the G20 countries since 2009. In the first years of observation from 2005

1 Pautz 2015: 33

2 Speck 2014

to 2007, Germany managed to increase its power on the global market, indicated by a positive Power Shift Rate of 0.8 for these years. When the global financial crisis hit in 2007, the country's favorable economic situation was challenged. Even though this is only one factor related to the declining power shares, it affected all European G20 countries studied by the Power Shift Monitor. The European powerhouse still has structural advantages in innovative capabilities and economic regards, although it also

suffered from the rising pressure of the unfolding economies in the east. Therefore, though Germany remains on the global top, the ongoing erosion of its dominant position underline that strategic challenges, particularly regarding innovation and defense strategy, need to be addressed.

R U S S I A

Falling behind its Global Aspirations

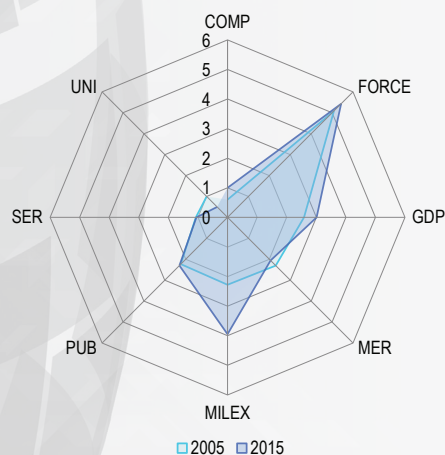
As the biggest country by territory in the world and remembering its former superpower status, the Russian Federation set its own aspirations high – not to say global. Based on a period of remarkably high growth in the 2000s, Russia is currently lagging behind its ambitions due to economic hardship and diplomatic tensions. Nevertheless, its overall 2005 to 2015 outlook remains positive, ranking Russia among the BPSM power gainers in place six with a Power Shift Rate of +0.27. In other words, Russia has increased its power base by 12.5 percent. As illustrated in the chart on the right, the power gains are largely owed to increased military expenditures, whereas negative rates for universities, merchandise and service exports curb Moscow's power expansion. With a Power Score of 2.41 in 2015, it is the ninth strongest nation of the G20 member states. Taking a closer look, however, its development takes quite a discontinuous path with volatile Power Scores.

A Serious Hard Power Player

Over the period of observation, Russia increased its hard power in numbers and also proved a willingness to project this power in foreign affairs. The conflicts in Georgia, Ukraine and

Syria stress Russian abilities to project its military might abroad. The already initiated modernization and build-up process was reinforced by the launch of military reform in 2008 after the Georgian war.¹ The build-up trend is particularly visible in

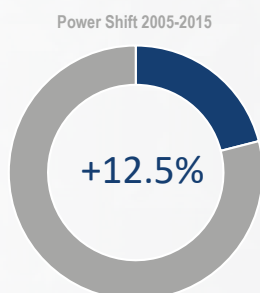
Russia's Global Shares



Russia's military expenditures which more than doubled in the period of observation. This enlargement is in fact the strongest plus for Russia's 2005-2015 power shift rating, hinting at a

1 Baev 2017: 181-182

special focus on hard power buildup. With a \$66.4 billion budget in 2015, Moscow is the fourth greatest defense spender in the world after the United States, China and Saudi Arabia. In absolute figures, however, this makes up only one fourth of the



Chinese and slightly more than one ninth of the US' volume of spending. Even though Russia's economy is groaning under recession, the upward trend in spending is a political project and had remained untouched until 2017.

There is also an upward trend in armed forces with Russia commanding the third largest troop on the list after China and India and 143,000 more forces personnel than the United States. Increasing its troop size to 1.49 million in 2015, Moscow gained hard power in relative and absolute terms. Yet until 2014, the priority was to modernize instead of enlarge the force which was reconsidered due to its foreign deployment. Both the enlargement and increased spending are reflected in the Russian 2014 Military Doctrine. The paper aims to improve the military infrastructure, strengthen the force, enhance combat readiness and upgrade equipment. Thus the Kremlin targets a holistic strengthening of military capacities in qualitative as well as quantitative respects that further bolsters its hard power assertiveness. Then again, the political elite has to manage harsh cutbacks due to economic hardship that ultimately required them to succumb to some austerity.²

Dependence and Stagnation

In the economic sense, the Russian hard power presents a mixed picture as the 2015 figures already suffer from recession. In the three macroeconomic categories considered by the Monitor, Russia gained only in the GDP category, but with a harsh decline to the 2014 level (GDP: MC +0.43; ICR +104.53). The continental power has clearly experienced a strong growth from 2000 to 2008 and from 2009 to 2014. The observed setbacks can be related to e.g. falling oil prices and foreign sanctions. Particularly, the former factor can also be observed in countries such as Saudi Arabia, whose merchandise trade is similarly reliant on oil exports and presents analogical gains and declines over the review period.

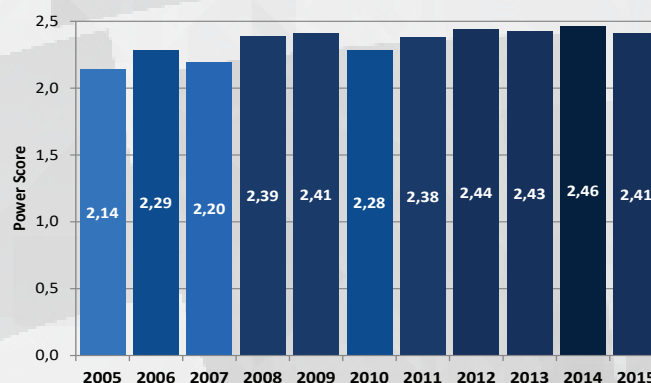
This is also visible in the comparably few number of globally leading companies. While their number rose from

three in 2005 to eight in 2014, Russia again lost three entries presenting only five companies among the global 500 elite. In view of its original great power status, this weak figure places Russia between Mexico and India and renders it incomparable to the first ranked United States, boasting 128 entries on the list of globally leading companies. In addition to reverted privatization, property rights violations are said to hinder the Russian business sector from flourishing. Asset-grabbing or corporate raiding is so widespread that the Russians even have a word for it: *Reiderstvo*. It describes illicit acquisition practices e.g. by law enforcement officers and courts.³ The Russian inertia to address business reform is consequently undermining its power in all – soft, hard and structural – dimensions placing it far behind other traditional powers.

Mismatch of Capacities

For service exports, the Kremlin's international importance is even smaller than for commodity trade. Export rates increased from \$28.8 billion in 2005 to \$51.7 billion in 2015. The volume peaked in 2013 and shows a similar downward curve as the merchandise exports related to similar reasons. With this, the Russian share almost stagnated at one percent of the global volume, whereas its merchandise makes up twice as much with two percent of the global trade. With this, Russia is placed mid-table of the G20 in both categories. The mismatch between the Russian potential and the economic numbers is even more striking for service trade than for commodities as

Russia's Troubled Rise



service exports reflect to some degree the link between human skills and international competitiveness. Despite its well-educated citizenship, Russia was not even ranked among the top 20 for total service exports by the estimate of the World Trade Organization (WTO) in 2015. This is a great lack in power realization and means a failure to meet the global market standards in skill-intensive industries.⁴

3 Hanson 2016: 27-31
4 Eberstadt 2017: 89

2 Baev 2017: 187

Contrarily, Russia has the structural advantage of a well-educated citizenship: 53 percent enjoyed tertiary qualification – a level far above any OECD country.⁵ Yet, the country hosted only one internationally renowned university in 2015: the Moscow State University, whereas it started off the research period with two entries. Still, Russia is not alone with this poor number in the G20 as also Argentina, Italy, Mexico, Saudi Arabia and South Africa present only one top 200 university in the QS 2015 ranking. Though Russian researchers published 60 percent more articles in 2015 than in 2005 (MC +0.07 percent), their output was still well below the OECD average⁶ and only twelfth among the G20 states. This indicates that Russia's knowledge society is at risk to fall behind the accelerated tempo of education around the globe. Even riser Brazil has managed to surpass the Russian scientific output in 2007 and stayed in front of Moscow until the end of the research period. With strongly increasing publications since, Russia has almost reached the Brazilian level and underscores its untapped scientific assets. The administration has indeed recognized the need for reform and tries to revitalize the scientific sector by adopting new performance measures and several roadmaps for research, including a 2013-2020 Mega-Science Infrastructure Projects program.⁷

Assertive Hard Power

Putin has promised to restore Russia's due credit in the global system. Moscow's present Power Score is largely based on ambitious hard power (military) buildup. When the boom dynamic of the 2000s dried up, politics and society were confronted with the consequences of delayed reform and dependence on global resource markets. Russia's assertiveness is expressed by regional thrusts in military as well as economic regards, e.g. in Ukraine or the Eurasian Economic Union (EEU). Crumbling state revenues due to sanctions and recession constrain further advances. Reorienting towards the unexploited potential of its high-educated population and managing domestic barriers to development offers opportunities for renovation and upgrading its global position. Though Russia has managed to surpass Canada's level of power over the period of observation, the Bonn Power Shift Monitor records no extraordinary upsurge as is the case for South Korea. Thus Russia's resurgence has overall stayed behind its own global aspirations over the period of observation.

5 OECD 2016: 2

6 Schaffmeister and Haller 2018: 169

7 OECD 2016: 6

GREAT BRITAIN

UK's Struggle for Power Resilience

The United Kingdom can look back on a long history as a leading power on the global top. Yet the last century confronted the country with vast power losses: its global empire disintegrated and the UK had to redefine its status. The BPSM presents the UK as the third most powerful state in the G20 after the United States and China, boasting a Power Score of 5.16 in 2015. While this sheds some glorious light on the island, it does not mean a stop in the country's relative decline in international relations. Quite the contrary, it has lost almost nine percent of its power base in comparison to 2005 (PSR -0.50), placing it 13th out of 19 for power shift. In fact, the UK has only reserved the title as the third most powerful state in the G20 due to the stronger decline of Japan that slipped from rank three to five. While the UK struggles to keep its strength in economic terms, it clearly defends its academic excellence which is the major reason why the island has stayed among the global elite.

A Shrinking Heavyweight

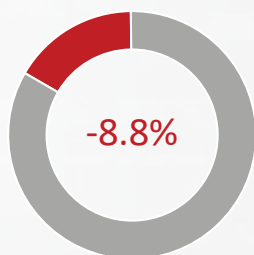
The UK's relative power loss is visible in all but one category of the Bonn Power Shift Monitor, underlining the importance of university excellence its global power status. In absolute terms, the economic categories of GDP, merchandise exports and service exports present positive growth trends. Adding the loss of six companies to the profile of economic power decrease, these four categories make up more than

two thirds of the UK's power decline in the 2005 to 2015 period.

Taking a closer look, its GDP rose by almost 40 percent making it the tenth largest economy in 2015

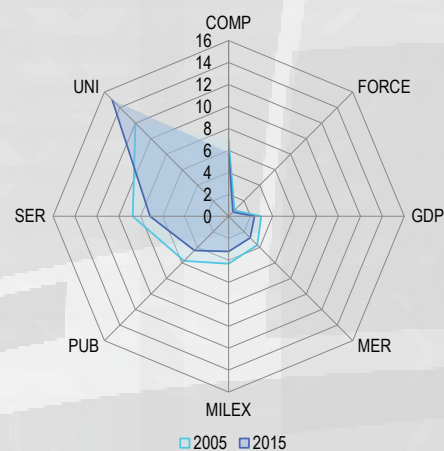
closely after France. The economy slumped in 2009 due to the global financial crisis, but quickly returned to and stayed on a growth path. In relative terms, however, its shares have been falling continuously over the period of observation (MC -0.61 percent).

Power Shift 2005-2015



The other economic categories show a similar, yet more uneven pattern. Its merchandise exports record an uneven development in absolute terms while its relative weight did recover until 2005. While the UK exported less merchandises

Great Britain's Global Shares



than Germany or France, it is the second greatest service exporter among the individual G20 states after the United States. Counting for more than seven percent of the global service export volume, the UK sure is a heavyweight in this regard. In 2015, it exported services worth \$460 billion which are almost 50 percent more than in 2005 (ICR). As this growth rate stays significantly behind the international trend (Brazil for example more than doubled its service exports), the UK lost international shares. With a loss of -1.58 percent (MC), service exports are the category that contribute the most to the island's power decline. Britain is widely known as a central financial hub with first class banking services attracting trade in finances from around the world. Despite this significant hard and soft power capability, the UK has not been able to balance its trade deficit which becomes increasingly negative. This reflects the sectoral differences in global influence and assertiveness which the BPSM shows is increasingly shrinking.¹

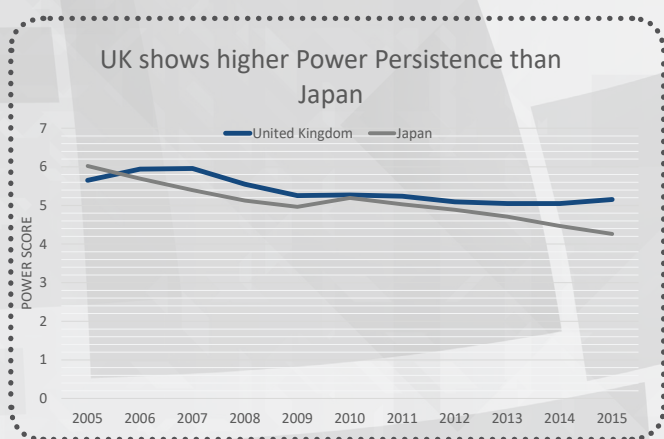
This is reinforced by the loss of six entries on the Fortune 500 list. Even though Britain housed the fifth most companies on the list with 29 in 2015, it stays behind the United States,

1 Destatis 2017: 5

China, Japan and France. In 2006, the UK even had 38 of the world's most valuable companies. Their number dropped to 26 in 2009, stressing the impact of the financial crisis on global elite businesses – particularly in the UK whose industry is dominated by large enterprises.² Even though their number rose to 29 again, the lower figures indicate weakened structural, as well as reputational and competitive capacities. Nevertheless, London is a commercial hub, but even before strong uncertainty was induced by the Leave Vote, its global image as a sustainable junction was considered to be damaged.

Reducing Hard Power

Britain enjoys the reputation as one of Europe's strongest military powers.³ The BPSM yet shows that the UK's hard power capacities are cut down in both absolute and relative terms over the 2005 to 2015 period. After a first phase of force reduction until 2008, Britain seemed to reorient and build up its forces, yet by 2015, the force size had been gradually reduced to almost 152,350 force personnel – almost 30 percent less than its 2005 amount of 217,000 armed troops. This also translated into an incremental loss in world shares (MC -0.21 percent) and reduces the UK's forces to one of the smallest among the individual G20 states (15/19). Remarkably, the British forces are even smaller than Germany's.



The decline in hard power is also visible in the UK's spending pattern, indicating the abandonment of hard military capacities as an activist foreign policy tool. While the British government has proven to be an ally in Afghanistan and Iraq, fatigue and financial issues seem to have impacted a stronger inwardly oriented defense policy. Defense budgets remain yet on a high level as the UK is the sixth largest military spender on the BPSM list in 2015 with a total of \$53.9 billion. Compared to its relatively small force size, this high degree of spending would signal a strong hard power focus, if it was not cut down

its original 2005 level (MILEX: MC -1.12; ICR -9.23). The reduction is even greater comparing the peak in spending in 2009 to the 2015 volume, showing an almost 18 percent cut in expenditures. As the White House is currently urging its NATO allies to take care of their limited operational readiness and prepare to maintain their security on their own, the UK needs to realize the consequences of having significantly lost hard power capabilities over the years.

Scientific Excellence

The BPSM notes a high degree of academic excellence in the UK, most visible in the category of renowned universities. In the 2005 to 2015 period, it managed to increase the number of top 200 universities from 24 to 30. In other words, 15 percent of all globally renowned universities were based in the UK in 2015. Thus, the UK hosted the second most elite universities on the list after the United States. Whereas Washington saw a falling trend in top-rated universities, London increased its share on the list translating it to the greatest plus in its BPSM score (UNI: MC +3.0; ICR +25.0). With 30 entries, there is a considerable distance to third placed Germany with 11 elite universities on the list. The figures stress the UK's particular structural power as their share of top universities and publications in top journals per GDP is above OECD average, making the island a global scientific driver.⁴

Having said that, the Monitor recognizes a relative decline in the UK's share of scientific articles until 2015. Though the country managed to increase the number in absolute terms to 101,207 articles published in 2015, the pace of growth remains behind the global average. This is also due to an incrementally falling trend in publication numbers since 2013. Therefore, while the UK is the fifth greatest knowledge producer by S&E articles on the list in 2015⁵, other states demonstrate greater vigor. For example, Germany surpassed the British output level in 2009 and stayed constantly in front of it ever since. Furthermore, India did not publish even half the number of articles as Britain in 2005, but exceeded the UK's output level in 2015 with more than 106,000 articles. This reveals a great shift in knowledge production capabilities that the British government has already tried to combat. Over the last years, London has set up reform and support plans for the scientific sector (e.g. the Productivity Plan in 2015) which aim to provide a stimulus to the research system and maintain its world-class status.⁶

2 OECD 2016: 2
3 Menon 2015 : 100

4 OECD 2016: 5
5 After the USA, China, India and Germany
6 OECD 2016: 1-2

Struggling for Power Resilience

Great Britain holds a prominent position in the international system of states. Its permanent seat in the UN Security Council, its NATO membership and its position as the third most powerful country on the BPSM ranking highlight the vast power resources of the former empire. Then again, the negative Power Shift Rate and implications of the Brexit signal great challenges for the UK's favorable position in the world.

Whether the withdrawal from the EU will offer the UK a reinforced global heft or not remains to be seen. Certainly the country has lost a great share of its global power over the last century and remains a shrinking island state seeking to retain its Great Power status and reputation. For the 2005 to 2015 period, the BPSM shows that the UK has better managed this challenge than the also former empire Japan, but these were times in which it did not have to struggle over its future in Europe.

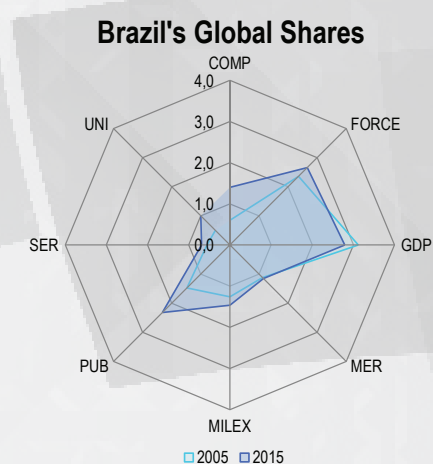
BRAZIL A Riser in Trouble

Brazil has risen to the global top in both political and economic terms over the last decades. With a Power Score of 1.68 in 2015, it is the most powerful Latin American country displaying a 22.6 percent growth of its power base since 2005 (PSR 0.31). With this shift, it is the fifth greatest power gainer in the BPSM 2005 to 2015 ranking. Nevertheless, the Land of the Palms is facing significant challenges that pose risks to its political and economic stability.

Volatile and Restricted Economy

The new millennium brought significant development to Brazil's economy. By 2015, it was already the seventh largest economy in the world and the largest in Latin America. While its rise has been more steady than spectacular, the figures demonstrate that Brazil has made its way up to the global economic top. Still, the numbers also show a sharp decline in economic performance in 2014 when the country entered recession. This is also noted by the BPSM numbers peaking in this year, before plummeting. Though the country rates are overall positive (ICR), the expansion of international shares has not only stagnated but was already reversed since 2012,

underlining the slackening growth. The fading momentum is most visible in the loss of country shares measured by GDP (MC -0.33 percent). As measured in purchasing power parity,



this underlines that Brazilian consumers are particularly hit by the economic downfall resulting in blatant unemployment. Still, volatility is nothing new to the Brazilian economy whose history shows recurrent boom and bust cycles.¹ On the other hand, its remarkable upswing after the global financial crisis

1 Doctor 2016: 34

underlines the robustness of Brazil's rise.

As the country has not yet fully recovered from the 2014 setback, it should reconsider its restricted trade policies. In terms of merchandise and service exports, Brazil has made some gradual steps towards integration into global markets apparent in positive market shares and country growth rates in both categories. However, the categories differ quite significantly in their meaning for Brazil's position on a regional and global level. Although merchandise exports have grown by more than 60 percent (ICR) over the period of observation, this marks an almost non-existent increase of global market shares (MC +0.03 percent). This is also the only category in which Brazil's influence remains smaller than that of Mexico in our ranking, underlining a major weakness in its regional leadership role. In the service exports category, Brazil's growth reflects its regional power status, surpassing the rates of both Argentina and Mexico by more than doubling its export rate (ICR +125.55 percent) and expanding its global share by +0.13 percent (MC).

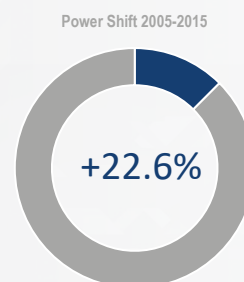
While the BPSM reflects Brazil's general upturn, it also reveals its low integration in global trade compared to other emerging markets.² Overall, Brazil maintains high trade barriers as for example its average tariffs are eight times higher than Mexico, resulting in higher prices for consumers and vendors. According to OECD reports, this precludes Brazil from obtaining higher productivity, global competitiveness as well as a fresh boost for recovering from the economic crisis.³

Tackling Innovation Challenges

As other emerging countries, Brazil has made remarkable progress concerning low levels of innovation linked to lacking human capacities. The number of leading companies has increased from only three in 2005 to seven in 2015 (MC +0.8 percent). Petrobras is not only Brazil's but Latin America's largest company, hinting at the key challenge of widespread corruption, but also Brazil's main strength of vast natural resources. The inclusion of three Brazilian banks among the wealthiest companies in the world signals growing financial capabilities with the potential to evolve into a regional financial hub. Positive, yet without the same trajectory of growth, remains the inclusion of two top-rated universities on the QS ranking since 2005. While only the Universidade de Sao Paulo was among the elite in 2005, the entry of Unicamp, the Universidade Estadual de Campinas, marks a

positive development in the category of top-rated universities. Nevertheless, Brazil's tertiary education remains weak by international standards, hampering the expansion of structural power that push business and the society as a whole to higher levels.⁴

Considering the third dimension of innovation in the BPSM, the number of Brazilian publications has more than doubled during the review period. This translates into the greatest expansion of global shares in the country's profile (MC +0.84 percent). While Brazilian researchers produced not even 22,000 scientific publications in 2005, they raised their output to 53,492 publications in 2015 counted by the National Science Foundation. Mexico and Argentina for example published only around 14,000 and 8,700 articles respectively.



The positive development in all three categories of innovation and strategic hubs underlines the effectiveness of reforms and transfer programs. The Bolsa Escola program, which was followed by the Bolsa Família program, marked significant progress in the support of poor families facilitating school education and financial support for millions of Brazilians. Furthermore, the 2011 Plano Brasil Maior shows the growing awareness among the political elite of innovative weaknesses in the global knowledge economy.⁵ The National Strategy for Science, Technology and Innovation 2016-2019 further intensified government spending on research and development supplemented with greater efforts to reduce social and regional inequalities in the strive for sustainable development.⁶ It seems that Brazil has recognized the necessity to overcome structural and social demands to ensure its national motto "Ordem E Progresso" ("Order and Progress").

Regional Hard Power Leader

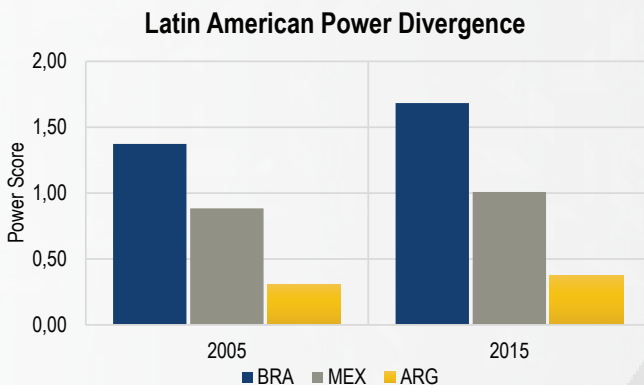
Brazil's interest in developing hard power capacities is often considered to be diminished in contrast to other rising powers.⁷ The BPSM reveals that this assessment is not valid anymore. With a size of almost 730,000 personnel, Brazil commands the fifth largest armed force among the individual G20 states. It

2 OECD 2018: 2
3 OECD 2018: 41, 44

4 OECD, 2016: 2
5 Doctor, 2012: 806
6 OECD, 2016: 1
7 Trinkunas, 2014: 2

even enlarged its forces by more than 50,000 in 2006 (FORCE: MC +0.3; ICR +8.4). Additionally, Brazil has raised its military spending by more than +40 percent in the period of observation to around \$24.6 billion by 2015 (MC +0.2 percent). This is

reputation, hence decreased soft power.¹¹ Furthermore, its most recent suspension membership of the Union of South American Nations limits the impression of Brazil as a regional rule-maker. Certainly Brazil has made its way to the global top, but if it aims to sustain its rise and reputation, it needs to live up to its own claim of leadership.



more than three times Mexico's defense budget, underlining Brazil's interest in modernizing its military. Even though Brazil traditionally rejects military means as a foreign policy instrument, the observed shifts underlines that stakeholders gradually embrace the idea of hard power as a complement and signal to Brazil's power status.⁸ While more than two thirds of the defense budget are consumed by salaries and benefits, this increase seems yet less a sign of robust military buildup than of needed investments.⁹

Regional Power in Trouble

The overall picture illustrates that Brazil's has enlarged its lead as a regional power, in particular in the G20 forum. Neither Mexico nor Argentina can keep up with Brazil's steady rise which is, however, much more gradual than that of India or China. Referring to the BRICS forum, Brazil is by BPSM measures only more powerful than South Africa (PS 0.37) in 2015. While Russia is still more powerful (PS 2.41), Brazil boasts higher growth rates in both relative and absolute terms over the review period, corroborating its reputation as a major emerging power despite volatile figures. This impression is reinforced by Brazil's increased willingness to act as a power broker and moderator.¹⁰

Still, the country has to manage great challenges: Financial instability, high corruption, and social inequalities have already found expression in mass protests. Social unrest and mismanagement during the 2014 FIFA World Cup have stuck in the memories of the world leading to lower international

8 Degaut 2017: 293

9 Trinkunas, 2014: 13

10 Arnson & Sotero, 2009: 9

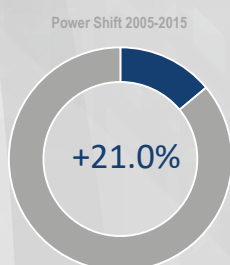
11 Kenkel, 2016: 6

SOUTH AFRICA

A Fading Rainbow?

As the only African country in the G20, the Rainbow Nation holds a special relationship to the world's leading economies as well as to its African neighbors. After being invited to the BRICS in 2010, its extraordinary international reputation as an emerging economy has increased. The Bonn Power Shift Monitor notes that South Africa has indeed gained weight as it enlarged its 2005 power base by 21 percent in 2015. From a global perspective, its power shift is only marginally positive (PSR +0.06) because other states have outpaced its growth trajectory.

With a Power Score of 0.37 in 2015, South Africa finds itself at the bottom of the G20, almost on par with Argentina. The considerable distance to next highest ranking Indonesia of more than 0.5 points further underscores the weak position of these



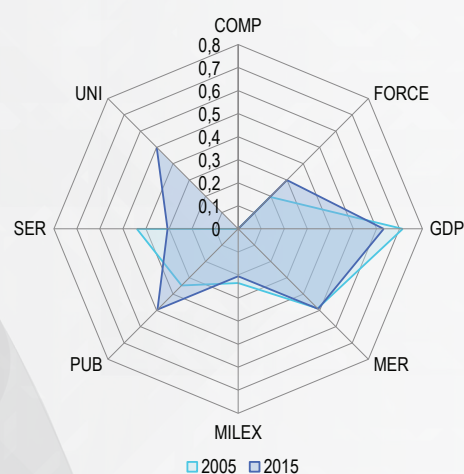
two emerging countries. In detail, South Africa is among the weakest four individual G20 members in all BPSM categories – for military spending, GDP and leading companies on the lowest rank. In contrast to this, it has

only increased its global footprint in top universities, scientific publications and armed forces. Although, the African state still presents a positive Power Shift Rate and thus increased its global influence over the years under review, the mixed ratings call into question South Africa's special reputation in the world.

Transition and Economic Rise

South Africa has gained international appreciation for its relatively peaceful transition from apartheid to democracy in the 1990s. With Nelson Mandela leading and symbolizing the change, South Africa joined regional and global institutions as a unique success story. Its integration into the world trade has pushed the economy forward, though it was surpassed by

South Africa's Global Shares



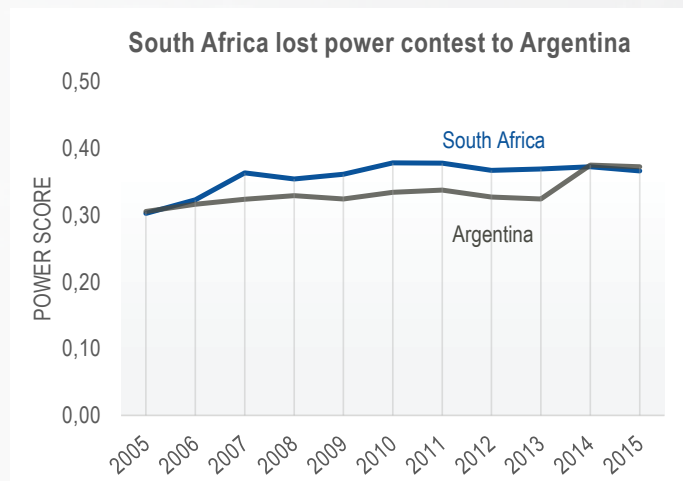
Nigeria in 2014 as Africa's largest economy. This underlines South Africa's special, but also delicate role on the G20 stage: It is seen as the 'Gateway to Africa' and oftentimes as a representative of the continent, without having an official mandate for this role and without actually being among the 20 largest economies around the globe.¹

Even though South Africa is member of several regional and international institutions, it failed to keep up with the developmental trajectory of other emerging economies which is visible in stagnating or even marginally falling global shares, particularly in the economic categories of the BPSM. Nevertheless, South Africa presents positive domestic sums in all but one (top companies) categories. In general, this reflects a positive development for the country, whereas the closer breakdown reveals setbacks in its upward trajectory – particularly in the last years which resulted in stagnating or slightly negative international shares for GDP, merchandise exports and service exports.

South Africa's rise was promoted under Mandela and Mbeki, when South Africa pushed forward African integration

¹ de la Fontaine 2017: 477

and played a leading role in the establishment of the African Union. During the presidency of Jacob Zuma, however, South Africa lost its previous international profile and charismatic soft power appeal. Still, the country profited from rising material demands of its BRIC partners which facilitated its remarkable recovery from the global financial crisis in 2009 as reflected by rising export rates for services as well as commodities.² Yet the



BPSM records the impact of slowing international trade since 2011, particularly by the time of the drought period of 2014-2015 when South Africa's service and merchandise exports declined even steeper. From a domestic view, the downturn hints at difficulties with managing inflation and unemployment.³ In a G20 comparison, the decreasing numbers of South Africa present similarities to Argentina's merchandise trade curve, hence raising questions about global dynamics of weakened trade.

Adressin Internal Weaknesses

The government has formulated a 2030 strategy to manage structural weaknesses. Launched in 2012, the National Development Plan (NDP) points out nine challenges, among them poor infrastructure, low education, social grievances and weak governance, that the administration aims to address in a sustainable manner.⁴ The plan was greatly appreciated on a global level as it provides a roadmap in terms of the sustainable development agenda of the United Nations.

In view of its low-scale scientific profile as noted by the BPSM, these efforts aim in the right direction. South Africa has indeed increased its relative and absolute weight in the categories universities and publications. Since 2007, the University of Cape Town is listed among the globally leading universities but remains the only South African university among the Top 200.

With this, South Africa is on the same level as Argentina, Italy, Mexico, Russia and Saudi Arabia. While this is the strongest positive contributor to South Africa's Power Shift Rate, its underperformance in leading science is emphasized by only presenting one globally renowned university.

On the other side, South African publications more than doubled between 2005 and 2015 which also enhanced its scientific influence in relative terms. Publishing more than 11,400 scientific articles in 2015, South Africa counts fewer publications than the OECD average, but significantly more than Saudi Arabia, Argentina and Indonesia – which too pushed their research output. In combination with raised public expenditures over the years, the government has shown increasing willingness to upgrade its innovative potential and strengthen its human capital. In view of budgetary constraints, exacerbated by drought, sustainable funding in education and research remains a central obstacle.⁵ Even though South Africa remains among the weak performers of the G20 states, its scientific push is outstanding as a category oftentimes overlooked in its meaning for international power.

Regional Hard Power

By international standards, South Africa holds a low-level hard power profile. In 2015, it had the lowest military expenditures among the 19 states under review, spending only \$3.46 billion. With this, the country financed the third smallest armed forces on the list (only Canada and Australia having fewer forces). In a regional context, however, South Africa remains a military heavyweight. It mainly deploys its troops for international interventions for example under a mandate of the AU and tries to establish itself as a conflict mediator.

Besides its low global defense profile, its domestic development raises further doubts about South Africa's future defense capabilities. Its military expenditures have were raised by only seven percent (ICR) between 2005 and 2015, which remains below the world's average (MC -0.03). On the other hand, the government increased its troop level from 56,000 to around 82,000, meaning higher maintenance costs. This is a 46 percent raise in staff (MC +0.1) without an appropriate increase in spending. Therefore, BPSM finds rather ambivalent tendencies for South Africa's military hard power. The issue was even acknowledged by the ministry of defense, warning that the defense forces are in a process of operational decline.⁶

2 Neethling 2017: 2

3 Claar 2017: 272

4 National Planning Commission 2012

5 OECD 2016: 1-2

6 Mandrup 2017: 5

Coordination for a Shining Rainbow

In general, South Africa has experienced great transformation that propelled the country on the favorable stage of global decision-making. With this, it earned the reputation as a bridge builder and ‘Gateway to Africa’, producing an immense potential for soft and structural power. On the other hand, the country exposes great vulnerabilities, e.g. in social, administrative and environmental terms, that keep it from realizing its full potential. Despite the fact that South Africa is criticized for being an unelected ‘gateway’ on the world stage, the nickname offers a unique chance for integration. Greater cooperation with other African states such as Nigeria or Kenya would help South Africa to effectively voice common interests at global negotiation tables, reshape its continental reputation and also push its rise back to the global pace. Its challenged position in the G20 is not only stressed by countries with larger markets such as Nigeria, but also South Africa’s very own struggle to preserve or even expand its power. The Rainbow Nation seems to build on its shining past, but has yet to foster its emerging capacities in order to stay competitive on a regional and global level.

Bonn Power Shift Monitor Methology

The Concept

The Bonn Power Shift Monitor (BPSM) uncovers and analyzes power shifts among the world's leading industrialized and emerging economies. Our goals are to raise awareness of the phenomenon of global power shifts and to demonstrate the extent and pace of these power alternations. By doing so, we hope to generate a public discourse about reasons and consequences of global power shift as well as a new wave of academic debates about power concepts and the measurability of power.

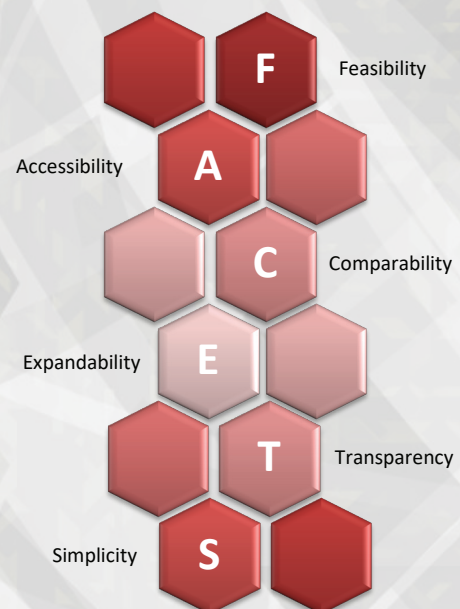
Reflecting the existing debates about hard power, soft power, as well structural power, we emphasize power as an ability to overcome political obstacles and to prevail in preference conflicts. Our understanding of power is, therefore, of an eclectic nature, combining the classical capabilities of resources, impact on related actors, the attractiveness of a country, and its ability to innovate structures. This reveals our understanding that power is comprised of the capacities, the willingness and the ability to assert political preferences. They are the minimum power fundament. If one of these components is missing, the power of a nation in terms of ability to prevail in preference conflicts threatens to decline.

Eight indicators (GDP, Merchandise Exports, Service Exports, Armed Forces, Military Spending, Leading Companies, Top Universities, Scientific Publications) serve as an eclectic access to project the power weight of a nation in the world. Thereby, we identify shares of a nation on these eight categories of global power resources as its power weight in the world. We demonstrate the power weights of nations and their shifts with a system of scores. Being a tool for analysis, the scores and shifts provided by the BPSM help to explain and predict changes of power among the leading industrial and emerging countries.

For the sake of usefulness and reliability, the BPSM is guided by six principles: feasibility, accessibility, comparability, expandability, transparency, and simplicity. Their initials build the acronym “facets”, which directly refers to our ba-

sic idea to integrate the power theories in one model. By incorporating freely available data only, the BPSM is of unique accessibility, expandability, and transparency for researchers,

BPSM Principles



students, and beyond. It avoids definitional fuzziness and statistical complexities in its theoretical and calculation model in order to ensure the simplicity of the approach. With this, the model remains comprehensible for the public and easily extendible. This again ensures the comparability of results and feasibility of analysis beyond the project.

The Indicators

Indicator	Abbr.	Unit	Source
1. GDP	GDP	PPP; current int. Dollar	World Bank
2. Merchandise Exports	MER	Total, current USD	World Bank
3. Service Exports	SER	Total, current USD	World Bank
4. Armed Forces	FORCE	total number of personnel	World Bank
5. Military Spending	MILEX	constant 2015 USD m	Stockholm Institute for Peace Research
6. Top Companies	COMP	total of Top 500	Fortune
7. Top Universities	UNI	total of Top 200	QS World University Ranking
8. Publications	PUB	number of S&E Articles	National Science Foundation

GDP

GDP (PPP) is the value of all final goods and services produced within a nation in a given year provided in a standard measure by purchasing power parity (PPP) rates. GDP (PPP) in current international dollar was selected as an indicator, because it illustrates the overall state of an economy, its purchasing power in international comparison, the size of the national market as well as the general economic prosperity. The basic assumption is that the higher the GDP (PPP) of a state, the higher its economic power in the international system. This in turn affects different hard and structural power aspects, e.g. to influence bargaining processes such as trade agreements or to enforce sanctions.

Merchandise Exports

Merchandise exports records the so-called free on board (f.o.b.) value of goods delivered to the frontier of the exporting country for shipment. This indicator covers tangible commodities; thus, services are not included. This indicator illustrates the integration of a state's economy into global markets as well as its competitiveness. The indicator reveals the shifts on the global trade market, hence market power shifts between the leading export nations. Higher merchandise exports translate into the capacity to influence international economic structures and shape them according to a state's production and trade interests. .

Service Exports

Service exports record intangible commodities that are delivered across a state's border. Comparable to the merchandise exports indicator, service exports illustrate the integration of a state's economy into global markets as well as its competitiveness. However, the nature of service exports is inherently different as it does not appraise material power structures, but immaterial ones such as financial flows, communication and information structures as well as knowledge. On the globalizing market that is increasingly based on internet networks, service exports highlight power shifts by indicating the economic and social changes such as the digitalization of markets or shifts towards a service society.

Armed Forces

Military troops counts all active duty military personnel plus paramilitary forces if it seems that they serve to support or replace regular military forces. This indicator illustrates a classical hard power category of the International Power Theories, e.g. in Realism. Military forces reflect the military strength and thus the ability of a state to defend itself and its citizens. It also indicates the location of a state in the global security structures as higher numbers of military personnel enhances the capacities to generate or deprive security which may also influence bargaining processes.

Military Spending

Defense spending in constant 2015 million USD illustrates the trends of a country's military expenditures over time by adjusting it to a consistent base year measure. This process-oriented category reflects a state's willingness to gain military might and thereby hard and structural power in international relations. It also indicates national preferences, for example security perceptions and risk assessments, military modernization, as well as the preparation or involvement in armed conflicts. In brief, the defense spending of a state illustrates its willingness to change to the status quo of global power structures and predicts possible power shifts.

Top Universities

The world's top universities are monitored by the QS World University Ranking. Leading universities are central hubs of scientific knowledge production and a country's academic outreach on a global level. Depending on the research, universities contribute to the hard, soft and structural power of their home countries in various ways. More specifically, leading universities illustrate the research quality, international connectedness and academic reputation of a country which provides soft power in form of prestige or the attraction of academic staff. The indicator also illustrates the capacities to shape current and future structures of knowledge, innovation, production and technology.

Top Companies

The largest companies of the world as ranked by the Global Fortune 500 according to their revenues shape the economic structures around the globe. These companies represent engines driving globalization, innovation, production, and communication. In this way, they contribute to the hard, soft and structural powers of their home countries in various ways similar to universities. More specifically, leading companies particularly shape the financial flows and thus interdependent structures on a global level illustrating the structural power a country. Giving another example, leading companies boost national reputation by serving as globally known brands which contributes to a state's soft power.

Publications

The publications indicator covers the number of science and engineering (S&E) articles collected by the National Science Foundation. The figures shown refer to publications from a selection of journals, books, and conference proceedings which are assigned to the institutional address(es) listed in the article. The publications cover the fields of engineering, chemistry, physics, geosciences, mathematics, computer sciences, agricultural sciences, biological sciences, medical sciences, other life sciences, psychology, and social sciences. In our globalized world, innovation, invention and knowledge transfer have become central metrics for state competitiveness influencing hard, soft, and structural power alike. This indicator also reflects the scientific community, level of knowledge and higher education of a country.

The Calculation

The Power Score (PS)

The Power Scores (PS) correspond with the average country shares of a particular year. By doing so, the Power Scores and thus Power Shift Rates are based on the model of relative shares on global resources.

1. Calculate the country shares by dividing the world's total by the country figure. In the absence of a world total for top universities and companies, we use the number of entities included in the ranking (200 and 500), which gives more weight to these indicators in our index. This fits in our model as we assume that micro-economic hubs are of central importance to a country's position in the globalized network of states.

$$\frac{\text{Country indicator}}{\text{World total}} \times 100 = \text{Country Share in \% (CS)}$$

2. Calculate the average to derive the Power Score of a country for a certain year. In our model n equates to seven as this is the number of indicators, hence country shares used.

$$\frac{1}{n} \sum_{i=1}^n CS = \text{Power Score (PS)}$$

The Power Shift Rate (PSR)

The Power Shift Rate (PSR) is the difference between the Power Scores of two points in time. This score illustrates whether a country lost or gained considering all indicators of our index.

1. Use the Power Scores of two points in time (t) to calculate the Power Shift Rate (PSR).

$$PS_{t2} - PS_{t1} = \text{Power Shift Rate (PSR)}$$

Rate of Country Change (CC)

In contrast to the relative Power Shift model, the rate of country change examines the development of the country figures without comparing them to the global total. This model reveals whether a country has experienced a positive or negative trend over the years.

1. Calculate the rate of change between two points in time (t) of each indicator.

$$\frac{I_{t2} - I_{t1}}{I_{t1}} \times 100 = \text{Indicator Change Rate \% (ICR)}$$

2. Calculate the average to derive the Rate of Country Change (CC). In our model n equates to seven as this is the number of indicator, hence country shares used.

$$\frac{1}{n} \sum_{i=1}^n ICR = \text{Rate of Country Change (CC)}$$

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Abbreviation	Full		
		JPN	Japan
		KOR	Korea, Rep.
ARG	Argentina	MC	Market Change (Comparison of Country Shares)
AUS	Australia		
BRA	Brazil	MER	Merchandise exports (current
CAN	Canada	USD)	
CC	Rate of Country Change	MEX	Mexico
CHN	China	MILEX	Milex (constant 2015 USD m)
COMP	Companies (total of Global	PS	Power Score
Fortune 500)		PSR	Power Shift Rate
CS	Country Share (Indicator	RUS	Russian Federation
World Share)		SAU	Saudi Arabia
DEU	Germany	SER	Service exports (BoP, current
FORCE	Armed forces personnel (total)	USD)	
FRA	France	TUR	Turkey
GBR	United Kingdom	UNI	Universities (total of QS top 200)
GDP	GDP (PPP, current int. Dollar)		
ICR	Indicator Change Rate	USA	United States
IDN	Indonesia	WLD	World
IND	India	ZAF	South Africa
ITA	Italy	PUB	Publications

Bonn Power Shift Data Table

2005-15 Power Shift Details																												
Rank	Country	Code	Rates			GDP			MER			SER			FORCE			MILEX			COMP			UNI			PUB	
			PSR	CC	MC	ICR	MC	ICR	MC	ICR	MC	ICR	MC	ICR	MC	ICR	MC	ICR	MC	ICR	MC	ICR	MC	ICR	MC	ICR		
1	China	CHN	5.35	174.41	7.07	198.40	6.51	198.37	1.51	177.05	-2.80	-24.29	6.89	166.96	16.40	512.50	0.50	16.67	6.72	149.64								
2	India	IND	0.78	97.43	2.02	147.66	0.67	168.48	1.24	199.50	-0.48	-8.15	0.46	44.18	0.40	40.00	-0.50	-33.33	2.38	221.12								
3	Korea. Rep.	KOR	0.55	69.28	-0.25	50.62	0.49	85.20	0.10	92.65	-0.12	-8.44	0.31	42.45	1.20	54.55	2.00	133.33	0.66	103.89								
4	Saudi Arabia	SAU	0.33	96.08	0.00	75.83	-0.48	12.64	-0.13	26.85	0.16	16.44	2.36	124.48	0.00	0.00	0.50	100.00	0.27	412.40								
5	Brazil	BRA	0.31	84.07	-0.33	57.12	0.03	61.26	0.13	125.55	0.30	8.40	0.20	42.29	0.80	133.33	0.50	100.00	0.84	144.60								
6	Russia	RUS	0.27	51.96	0.43	104.53	-0.25	40.06	-0.02	79.22	0.34	2.62	1.67	112.25	0.40	66.67	-0.50	-50.00	0.07	60.34								
7	Indonesia	IDN	0.21	181.46	0.37	106.86	0.08	72.84	-0.03	70.97	0.42	16.07	0.24	154.93	0.40	200.00	0.00	0.00	0.18	830.04								
8	Mexico	MEX	0.12	60.76	-0.13	63.87	0.27	77.69	-0.12	45.44	0.51	64.73	0.19	109.52	0.20	50.00	0.00	0.00	0.07	74.82								
9	Argentina	ARG	0.07	53.68	-0.06	63.25	-0.04	40.74	0.04	115.90	0.03	3.38	0.02	32.08	0.00	0.00	0.50	100.00	0.04	74.07								
10	South Africa	ZAF	0.06	51.99	-0.08	55.26	0.00	57.75	-0.13	27.23	0.10	46.70	-0.03	7.12	0.00	0.00	0.50	100.00	0.15	121.86								
11	Turkey	TUR	0.05	48.26	0.40	133.24	0.17	95.76	-0.08	68.53	-0.30	-17.02	-0.02	19.98	0.00	0.00	0.00	0.00	0.23	85.60								
12	Canada	CAN	-0.38	11.95	-0.40	35.72	-0.94	13.73	-0.61	32.77	0.00	-4.93	-0.15	5.22	-0.40	-15.38	0.00	0.00	-0.55	28.48								
13	United Kingdom	GBR	-0.50	11.86	-0.61	39.54	-0.92	17.73	-1.58	49.47	-0.21	-29.79	-1.12	-9.23	-1.20	-17.14	3.00	25.00	-1.34	19.31								
14	Australia	AUS	-0.55	32.42	-0.05	66.33	0.13	76.92	-0.14	60.74	0.02	9.06	0.20	42.30	-0.20	-11.11	-4.50	-52.94	0.17	68.05								
15	Germany	DEU	-0.60	18.20	-0.61	48.72	-1.18	36.65	-0.37	71.16	-0.35	-37.79	-0.49	1.47	-1.80	-24.32	1.00	22.22	-1.01	27.46								
16	Italy	ITA	-0.64	0.79	-0.69	29.87	-0.77	22.59	-1.42	6.69	-0.26	-19.81	-1.07	-28.37	0.20	12.50	-1.00	-66.67	-0.13	49.53								
17	France	FRA	-0.94	7.19	-0.57	41.89	-1.33	9.14	-0.78	57.55	-0.14	-14.67	-0.62	3.03	-1.20	-16.22	-2.00	-44.44	-0.89	21.22								
18	Japan	JPN	-1.76	3.05	-1.68	27.86	-1.86	5.02	-0.48	59.55	-0.01	-4.49	-0.58	-1.25	-5.40	-33.33	-1.00	-20.00	-3.07	-8.98								
19	United States	USA	-3.84	20.96	-4.30	37.75	0.56	67.01	1.43	101.30	-0.51	-12.85	-9.02	-2.44	-9.40	-26.86	-2.50	-9.26	-7.02	13.02								
	World	WLD	0.00	36.13	0.00	75.60	0.00	56.76	0.00	82.49	0.00	-3.86	0.00	22.38	0.00	0.00	0.00	0.00	0.00	55.63								
	G19 Average		-0.06	56.62	0.03	72.86	0.06	61.03	-0.07	77.27	-0.17	-0.78	-0.03	45.63	0.02	48.69	-0.18	16.87	-0.12	131.39								

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