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Strategic Hedging and Changes in Geopolitical Capabilities for Second-Tier States

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Abstract
Recently Tessman and Wolfe (International Studies Review 13:214–240, 2011) and Tessman (Security Studies 21(2):192–231, 2012) introduced the concept of strategic hedging as a core strategy for second-tier states operating in the current deconcentrating unipolar system with the United States as system leader. Being a crucial element in understanding the connection between strategic hedging intentions and actual actions, this article investigates the measurement of strategic hedging capabilities of second-tier states. Building on earlier research of Geeraerts and Salman (Chinese Political Science Review 1(1):60–80, 2016) on the measurement of strategic hedging capabilities, we improve significantly the measurement methodology, which often leads to quite different results in strategic hedging capabilities. Using the new approach, we investigate how the strategic hedging capabilities of the leading eleven second-tier states have evolved over the period 2005–2015, extending the comparative analysis performed by Geeraerts and Salman for the year 2013.

Keywords Strategic hedging · Strategic hedging capability index · Second-tier states · Unipolarity · Power diffusion

1 Introduction

Although the United States (US) is still the dominant power, especially in military terms, and the international system is currently therefore most accurately described as unipolar, its dominance is in *relative* decline due to the rise of China, and to a lesser extent, other second-tier countries such as India and Brazil (Schweller and Pu 2011; Tessman 2012). As a consequence, second-tier states have to build their strategies in the context of the current deconcentrating unipolar system.

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The concept of strategic hedging, introduced by Tessman and Wolfe (2011) and Tessman (2012), is a way for second-tier states to manage the current threats and constraints under conditions of unipolarity while in the same time preparing for future threats and opportunities that might emerge because the system leader will decline further. In essence, the hedging state attempts to improve its military and economic abilities without provoking the system leader (US), which distinguishes this strategy from hard balancing. In contrast to other strategies, such as soft balancing or leash-slipping, a particular interesting aspect of strategic hedging is that it relates directly to the system structure (Tessman 2012; Salman and Geeraerts 2015; Salman et al. 2015; Salman 2017).

Being a crucial element in understanding the connection between strategic hedging intentions and actual actions, this article investigates the measurement of strategic hedging capabilities of second-tier states. Building on earlier research of Geeraerts and Salman (2016) on the measurement of strategic hedging capabilities, we improve significantly the measurement methodology by performing a deeper analysis of the quantitative indicators for strategic hedging and thoroughly investigate their strengths and weaknesses.

Using the enhanced approach, we then investigate how the strategic hedging capabilities of the leading eleven second-tier states have evolved over the period 2005–2015, extending the comparative analysis performed by Geeraerts and Salman for the year 2013, and including four extra second-tier states: Brazil, Italy, Australia, and South Korea, those being the next largest economic and/or military powers after the original list of seven leading second-tier states used by Geeraerts and Salman (2016). The results of our investigation often lead to quite different outcomes in strategizing hedging capabilities than the ones obtained by Salman and Geeraerts, the main reason being the higher explanatory power of our new measurement approach.

2 Strategic Hedging Framework

The collapse of the Soviet Union resulted into a unipolar international system characterized by the US as system leader. Large scale counterbalancing efforts of other major powers, as predicted by balance of power theories, did not occur (Brooks and Wohlforth 2008 ; Tessman 2012; Salman 2017) up to this moment as this is too costly given the overwhelming military superiority of the US. States have nevertheless tried to improve their competitive abilities while avoiding direct confrontation with the system leader. In this context, strategies such as soft balancing, implying the use of nonmilitary tools to confront or undermine the system leader, or leash-slipping, where states wish to acquire the capability to act independently from it in the security realm, have been introduced to understand how second-tier states behave (Layne 2006; Tessman 2012; Salman et al. 2015; Geeraerts and Salman 2016).

However, such strategies do not necessarily follow from the particular context of the current unipolarity, and therefore do not properly account for possible shifts in the balance of power. The concept of strategic hedging, developed by Tessman (2012) and Tessman and Wolfe (2011), is a specific type of hedging and aims to

remediate these deficiencies. Taking explicitly into account the deconcentrating nature of the current unipolarity, which is a consequence of the rise (economic and military) of second-tier states such as China, India and Brazil (Schweller and Pu 2011; Tessman 2012; Salman 2017), strategic hedging behavior of second-tier states can be seen as an insurance contract that hedges against two types of future threats (Tessman and Wolfe 2011; Salman and Geeraerts 2015). The first is a possible future military confrontation with the system leader in case relations with the system leader might deteriorate (Type A hedging). The second long-term threat is the risk that the system leader, due to its relative decline, will not be able or willing anymore to provide certain public goods or subsidies related to the hedging state's security (Type B hedging).[1]

The long-term insurance is provided by improving in observable, significant and specific ways the competitive capabilities (in terms of hard and soft power) without provoking the system leader through the formation of an explicit military alliance against it or an extensive arms buildup. This is what differentiates strategic hedging clearly from hard internal or external balancing (Tessman and Wolfe 2011; Salman et al. 2015; Salman 2017). Moreover, for actions to classify as instances of strategic hedging, they must be 'strategic' in the sense that they should be coordinated at the highest levels of government and the involved issue should be recognized as of major national security interest to the hedging state and related to Type A and/or B hedging. In addition, it needs to come at a short-term domestic or international cost. In this way, strategic hedging can be distinguished from normal diplomatic friction or cases of simple power maximization (Tessman and Wolfe 2011; Tessman 2012).

3 Indicators of Strategic Hedging Capabilities: Methodology

Although the relation between strategic hedging capabilities and actual behavior can depend on many factors and still requires further research (Tessman and Wolfe 2011; Salman and Geeraerts 2015), they form a prerequisite for effective strategic hedging. Measuring strategic hedging capabilities can be a challenging endeavor. On the one hand, the quantification should be such that it sufficiently captures the different angles of strategic hedging and its interconnections. On the other hand, the aim is to limit the level of complexity of the quantification methodology as it should provide intuitive insight in strategic hedging capabilities through well-known, transparent indicators. Therefore, the purpose is to come up with a limited set of strategic hedging determinants or indicators that still yields sufficient explanatory power, as explained in detail in the next section. To allow for comparison, we create

[1] An effective way to differentiate between Type A and Type B hedging is through the identification of the motive of the hedging behavior. If the relations between the second-tier state and the system leader are not warm, such as China, and the state fears a possible future confrontation, Type A hedging will be the preferred strategy. In case the second-tier state is allied to the system leader, such as Japan, there is no fear of confrontation but the declining power of the US makes that such second-tier states will pursue type B hedging to compensate the diminished provision of public goods by the system leader which impacts their security (Salman, 2017).

a composite index CI of these indicators in line with standard OECD practices and Geeraerts and Salman (2016).

Following Tessman and Wolfe (2011) and Geeraerts and Salman (2016), we center strategic hedging capabilities around three main factors: economic capability, military power, and strength of central government, and present a subset of indicators to represent each of these factors.[2] We improve and extend their analysis in multiple ways by investigating more deeply new and alternative indicators to obtain higher explanatory power and assess the strength and weaknesses of all indicators in our analysis. This allows us to obtain a composite index of strategic hedging indicators with significantly higher explanatory power.

3.1 Economic Capabilities

Economic power lies at the basis of military competence (Gao 2011; Kennedy 1987). In addition, a well-functioning economy bringing welfare to the people increases the central government's degree of freedom to pursue its desired strategies. In the context of strategic hedging, economic growth is even more important because the military buildup should not outpace the economic growth too much in order not to provoke the system leader. Due to the primary importance of economic capabilities in the performance of successful hedging strategies, it is adamant to capture this capacity in an appropriate way. Therefore, we introduce a higher number of indicators for this factor such that the level of economic health and stability is sufficiently reflected.

The indicators gross domestic product, foreign exchange reserves and government debt-to-GDP ratio were used in the analysis of Geeraerts and Salman (2016). Our analysis adds inflation rate and credit spreads. As will become clear in the description below and in Sect. 5.1, the addition of these indicators allows to incorporate in a more accurate way the impact of economic cycles and crises. Together, the five indicators give already a good view on the strength and healthiness of the economy. However, it should be mentioned that a full assessment of a country's economy entails many more elements and goes beyond the purpose of this article.

3.1.1 Gross Domestic Product (GDP)

Gross domestic product (GDP) is defined as the market value of the aggregate production of the national income of a country within a year (Blanchard 2009). There is a strong correlation between GDP and many important factors relating to welfare as well as military successes, and it plays a crucial role in the determination of the future relations between great powers (Goossens 2007; Geeraerts and Salman 2016). GDP is therefore an important ingredient in the measurement of economic

[2] Economic, military, and central government power are important for strategic hedging as well as hard balancing (and more general, in describing general country capabilities). However, strategic hedging capabilities are specific in the sense that the military buildup should be such that it does not provoke the system leader, contrary to, e.g., hard balancing.

capabilities and is used as a positive indicator. Notice that the GDP numbers used in our analysis are nominal and USD dollar equivalent, allowing a direct way to compare the GDP's of different states. However, this implies that foreign exchange and inflation shocks will impact the GDP numbers (Blanchard 2009), an effect to be taken into account in the interpretation of the results.

3.1.2 Foreign Exchange and Gold Reserves

Foreign exchange and gold reserves (FX reserves) are foreign currency or gold assets held by central banks (Krugman and Obstfeld 2009). They play an important role in the management of the balance of payments, foreign exchange rates and markets, and for all payments in foreign currencies. Therefore, they are crucial factors in the country's stability and growth of its international economy (Oatley 2016). However, the optimal level of FX reserves depends on several factors and specific circumstances such as a country's monetary and exchange rate arrangements, the size, nature, and variability of its balance of payments and external position. There are no universally applicable measures for assessing the adequacy of reserves and the determination of reserve adequacy (IMF 2003). Nevertheless, it can be used, ceteris paribus, as a positive indicator.

3.1.3 Inflation Rate

Inflation rates measure changes in price level and are closely connected to economic cycles, and central bank and central government interventions (Blanchard 2009). There is therefore no 'ideal' inflation rate. However, the typical trade-off between unemployment and inflation, i.e., the 'Phillips curve' holds only in the short term and can lead to persistent rises in inflation rates. The problem is that high inflation raises uncertainty and can destabilize the economy (Oatley 2016). Negative inflation rates as occur in Japan are also problematic for economic growth but currently less dramatic then too high inflation rates due to its chaotic effects. Accordingly, the main purpose of central banks of developed countries is to manage the inflation and to keep relative stable prices (Poole and Wheelock 2008). Therefore, we use the level of inflation as a negative measure of economic stability and growth. Notice that this holds in fact only for sufficiently high levels of inflation rates and will be taken into account in the interpretation of the results.

A common way to express inflation rates is through the Consumer Price Index (CPI) in annual percentages, which measures the average price change of consumption over a one-year period (Blanchard 2009). Together with FX reserves, this indicator reflects the level of monetary stability.

3.1.4 Government Debt

Government debt constitutes domestic and foreign debt the central government of a state owes and is, next to taxes, the major source for a central government to cover the financial needs required for its economic growth (Gayer and Rosen 2008). There is no academic consensus on the impact of government debt on economic growth of

a state. In addition, the relation between the debt-to-GDP ratio and macroeconomic instability is weak (Chowdhury and Islam 2016). Nevertheless, higher government debt levels imply a lower net income from a state's GDP because of higher repayment schemes and hence less resources that are available for the implementation of hedging strategies. We use it therefore as negative indicator.

3.1.5 Country Credit Spreads

The creditworthiness of a state directly relates to the health and stability of the state's economy and the cost of central government funding through international financial markets, which has become increasingly significant in the current globalized world, as illustrated during the European sovereign debt crisis in 2010–2012 (Blundell-Wignall 2012, p6). The decreased credit quality of many European states led to higher interest repayment rates for the government bonds they issued. The cost of this funding is visible in the state's government bond spread, i.e., the extra spread over the risk-free interest rate that needs to be paid to obtain funding in the international financial markets (Gregory 2012; Hull 2009), and equals the market price of credit risk. It reflects the perception of international markets of the quality of the borrower, which relates to the likelihood to repay its debt and the loss the lender would occur in case the borrower defaults.[3] Accordingly, the country's credit spread provides direct information on how international markets perceive the healthiness of the country's economy.

There is actually no single country spread but a whole country spread curve because the spread depends on the maturity of the borrowing. To compare the evolution of the spreads over time or between countries, we consider a fixed maturity such that the comparison makes sense. One way is to use the country credit default swap (CDS) spread for a fixed maturity. We choose the 5-year tenor USD country CDS as indicator for the country credit spread in our analysis. A CDS is a contract that provides insurance against the default of an entity (company or country). The periodic premiums paid in the contract are directly related to the credit spread of the entity and are expressed against a reference currency, for instance, USD in our case (Hull 2009). There is a wide range of CDS contracts which are traded on the financial markets with different maturities, the most liquid ones having a 5-year maturity, hence the reason for our choice. This CDS spread constitutes a negative indicator. There is in general no direct link between the level of government debt and the country credit spreads. However, this link can become stronger when government debts increase sharply (infra).

[3] To be precise, the bond spread covers not only credit risk but also funding liquidity risk, where funding liquidity risk relates to the funding at levels in excess of the risk-free interest rate (Gregory 2012, p215-216). We are mainly interested in the credit spread as it is this spread that relates to the perceived creditworthiness of the state. However, it is difficult to separate the credit and liquidity part of the bond spread. To isolate the credit spread, we will consider CDS spreads.

3.2 Military Power

While economic power is a positive indicator for strategic hedging capabilities, the situation is more complex for military power where military buildup should be such that it does not provoke the system leader into military reaction (Tessman 2012; Geeraerts and Salman 2016). Therefore, next to the level of military expenditure, an indicator is needed that relates to the growth of the military arsenal. To express this, we investigate two indicators: military expenditure as percentage of GDP and the Global Militarization Index (GMI), which both express *relative* military expenditure. We add the GMI to the original analysis of Geeraerts and Salman (2016) and compare it to the military expenditure-to-GDP ratio (infra).

3.2.1 Military Expenditure

This indicator measures the military expenditure of a state per year and constitutes an essential part for enhancing the competitive capabilities within the strategic hedging context. It is therefore used as a positive indicator.

3.2.2 Military Expenditure as Percentage of GDP

Military buildup in the context of strategic hedging is only successful if it does not result into a military reaction of the system leader or cause a severe dispute. Moreover, too much military spending can negatively impact economic growth (Chang et al. 2011; Geeraerts and Salman 2016). Therefore, military expenditure relative to GDP can be adopted to measure this effect and is a negative indicator.

3.2.3 Global Militarization Index (GMI)

The Global Militarization Index (GMI) represents the relative weight and importance of the military apparatus of a state in relation to society as a whole. The GMI includes sub-indicators to represent the level of militarization of a country: military spending in relation to GDP and health services, the ratio of (para)military personnel, reserve forces and physicians, and finally heavy weapons (Grebe 2011). The difference with the military expenditure-to-GDP ratio is that it is a more refined measure of the importance of the military apparatus and broader than just relative spending. Therefore, the GMI can also be used as a negative indicator.

3.3 Central Government

As strategic hedging actions are decided at the highest government level, central government power is crucial for successful strategic hedging (Tessman and Wolfe 2011), i.e., a government that can decide autonomously without being hindered too

much by internal and external pressures. Next to the level of democracy introduced by Geeraerts and Salman (2016), we add an extra indicator that measures the level of political stability and absence of violence and terrorism.

3.3.1 Democracy Score

Although democracy has had a significant positive effect on economic growth, high levels of democracy, due to pressures of different interest groups, can reduce the central government's capability to take decisions, which is crucial for successful strategic hedging (Geeraerts and Salman 2016). We therefore use the Democracy Ranking Index as a negative indicator.

3.3.2 Political Stability and Absence of Violence/Terrorism

This indicator measures the likelihood of political instability and/or politically motivated violence, including terrorism and is composed of a wide range of variables (Kraay and Mastruzzi 2010; World Bank 2017) such as the risk of protests and riots, terrorism, ethnic and social tensions, civil war, and interstate conflicts. These issues can undermine the central government's legitimacy and make that many resources have to be used to contain these problems, implying that strategic hedging efforts can be hampered. We therefore use this as a positive indicator.

4 Data Sources and Quality

The data used in this paper consist of yearly data for all indicators described in the previous section for the period 2005–2015. The only exception is for country credit spreads, where monthly data are used. The reason for this is that credit spreads can change on a regular basis during the year. We therefore take the average of the credit spread values of all months in that year.

The countries in scope are: Australia, Brazil, China, France, Germany, Italy, India, Japan, Russia, South Korea, and the UK. These countries are selected on the basis of their being the largest economic and/or military powers in the world, apart from the US as system leader. Our analysis adds the next four second-tier states to the original ones investigated by Geeraerts and Salman: Brazil, Italy, South Korea and Australia. Table 1 exhibits the data sources used for the respective indicators and show the data for the year 2015. The Appendix provides a complete overview of the data for each indicator over the period 2005–2015. In addition to this, we also use data of real GDP growth per country (IMF 2017b) and data of the components of the Global Militarization Index per country (BICC 2017).

All data sources come from official or reliable data providers. We therefore assume that the data have good quality. However, for the indicators, government debt-to-GDP ratio, country credit spreads and democracy index, there are some missing data points. For government debt-to-GDP ratio, only the data point for Brazil at 2005 is missing. We solve this by taking the value at 2006 given that the values

Table 1 Data sources for strategic hedging capabilities (2015)

Country (2015)	GDP (US$ billion)	Reserve of foreign exchange (US$ million)	Government debt (% GDP)	Inflation rate	Country credit spread	Military expenditure (US$ Million)	Military expenditure (% GDP)	Glabal militarization index	Democracy index	Political stability
Australia	1225	49,261	37.6	1.51	0.72	24,040	1.97	608.5	79.7	0.90
Brazil	1773	356,465	65.5	9.03	3.32	24,618	1.39	593.5	64.6	−0.38
China	11,182	3,405,253	42.6	1.44	1.00	214,093	1.94	564.3	40.8	−0.56
France	2420	138,199	95.6	0.04	0.35	55,342	2.29	613.8	79.3	0.27
Germany	3365	173,731	71.2	0.23	0.15	39,813	1.19	540.9	82.0	0.72
Italy	1816	130,592	132.1	0.04	1.12	25,295	1.40	579.5	71.6	0.34
India	2073	353,319	69.6	4.91	1.62	51,295	2.42	573.0	55.3	−0.92
Japan	4124	1,233,098	248.0	0.79	0.43	41,103	0.99	524.7	75.3	0.98
Russia	1326	368,043	15.9	15.52	3.71	66,419	4.90	808.9	45.5	−1.05
South Korea	1378	366,707	37.8	0.71	0.57	36,433	2.64	806.5	70.6	0.09
UK	2858	129,601	89.0	0.05	0.18	53,862	1.89	603.7	80.0	0.56
Source	IMF (2017a)	World Bank (2017a)	Trading Economics (2017a)	World Bank (2017b)	Bloomberg (2017b)	SIPRI (2017)	SIPRI (2017)	BICC (2017)	Democracy Ranking (2017)	World Bank (2017c)

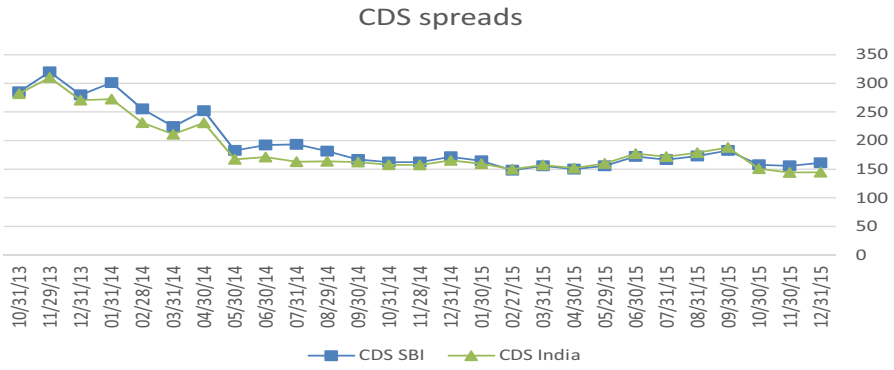

Fig. 1 Monthly 5-year tenor credit spreads for SBI and India Source: Bloomberg

for the years 2006, 2007 and 2008 are very close and no crisis event occurred in that period.

For country credit spreads, there are missing data points for the countries UK and India. Credit spread data for the UK only go back to 2006. The yearly value for 2006 equals 0.02%, which is very low and typical for highly developed countries before the financial crisis that started in 2007–2008. Therefore, we also use 0.02% as the yearly credit spread for 2005. For India, data only go back to October 2013. We use instead the monthly credit spreads of the State Bank of India (SBI), which is government-owned and benefits from state protection (State Bank of India 2017, p11). Accordingly, the creditworthiness of the bank is very close to the creditworthiness of India as Fig. 1 confirms, implying that SBI is a good proxy. Finally, data for the democracy index are missing for the years 2007 and 2015. No data for 2015 are available yet and we therefore take the values of the year 2014. For the year 2007, we use linear interpolation between the year 2006 and 2008. The error is small because the values of the democracy index per country are quite stable over the period 2005–2015.[4] Data for all other indicators is complete.

4.1 Models

To aggregate the different indicators into a composite index, we transform the indicator values to scores that have an identical range [0, 1] using min–max indicators, by subtracting the minimum (maximum for negative indicators) value and dividing by the range of the indicator values (OECD 2008; Geeraerts and Salman 2016). In formulas:

$$I_q = \frac{X_q - \min_c(X_c)}{\max_c(X_c) - \min_c(X_c)} \quad \text{for positive indicators, and}$$

[4] The relative error is smaller than 5%.

$$I_q = \frac{X_q - \max_c(X_c)}{\min_c(X_c) - \max_c(X_c)} \quad \text{for negative indicators.}$$

The total index value is obtained as a weighted sum of the individual scores and provides a *relative* score. We consider two composite indices. First, the original composite index CI1 of Geeraerts and Salman (2016) that consists of the sum of the following indicators: GDP, FX reserves, government debt, military expenditure, military expenditure-to-GDP ratio, and democracy. Second, our improved composite index CI which is obtained by adding the inflation rate, credit spread, and political stability to the index CI1, and replacing military expenditure-to-GDP ratio with GMI.

All indicators get a 100% weight, except foreign exchange reserves, government debt, inflation and credit spreads, which express different aspects related to the health and stability of the economy. They obtain a 50% weight to avoid that too much relative weight for the economic factor to the detriment of the military and central government factor. Composite index CI will be adopted in our analyses, while index CI1 is used only for comparison.

5 Results

This section presents the results of the analyses we performed. Section 5.1 gives an analysis per indicator over the period 2005–2015 to distinguish the major trends. Section 5.2 compares our results with the analysis performed by Geeraerts and Salman (2016). The final section provides an analysis through time over the period 2005–2015 of the relative strategic hedging capabilities of the second-tier states together with an analysis per country.

5.1 Analysis per Indicator

Figure 2 shows the evolution of the GDP over the period 2005–2015.

The changes in GDP over 2005–2015 are a consequence of different GDP *growth* rates.[5] China displays the highest growth, which explains why its GDP level increasingly outclasses the other states. Next, Russia, Brazil, and India have also high GDP growth levels (but lower GDP at 2005), resulting in GDP levels that come close to most European great powers towards 2015. Finally, GDP growth for South Korea and Australia was higher than the European second-tier states but smaller than for BRIC countries. Their corresponding GDP levels remain therefore far below the European states and also BRIC countries towards 2015. The result is that the European second-tier states keep high GDP levels but their relative GDP level has declined over the period 2005–2015.

[5] As GDP level is USD equivalent, some changes in GDP are the results of movements in exchange rates. For example, the drop in Japan's GDP in 2013 relates to an increase in the USD/JPY exchange rate. Real growth was still positive (Fig. 22 and Table 19).

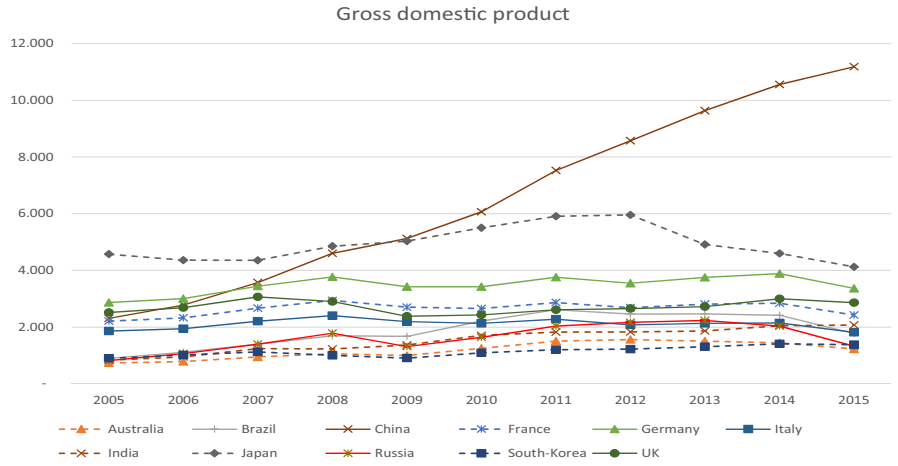

Fig. 2 Gross Domestic Product. Source: IMF

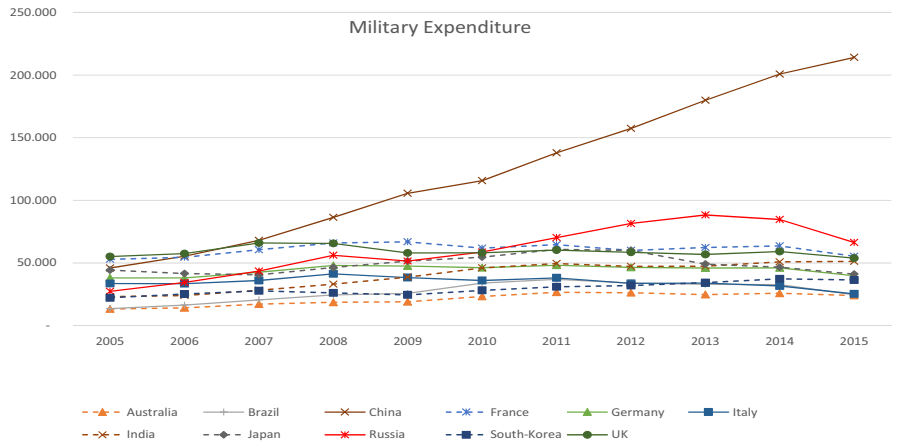

Fig. 3 Military Expenditure. Source: SIPRI

Figure 3 shows that similar growth trends hold for military expenditure (also for FX reserves). Militarily, China has increasingly outpaced the other second-tier countries and the other BRIC countries have come closer to the European states or even surpass them. Australia and South Korea, despite higher military growth rates than the European states, keep the lowest military expenditure over 2005–2015. For FX reserves, the impact on total strategic hedging score becomes smaller over time because China's increasingly high indicator value makes that the scores of the other second-tier states are very small (except for Japan).

Except for Brazil, India and Russia, which often display high inflation levels (Fig. 4), the inflation rates of the other second-tier states do not go beyond 4% (except a few instances; Table 12). This implies that the score for the inflation

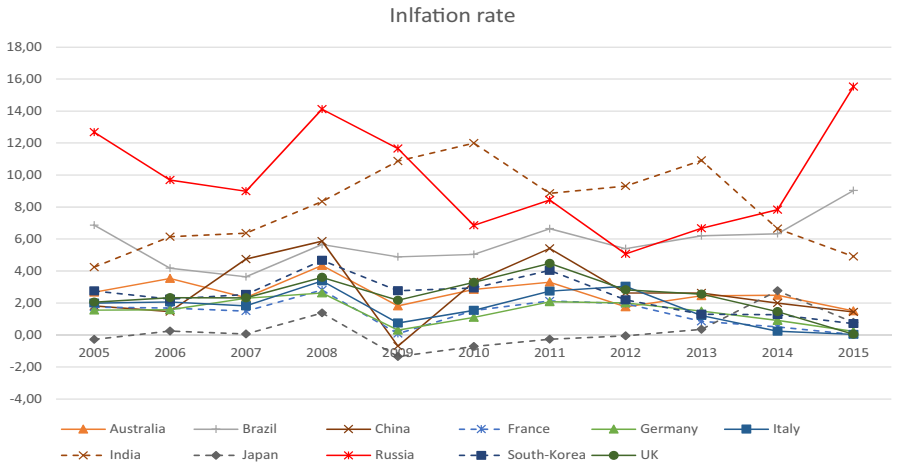

Fig. 4 Yearly inflation rates. Source: World Bank

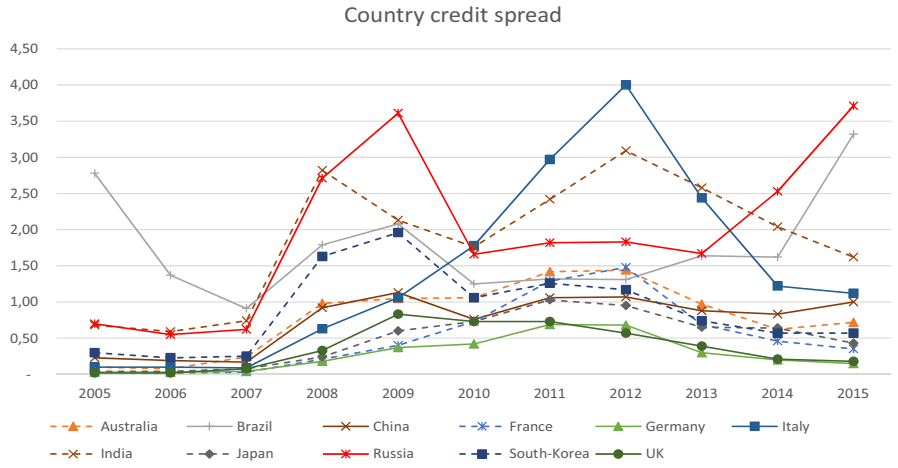

Fig. 5 Average yearly country credit spreads. Source: Bloomberg

indicator is considerably lower for Brazil, India and Russia than for other second-tier states. In addition, inflation rates display volatility through time, especially during period of the Great Recession (2008–2010) and the European Sovereign Debt Crisis (2010–2012). The recent sharp increases in inflation rates for Russia and Brazil relate to local financial crises (Sect. 5.3).

The credit spreads of Brazil, India and Russia (Fig. 5) are in general materialistic higher than for the other second-tier states (and consequently score low on this negative indicator). The only exception is during the European Sovereign Debt Crisis and shortly after, where Italy had quite high credit spreads. The country credit spreads show a structural increase since the Great Recession, especially for the developed

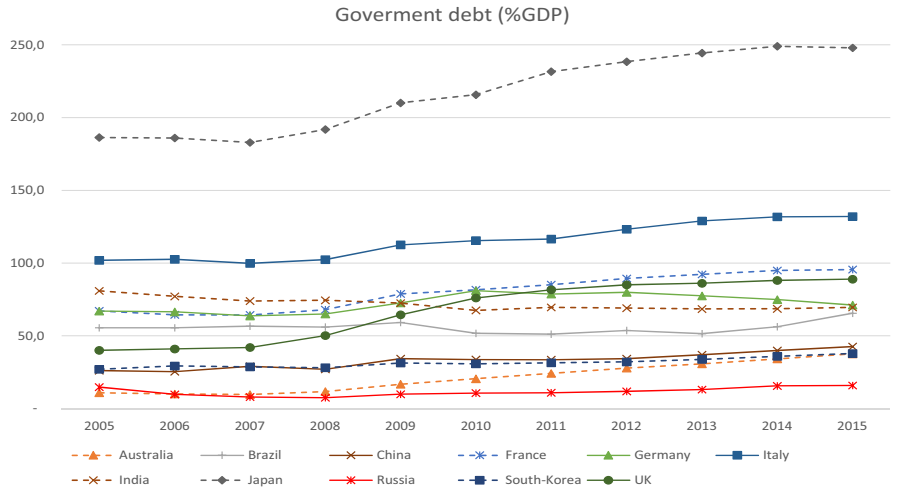

Fig. 6 Government debt (%GDP) per country. Source: Trading Economics

countries. Although the spreads have decreased thereafter, they never went back to the pre-crisis level, which is also the consequence of broader changes in credit risk perceptions since the crisis (Füss et al. 2016). As for inflation rates, the recent increases in credit spread for Russia and Brazil relate to local financial crises (Sect. 5.3).

Figure 6 shows that the government debt-to-GDP ratio has in general increased over the period 2005–2015, especially since the Great Recession, although there are small exceptions to that trend (Brazil and India, and Germany more recently). Japan suffers from very high government debt ratios. The European states have in general higher debt ratios than the BRIC countries (except India) and Australia and South Korea. The UK is the exception as it had materially lower government-to-GDP ratios than other European states before the Great Recession, but it doubled afterwards. Apart from this, the country ranking for this indicator is rather stable over time.

For political stability, we distinguish three types of second-tier states from Fig. 7. A first class, consisting of the BRIC countries, has low political stability. A second class contains the second-tier states with high political stability, i.e., Australia, Japan, and Germany. The third class comprises the remainder of second-tier states which have 'mediocre' political stability, but are closer to the second than the first class. Despite some volatility, these trends are stable through time (except Brazil who moves closer to the upper side in some periods).

Figure 8 shows that BRIC countries have materially lower democracy values than the other second-tier states. Germany, the UK and Australia have the highest democracy level. The other states are between these two classes but have in general rather high democracy levels. The democracy levels are also rather stable through time, although a slow increase can be distinguished for the BRIC countries (except Russia) and South Korea.

Figure 9 shows that the GMI slowly decreases over time. Russia and South Korea systematically have the highest index values, to be followed by the UK, France,

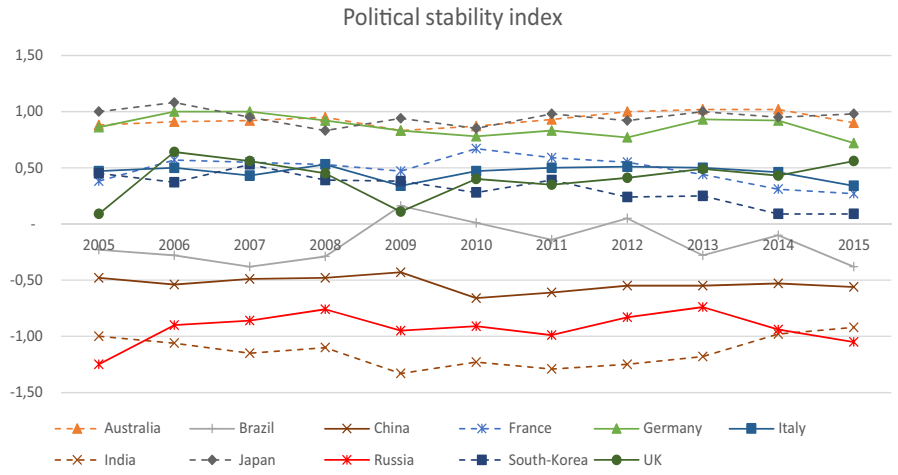

Fig. 7 Political stability and absence of violence/terrorism. Source: World Bank

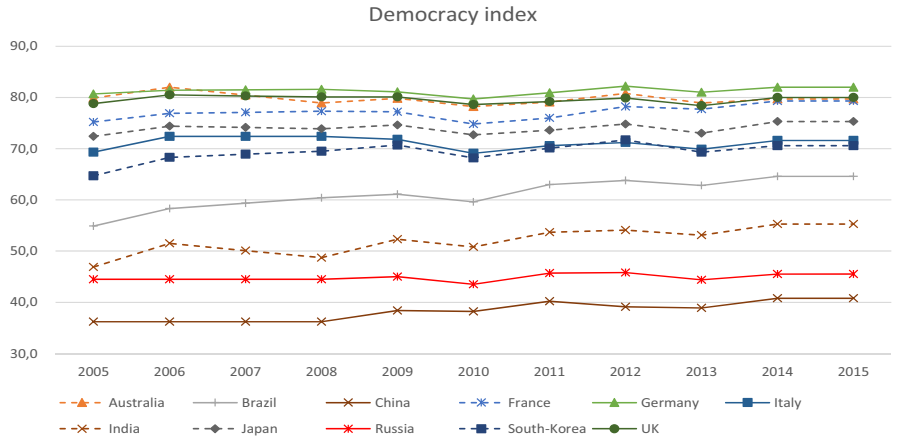

Fig. 8 Democracy index per country. Source: Democracy Ranking

Australia, and Brazil. Italy and Germany have lower index values than the other European states and their GMI decreases faster than for other states. India and China have rather low GMI values (but Germany even lower since 2011) and Japan has consistently the lowest value.

Comparing the GMI with the military expenditure-to-GDP indicator yields some differences. India has a rather high military expenditure-to-GDP ratio (Table 15) and therefore rather low ranking for this indicator. However, India scores lowest in terms of heavy weapons (Table 22). Therefore, India's relative ranking increases when the GMI indicator is used (Tables 20 and 21). Next, Brazil decreases in ranking for the GMI indicator because it scores quite high on personnel, while China increases in ranking for the GMI as it scores relatively low for personnel and heavy

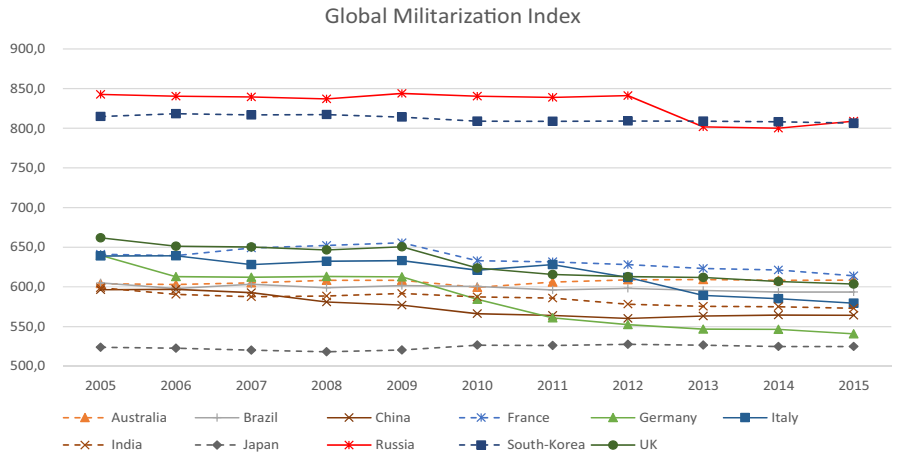

Fig. 9 Global Militarization Index. Source: BICC

weapons. Finally, the impact is highest for South Korea. It ranks already low for the military expenditure-to-GDP ratio (only Russia does worse) but the gap with Russia decreases materially when the GMI is used. This is because South Korea scores much higher in terms of personnel than the other second-tier states (Table 22). These trends are systematic over the period 2005–2015.

5.2 Comparison With Geeraerts and Salman (2016)

Using index CI1 and data for 2013, Geeraerts and Salman (2016) obtained the following ranking in decreasing order for 2013: China, Russia, India, Japan, Germany, France and UK, which is different when the enhanced index CI is used (Table 3). The result is a strong decrease in relative strategic hedging capabilities of Russia and India that fall below Japan and the European states. This effect holds for the more recent years (also for Brazil and Italy) and is mainly a consequence of the indicators inflation rate, credit spread, and government stability index that are part of index CI but not of index CI1. As shown in the previous section, the BRIC countries score lowest on these indicators (except China, which only scores low on political stability and keeps the highest ranking, except in 2005). The effect is less visible for earlier years because these countries had not yet caught up with Japan and the European great powers in terms of GDP and military expenditure (Tables 3 and 8).[6]

There is also an impact of using the GMI (index CI) instead of the military expenditure-to-GDP ratio (index CI1) but the impact is smaller (except for South Korea), as well as the different weighting schemes applied (Sect. 4.1). The effect is most visible for Russia due to its very low government debt as percentage-of-GDP (Table 11). Finally, the impact of including the country credit spread in index CI

[6] The only difference in ranking for composite index CI1 for the year 2013 with respect to the ranking obtained by Geeraerts and Salman (2016) is Germany and Japan, who switch places. The reason is that we sometimes use different data sets and that the scores of both countries are close.

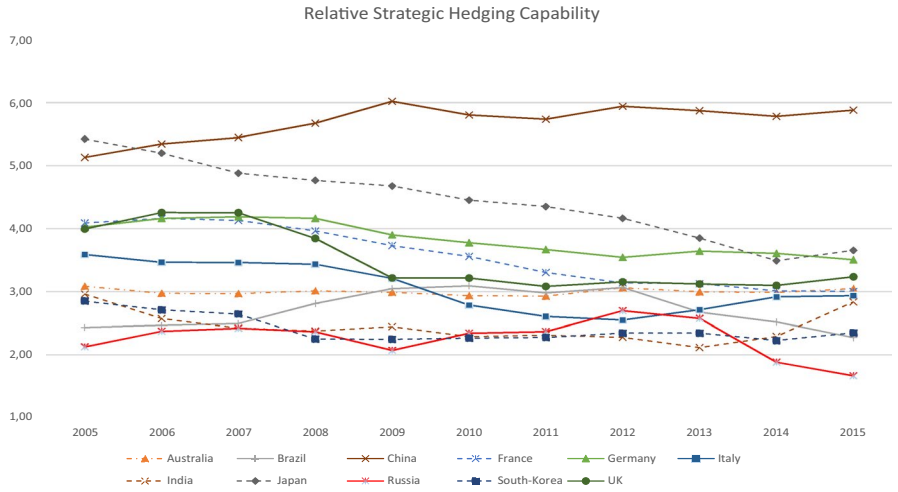

Fig. 10 Relative strategic hedging capabilities per country

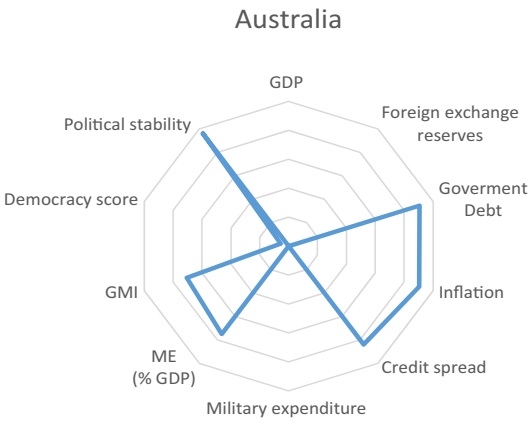

Fig. 11 Australia's capability of strategic hedging, 2015. Source: Own calculations based on the Models

explains also the decrease in ranking of Italy with respect to index CI1 during the European Sovereign Debt Crisis.

The above analysis shows that the higher explanatory power of index CI has a material impact on the relative strategic hedging capabilities of second-tier states.

5.3 Evolution of Strategic Hedging Capabilities for Second-Tier States

Figure 10 displays the historical evolution of the *relative* strategic hedging (Figs. 11, 12) capabilities for the second-tier states in scope over the period 2005–2015.[7]

[7] The relation between capabilities and actual strategic hedging behavior or the choice between Type A or Type B hedging are not formally in scope of this paper and are still open to future research. Nevertheless, to an extent possible, we provide some comments on the second-tier states strategic hedging motivations and actions.

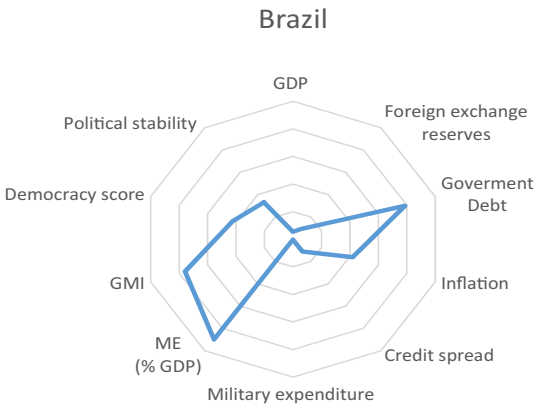

Fig. 12 Brazil's capability of strategic hedging, 2015. Source: Own calculations based on the Models

5.3.1 China

Due to its unprecedented economic and military growth the last two decades, China has changed the security environment in Asia and replaced Japan as the leading Asian state (Lincoln 2014; Saunders 2014). The growing gap in relative hedging capabilities with respect to other second-tier states illustrates this (Fig. 10). Its GDP, military expenses, and FX reserves grow faster than other second-tier states and increasingly dwarf other states, while it started already quite high in 2005. Despite inherent risks related to its strongly export-driven economy, it has been able to sustain stable economic growth (also during the financial crisis of 2008–2010), visible through controllable credit spreads and inflation rates, contrary to other BRIC countries. Moreover, its government debt, although growing, remains low.

Militarily, China's large economic growth allows to augment its military sharply while maintaining its level of relative military spending (its GMI ranks second or third), being very advantageous for strategic hedging. Chinese decision-making is coordinated at the central level and strongly influenced by the Party (Geeraerts and Salman 2016). Only on political stability does China score low because it suffers from many domestic problems such as terrorist attacks, social unrest and tensions in Xinjiang and Tibet (The Diplomat 2014). Despite this, China scores by far highest for strategic hedging capabilities (Fig. 13).

With respect to capabilities, China is well placed to perform strategic hedging and several of its actions have been identified as instances of Type A and Type B strategic hedging (Tessman 2012; Wolfe 2013; Salman and Geeraerts 2015). Recently, Salman (2017) claims that China has closed the economic gap with the United States already to such an extent that it is entering the second phase of strategic hedging, with higher focus on the military (Figs. 14, 15, 16, 17, 18, 19, 20, 21).[8]

[8] Whether this phase transition will continue depends on China's ability to sustain the decrease of the relative gap with the United States.

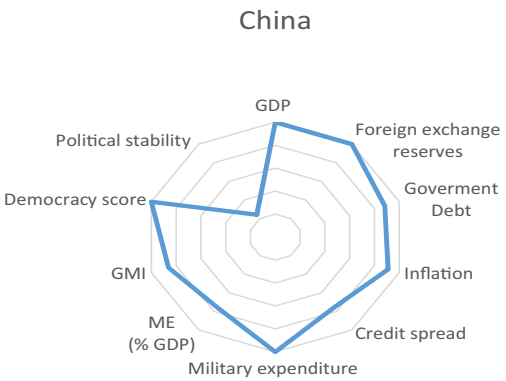

Fig. 13 China's capability of strategic hedging, 2015

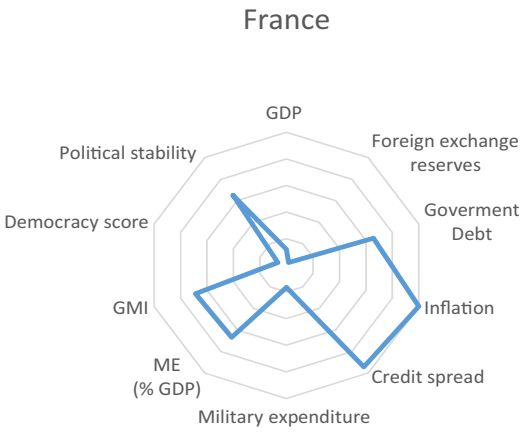

Fig. 14 France's capability of strategic hedging, 2015. Source: Own calculations based on the Models

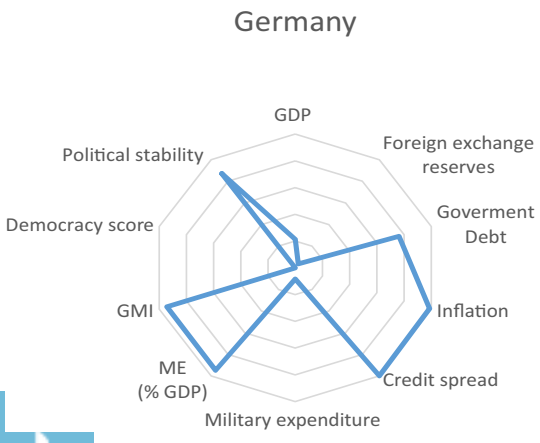

Fig. 15 Germany's capability of strategic hedging, 2015. Source: Own calculations based on the Models

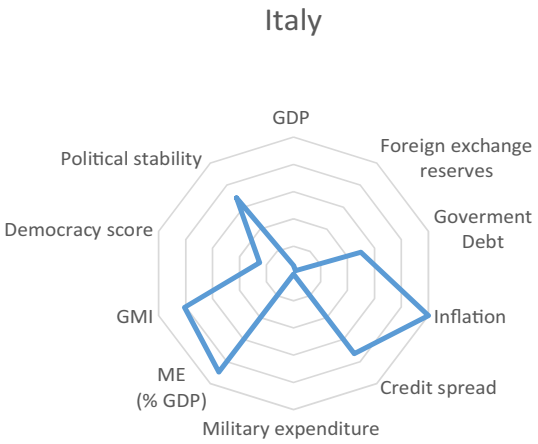

Fig. 16 Italy's capability of strategic hedging, 2015. Source: Own calculations based on the Models

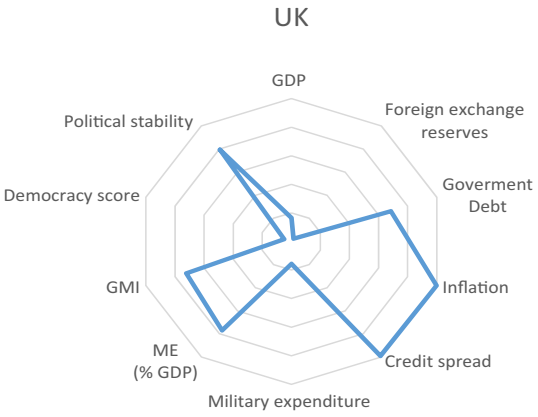

Fig. 17 UK's capability of strategic hedging, 2015. Source: Own calculations based on the Models

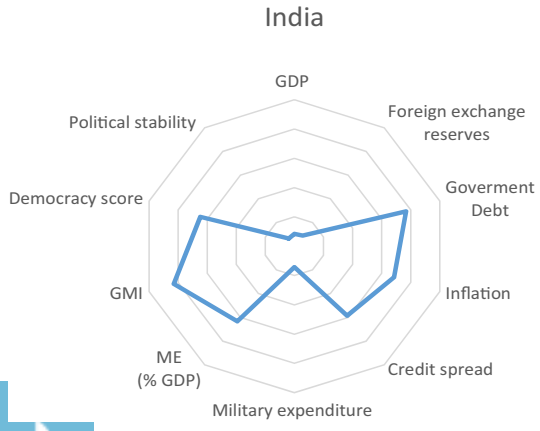

Fig. 18 India's capability of strategic hedging, 2015. Source: Own calculations based on the Models

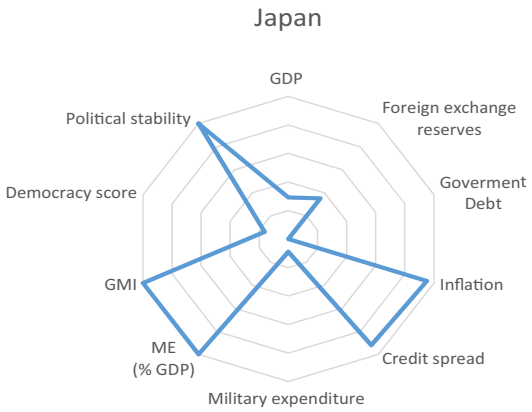

Fig. 19 Japan's capability of strategic hedging, 2015. Source: Own calculations based on the Models

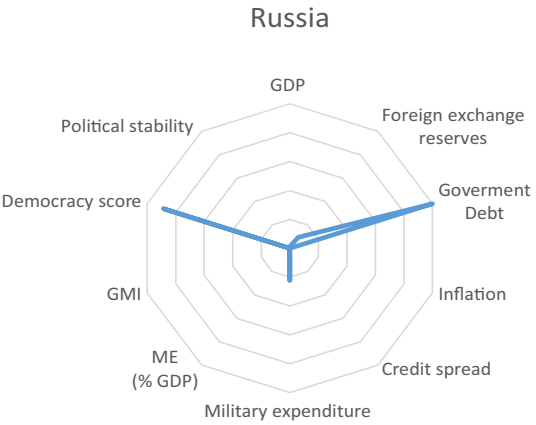

Fig. 20 Russia's capability of strategic hedging, 2015. Source: Own calculations based on the Models

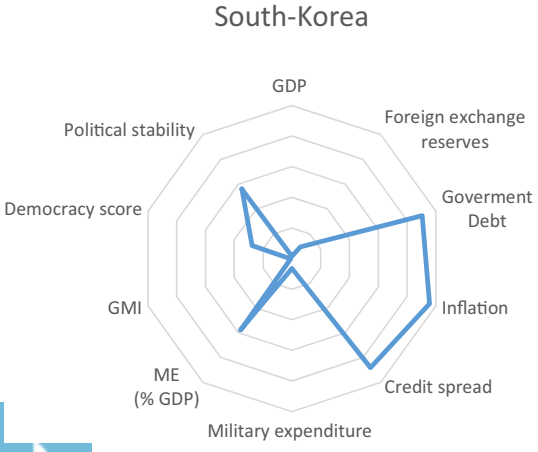

Fig. 21 South Korea's capability of strategic hedging, 2015. Source: Own calculations based on the Models

Fig. 22 USD/JPY exchange rate (XE-The World's Trusted Currency Authority. http://www.xe.com/currencycharts/?from=USD&to=JPY&view=10Y)

5.3.2 Japan

Although being surpassed by China since 2006, Japan keeps the second position in the capabilities, except in 2014 where Germany ranks just before Japan. Japan's GDP and FX reserves surpass the remaining second-tier states and its economy is well-diversified and keeps a considerable export activity despite China's economic rise (Okabe 2013). Low credit spreads (even during the Great Recession they remained relatively low) and inflation rates point to a stable economy. However, inflation is sometimes negative, having a detrimental impact on economic growth. This implies that its inflation score overestimates Japan's economic healthiness (Sect. 3.1). Despite these economic strengths, Japan endures a high level of government debt. The foregoing arguments imply that Japan's total economic score outdoes the other second-tier states, safe China (Table 4). Only 2013–2015 forms an exception, when Germany surpasses Japan, but this relates more to the sharper increase in USD/JPY exchange rate than the USD/EUR exchange rate in that period (Figs. 22, 23) because Japan's real GDP growth is positive in this period (Table 19). This bias should be taken into account in the interpretation of the results.

Japan's adoption of its pacifist constitution after the Second World War, and more specific Article nine, is well suited not to provoke the system leader (Liff, 2015), consistently resulting in the lowest GMI score. High GDP levels ensure this does not translate in low military expenditure implying that Japan's total military score outperforms all other states, except China (Table 5).[9] Finally, its low score for the

[9] Notice that Japan's low military expenditure level has increased recently, though still limited in the historical time period we consider. However, this level might change in the near future, especially in light of Abe's desire to change the constitution of Japan, and more specifically a revision of the very sensitive Article 9. Nevertheless, it is far from certain whether this will effectively lead to drastic military expense increases (Liff 2015; The Diplomat 2017).

Fig. 23 USD/EUR exchange rate (XE-The World's Trusted Currency Authority. http://www.xe.com/currencycharts/?from=USD&to=EUR&view=10Y)

democracy index is compensated by the high level of political stability, yielding higher government strength scores (Table 6) than the other states, safe China. Therefore, while increasingly overtaken by China, Japan scores still high in capabilities (Fig. 19).

As an ally of the US, Japan is less expected to implement Type A hedging actions. However, China's rise and North Korea's threat makes that Japan wants to improve its military capabilities as a form of Type B hedging in response to the possible further decline of US' military assistance (Salman 2017).

5.3.3 European Union: Germany, UK, France, and Italy

The hedging capabilities of the European second-tier states display several similarities to those of Japan (Figs. 14, 15, 16, 17). GDP levels rank still high with respect to the BRIC countries (except China) as well as Australia and South Korea, although lower than Japan. Like Japan, they score well on inflation and credit spreads (except Italy, see below) and have high government debts, but not as severe as Japan. Nevertheless, on FX reserves, the European states score much lower than Japan (Table 10). There are also differences between the European states. Germany consistently scores higher on total economic strength (Table 4), mostly due to its higher GDP and lower government debt levels (as %GDP). The only exception is the UK that had much lower debt levels before the Great Recession but which rose swiftly afterwards. It explains the faster decline in relative strategic hedging capabilities of the UK in the period 2008–2010 (Fig. 10). In addition, Germany's credit spreads recovered better than the other European states after the financial crisis. It partly explains that the relative difference in strategic hedging capabilities between Germany, and France

and the UK, has increased since 2005 (next to changes in Germany's GMI, see footnote below).

Since its economic miracle of 1958–1963 and access to the European Economic Community, Italy's economy has risen steadily (Buchanan 2012) and is now one of the leading economies in the world, although performing less than the other European second-tier states. It has lower GDP and higher government debt level and suffered much harder from the Great Recession and consequent Eurozone Sovereign Debt Crisis, resulting in very high government debt levels and low credit quality (The Economist 2011). This is reflected in a blow-up of the Italian credit spreads during 2010–2013, and which remain significantly higher than for the other European second-tier states after this period, explaining why Italy loses rank in 2010–2013.

Although Europe decreased military expenditure drastically after the Second World War (Geeraerts and Salman 2016), military expenditure for France and the UK is still high although it lost some ranking to China and Russia over the period 2005–2015. Germany's demilitarization after the Second World War puts it below France and the UK, but still above Italy. Due to its higher GDP, Germany's total military score is in line with France and the UK, but higher than Italy.[10] Finally, as for Japan, the European second-tier states score low on the democracy score but rather high on political stability.

In sum, Germany's relative strategic hedging capabilities have increased with respect to France and the UK, two countries with similar strategic hedging capabilities, but remains below Japan, while Italy scores lowest. Figure 10 also shows that the European great powers remain higher in ranking than the BRIC countries (except China) despite their faster rise in GDP and military expenses. The only exception is Italy during its crisis period 2010–2013. The main reason is that the European second-tier states have stronger economic performance (see below).

As allies of the US, the European states have no direct need for Type A hedging. However, rising regional threats (e.g., Russia) and reduced US military involvement provides incentives for Type B hedging. Deeper cooperation through an enhanced EU structure could make a powerful European block with considerable strategic hedging capabilities. However, the recent Brexit event might reduce such prospects.

5.3.4 Australia

Australia's GDP growth in 2005–2015 was considerably lower than for BRIC countries but higher than for Japan and the European second-tier states. Its government debt level remains also lower than most other second-tier states (Table 11). Australia also scores consistently high on inflation (negative indicator) and even though it was hurt by the Great Recession and the European Sovereign Debt crisis (Mascitelli and Park 2012), credit spreads returned to more reasonable levels (Fig. 5). Thus, despite low GDP, Australia scores rather high on economic capabilities but lower than the

[10] Actually, Germany's GMI (due to high personnel costs) has the same level as France in 2005 but decreases faster afterwards, explaining also the increasing outperformance of Germany w.r.t France (and UK).

European second-tier states (except Italy since 2010). It has even gained relative economic power with respect to the European second-tier states (Table 4). It surpassed Italy since the sovereign debt crisis and has come closer to France and the UK. Australia has a high level of democracy and political stability, resulting in good scores for central government strength, in general higher than the European second-tier states (Table 6). Finally, on the military aspect, Australia scores lower than the European states because of its smaller military expenditure, although it comes close to Italy towards the end of the period.

In sum, Australia has gained in relative strategic hedging capabilities with respect to the European second-tier states and performs better than Italy since 2010 despite its lower GDP (Fig. 11). Due to its strong economic capabilities, it also still surpasses the BRIC countries (except Brazil during 2009–2012).

Australia's security has always depended ultimately on Western strategic primacy in the East Asian littoral, first by Britain and later by the US. Recent Asian economic growth, which poses a threat to American primacy in that region, and Australia's growing economic involvement with East Asia makes its international situation more complex than ever before (White 2014). To optimize these economic opportunities, its primary aim consists in preserving the stability of the rule-based global order. Therefore, maintaining its military technological edge and capability superiority over potential adversaries is an essential element of Australia's strategic planning. In the context of the possible threat of decreasing US military presence in the East Asia region, there can be a strong motivation for Type B hedging.

5.3.5 South Korea

The 1980s and early 1990s witnessed a South Korea transforming into a more modern economy with a continuous economic growth despite difficult periods such as the Asian financial crisis of 1997 from which it quickly recovered, and the Great Recession and successive European Sovereign Debt Crisis that hit South Korea hard but only temporarily led to a reduced economic growth (Table 19; Chaibong 2008). The downward shock of 2008 in Fig. 10 is mainly due to increased credit spreads in that period. In terms of economic power, South Korea is close to Australia as can be seen through the similar values over the period 2005–2015 for all economic indicators (except for higher FX reserves of South Korea but the impact is small).

South Korea's military expenditure is rather small with respect to other second-tier states but its GMI is high such that the total military score is lowest of all second-tier states (Table 5). Despite its democratic revolution end 1980s, South Korea's democracy is not fully consolidated yet (Chaibong 2008), with a democracy level higher than for BRIC countries but lower than the other developed countries. South Korea's political stability has decreased over the period 2005–2015 but is still closer to European second-tier states than BRIC countries. In sum, South Korea ranks much lower than Australia, and at many times, the BRIC states (Fig. 21), especially later in the time period because the BRIC economies have grown faster than South Korea.

Due to its high GMI and relative low military expenditure, South Korea lacks the strategic hedging capabilities of many other second-tier states. This focus on the

military relates to the specific geopolitical environment where the Korean peninsula is at the center of conflicting geostrategic interests of the great powers in their dealing with the threat of North Korea (Snyder 2014).

5.3.6 Brazil

As Fig. 10 shows, Brazil has increased its relative strategic hedging capabilities until 2013, mainly due to high GDP growth rates (World Bank 2016; Table 19), which played a role in Brazil's emergence as a leading power in South America after more than a century of US hegemony in the Western Hemisphere. In addition, Brazil has on average rather low government debt-to-GDP ratios, and on average, a lower value on inflation rates and credit spreads than India and Russia, although higher than the other second-tier states. Moreover, its credit spread score has increased over time (until 2013, see below). Its economy has caught up quickly after the Great Recession, and the inflation rate and credit spreads are high but stay under those of India and Russia. Therefore, it mostly outdoes India and Russia in economic capabilities since 2010 (Table 4). Compared to Australia and South Korea, Brazil catches up economically and comes close to these countries.

This trend was undone since 2013 (Fig. 10) and the reason is threefold. First, from 2013 the credit spread score of Brazil decreases because of the swift decline of India's credit spread. Second, since 2015, Brazil suffers from an economic recession. As a consequence, its growth rate decreased with 3.8% and inflation peaked to an annual rate of 9.0% in 2015, exceeding the upper limit of the country's upper target inflation band (Table 19; World Bank 2016). Therefore, Brazil loses position with respect to India (and also South Korea). Third, India's total economic score increases sharply in 2015 due to lower inflation rates.

For the military, Brazil spends relatively little on the military and its GMI ranks in the middle of the other second-tier states. Its total score on the military is therefore systematically lower than that of India but higher than for Russia and Australia (Table 5). Both its democracy and political stability levels are above the other BRIC countries but below the other second-tier states and result in a government strength score that is higher than for India and rather close to Russia and Australia (Table 6). The combination of the above explains why Brazil has higher strategic hedging capabilities than India and Russia during most of the period of 2005–2015, and even Australia between 2009 and 2012. The trend is reversed since 2013 (Fig. 12).

Brazil's approach to regional leadership is not directed towards competition with the US but concerned with the creation of a stable South America. In light of possible US reduced involvement in the region, Tessman identified several actions of Brazil as instances of Type B strategic hedging (Tessman 2012).

5.3.7 India

Since the liberalization of its economy in 1991, India's economy has risen sharply with average annual growth rates above 6%. Its military buildup goes at a similar

pace (Paul 2014) and it has a firm desire in profiling itself as a strong regional power, as its Look-East Policy illustrates (Engh 2016). Despite these growth levels, India's economic capabilities are in general the lowest during 2005–2015 (Table 4). Although its GDP evolution is in line with Brazil and Russia and it has also high credit spreads and inflation rates, India has also much larger government debt-to-GDP ratios than Brazil and Russia. Exceptions are the beginning and the end of the period where India's economic performance ranks higher as a consequence of lower credit spreads and inflation rates,[11] and during Russia's economic downturn in 2009 and its more recent economic crisis (see below).

In line with its GDP, India's military expenditure has grown strongly over the period 2005–2015 and although India spends a rather high percentage of its GDP to the military, it still scores high on the GMI indicator, yielding a total military score which is materially higher than Russia. The fact that India has the lowest political stability but higher democracy level than Russia results in a lower ranking for government strength.

In sum, despite large GDP growth levels, India remains low in ranking because of its relative poor economic health and government strength capabilities (Fig. 18). India and Russia are on average rather close to each other in total strategic hedging capabilities but for different reasons, and are also in the range of South Korea. Notwithstanding the relatively low capabilities, India has incentives to perform Type A and Type B hedging. Although India desires US military presence in the region to counter a swiftly rising China, it is also wary of a US that might thwart its own ambitions in the Indian Ocean.

5.3.8 Russia

Since the early 2000s Russia's has begun to recover from its severe depression in the aftermath of the collapse of the Soviet Union. Its GDP has grown fast in the period 2005–2013 (except in 2009), though less than for China and India, but then slowed down in 2014, to become negative in 2015. Its economy is still fragile to adverse economic events as became clear during the Great Recession and Russia's economic crisis since mid-2014, caused by falling oil prices, sharp devaluation of the ruble and economic sanctions (Kuepper 2016). It resulted in sharply rising credit spreads and inflation, yielding an economic score that is lower than other second-tier states in these periods. Even outside the crisis moments, Russia has high inflation rates and credit spreads. On the positive side, it has very low government debt-to-GDP ratios.

Russia has high military spending (second to China) but also high GMI. Therefore, its total military score is low (Table 5). Russia's government strength score is average because it has a low democracy level combined with low political stability. In sum, despite Russia's strong growth in GDP and military expenditure over the period 2005–2015, its economy is still sensitive to crises, and its recent severe

[11] India's inflation rate in 2015 is close to the future target inflation rate set by the Reserve Bank of India (Ball et al. 2015; The Economic Times 2016).

economic crisis makes that Russia's relative strategic hedging capabilities have decreased with respect to the other second-tier states (Fig. 20).

Despite its relatively low strategic hedging capabilities, Russia has incentives for both Type A and B hedging. Tessman (2012) identified the strategic partnership between Russia and China as Type B strategic hedging for Russia. In its dealing with the threat of increasing US influence, Russia's behavior is often too confrontational to classify as strategic hedging instances. Its recent actions during the Ukrainian Crisis are rather examples of 'hard hedging', which is an intermediary strategy between balancing and engagement that is more confrontational in its form than other concepts of hedging (Holslag 2016).

6 Conclusion

In the current deconcentrating unipolar system with the US as the system leader, second-tier states have incentives to engage in strategic hedging, i.e., to develop in a steady way their competitive abilities in the longer term to hedge against future uncertainties, without provoking a short-term military reaction of the system leader. Many factors can influence the priority of a state to engage in strategic hedging actions. However, a primary condition for a second-state to perform successful strategic hedging strategies is that it has sufficient capabilities.

This article extends and improves earlier research of Geeraerts and Salman (2016) on the measurement of strategic hedging capabilities, and constructs an enhanced index of strategic hedging determinants with considerably higher explanatory power. This new methodology often yields different results than the original methodology of Geeraerts and Salman. Using the new approach, we investigate how the strategic hedging capabilities of the leading eleven second-tier states have evolved over the period 2005–2015. The results show that China increasingly outclasses all other second-tier states and recently dwarfs the other states in terms of strategic hedging capabilities. Although relatively losing position with respect to China, Japan and the European great powers still rank high, the only exception being Italy, who performed considerably less during the European Sovereign Debt Crisis. Despite their stronger rise in GDP and military expenditure, the BRIC countries (expect China) do not consistently catch up with the European second-tier states. The main reason is their lower economic stability which is more prone to economic setbacks. Despite its lower GDP, Australia relatively gains in strategic hedging capabilities with respect to the European states and comes closer to France and the UK in recent times. Finally, South Korea has a low score which is in the same range as India and Russia.

The strategic hedging program is still in its early stages. Further research is required to what extent strategic hedging capabilities are linked to actual behavior. In this context, strategic hedging capabilities form a crucial element in understanding

the reasons why strategic hedging can be successful or not in different situations. This article contributes to this research by providing a robust measurement methodology that allows to track or forecast the strategic hedging capabilities of states through time.

Appendix

See Tables 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22.

Table 2 Total scores for composite index CI

Total score	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Australia	3.09	2.97	2.97	3.01	2.99	2.94	2.93	3.06	3.00	2.99	3.05
Brazil	2.43	2.47	2.49	2.81	3.05	3.09	2.98	3.06	2.67	2.52	2.27
China	5.13	5.35	5.45	5.67	6.02	5.81	5.74	5.94	5.87	5.78	5.88
France	4.09	4.16	4.13	3.96	3.73	3.56	3.30	3.14	3.13	3.01	3.00
Germany	4.03	4.16	4.19	4.16	3.90	3.78	3.67	3.54	3.64	3.61	3.51
Italy	3.59	3.46	3.46	3.43	3.21	2.79	2.60	2.55	2.71	2.92	2.94
India	2.96	2.57	2.42	2.38	2.44	2.29	2.31	2.28	2.11	2.29	2.84
Japan	5.42	5.20	4.88	4.77	4.68	4.45	4.35	4.17	3.85	3.49	3.66
Russia	2.12	2.37	2.42	2.36	2.07	2.34	2.37	2.70	2.58	1.88	1.67
South Korea	2.85	2.71	2.64	2.25	2.24	2.26	2.28	2.34	2.34	2.23	2.35
UK	4.00	4.26	4.25	3.85	3.22	3.21	3.08	3.15	3.12	3.10	3.23

Table 3 Country rankings for composite index CI

Ranking	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
1	Japan	China	China	China	China	China	China	China	China	China	China
2	China	Japan	Japan	Japan	Japan	Japan	Japan	Japan	Japan	Germany	Japan
3	France	UK	UK	Germany	Germany	Germany	Germany	Germany	Germany	Japan	Germany
4	Germany	France	Germany	France	France	France	France	UK	France	UK	UK
5	UK	Germany	France	UK	UK	UK	UK	France	UK	France	Australia
6	Italy	Italy	Italy	Italy	Italy	Brazil	Brazil	Brazil	Australia	Australia	France
7	Australia	Australia	Australia	Australia	Brazil	Australia	Australia	Australia	Italy	Italy	Italy
8	India	South Korea	South Korea	Brazil	Australia	Italy	Italy	Russia	Brazil	Brazil	India
9	South Korea	India	Brazil	India	India	Russia	Russia	Italy	Russia	India	South Korea
10	Brazil	Brazil	India	Russia	South Korea	India	India	South Korea	South Korea	South Korea	Brazil
11	Russia	Russia	Russia	South Korea	Russia	South Korea	South Korea	India	India	Russia	Russia

Table 4 Total scores per country for the economic indicators of CI

Economy total score	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Australia	1.37	1.31	1.25	1.23	1.28	1.13	1.16	1.29	1.24	1.23	1.33
Brazil	0.64	0.77	0.84	1.12	1.10	1.14	1.16	1.23	1.03	0.86	0.76
China	2.24	2.39	2.37	2.57	2.80	2.66	2.56	2.73	2.71	2.70	2.78
France	1.66	1.73	1.79	1.80	1.71	1.46	1.35	1.31	1.41	1.42	1.43
Germany	1.86	1.92	1.98	2.04	1.91	1.76	1.65	1.57	1.62	1.62	1.61
Italy	1.44	1.45	1.50	1.46	1.38	0.88	0.79	0.72	0.85	1.12	1.18
India	1.09	0.90	0.72	0.66	0.76	0.54	0.63	0.63	0.48	0.67	1.15
Japan	2.50	2.40	2.28	2.25	2.15	1.96	1.86	1.77	1.51	1.24	1.40
Russia	0.97	1.01	0.94	0.83	0.68	0.93	0.98	1.24	1.07	0.61	0.56
South Korea	1.43	1.42	1.31	1.08	1.09	1.12	1.13	1.29	1.35	1.35	1.43
UK	1.79	1.83	1.88	1.77	1.51	1.34	1.30	1.39	1.39	1.44	1.51

Table 5 Total scores per country for the military indicators of CI

Military total score	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Australia	0.75	0.75	0.73	0.72	0.73	0.77	0.74	0.74	0.71	0.71	0.71
Brazil	0.75	0.81	0.80	0.83	0.83	0.88	0.87	0.83	0.81	0.80	0.76
China	1.55	1.72	1.77	1.80	1.83	1.87	1.88	1.90	1.87	1.86	1.86
France	1.58	1.56	1.45	1.28	1.13	1.08	1.00	0.94	0.90	0.88	0.85
Germany	1.23	1.27	1.21	1.14	1.04	1.06	1.08	1.07	1.06	1.04	1.03
Italy	1.12	1.08	1.03	0.98	0.87	0.84	0.78	0.79	0.84	0.82	0.81
India	1.00	1.01	1.01	0.99	1.01	1.05	1.02	1.00	0.97	0.97	0.97
Japan	1.74	1.63	1.46	1.41	1.37	1.34	1.31	1.26	1.16	1.12	1.09
Russia	0.34	0.47	0.52	0.55	0.38	0.38	0.39	0.42	0.43	0.37	0.22
South Korea	0.30	0.32	0.28	0.17	0.16	0.15	0.14	0.15	0.06	0.07	0.07
UK	1.57	1.60	1.55	1.29	1.05	1.07	1.02	0.97	0.90	0.90	0.88

Table 6 Total scores per country for the central government indicators of CI

Central government total score	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Australia	0.96	0.92	0.99	1.06	0.98	1.04	1.02	1.03	1.05	1.06	1.02
Brazil	1.03	0.88	0.85	0.86	1.12	1.07	0.95	1.00	0.84	0.86	0.75
China	1.34	1.24	1.31	1.30	1.40	1.27	1.30	1.31	1.29	1.23	1.24
France	0.85	0.87	0.89	0.89	0.88	1.02	0.95	0.89	0.81	0.71	0.72
Germany	0.94	0.98	1.00	0.99	0.95	0.96	0.93	0.90	0.96	0.95	0.87
Italy	1.02	0.94	0.94	1.00	0.95	1.06	1.04	1.04	1.03	0.97	0.94
India	0.87	0.67	0.69	0.72	0.67	0.70	0.67	0.65	0.66	0.65	0.71
Japan	1.19	1.17	1.14	1.11	1.15	1.16	1.18	1.14	1.18	1.13	1.16
Russia	0.81	0.89	0.95	0.98	1.01	1.02	1.00	1.03	1.07	0.91	0.89
South Korea	1.12	0.97	1.06	0.99	1.00	1.00	1.01	0.91	0.93	0.81	0.84
UK	0.64	0.83	0.82	0.79	0.66	0.80	0.76	0.79	0.82	0.75	0.84

Table 7 Total scores for composite index CI1

Total score	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Australia	1.70	1.66	1.65	1.70	1.73	1.71	1.75	1.78	1.79	1.76	1.71
Brazil	2.17	2.22	2.28	2.33	2.38	2.50	2.49	2.40	2.39	2.37	2.26
China	4.69	5.00	5.25	5.44	5.54	5.56	5.59	5.62	5.62	5.64	5.64
France	2.62	2.67	2.65	2.46	2.30	2.07	1.96	1.83	1.80	1.77	1.70
Germany	2.76	2.80	2.86	2.76	2.55	2.30	2.25	2.13	2.12	2.11	2.05
Italy	2.22	2.17	2.17	2.10	2.04	1.88	1.84	1.77	1.76	1.76	1.74
India	2.05	2.06	2.21	2.08	2.20	2.27	2.17	2.20	2.24	2.28	2.37
Japan	3.93	3.62	3.24	3.10	2.92	2.76	2.62	2.44	2.10	1.94	1.90
Russia	2.32	2.62	2.76	2.78	2.48	2.52	2.53	2.54	2.51	2.38	2.21
South Korea	2.05	2.08	1.94	1.66	1.75	1.76	1.71	1.74	1.82	1.87	1.94
UK	2.83	2.88	2.90	2.41	2.08	1.87	1.77	1.78	1.78	1.83	1.85

Table 8 Country rankings for composite index CI1

Ranking	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
1	China	China	China	China	China	China	China	China	China	China	China
2	Japan	Japan	Japan	Japan	Japan	Japan	Japan	Russia	Russia	Russia	India
3	UK	UK	UK	Russia	Germany	Russia	Russia	Japan	Brazil	Brazil	Brazil
4	Germany	Germany	Germany	Germany	Russia	Brazil	Brazil	Brazil	India	India	Russia
5	France	France	Russia	France	Brazil	Germany	Germany	India	Germany	Germany	Germany
6	Russia	Russia	France	UK	France	India	India	Germany	Japan	Japan	South Korea
7	Italy	Brazil	Brazil	Brazil	India	France	France	France	South Korea	South Korea	Japan
8	Brazil	Italy	India	Italy	UK	Italy	Italy	Australia	France	UK	UK
9	India	South Korea	Italy	India	Italy	UK	UK	UK	Australia	France	Italy
10	South Korea	India	South Korea	Australia	South Korea	South Korea	Australia	Italy	UK	Italy	Australia
11	Australia	Australia	Australia	South Korea	Australia	Australia	South Korea	South Korea	Italy	Australia	France

Table 9 GDP values (US$ Billion) per country. Source: IMF

GDP (in US$ Billion)	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Australia	734	781	948	1056	997	1249	1504	1559	1506	1444	1225
Brazil	892	1108	1397	1696	1669	2209	2612	2459	2465	2417	1773
China	2309	2774	3572	4605	5122	6066	7522	8570	9635	10,558	11,182
France	2207	2327	2667	2937	2701	2652	2865	2683	2809	2844	2420
Germany	2866	3005	3445	3770	3427	3423	3761	3546	3754	3885	3365
Italy	1855	1944	2206	2402	2190	2129	2278	2074	2131	2142	1816
India	834	949	1239	1224	1365	1708	1823	1829	1863	2043	2073
Japan	4572	4357	4356	4849	5035	5499	5909	5957	4909	4596	4124
Russia	821	1064	1396	1785	1314	1638	2032	2170	2231	2031	1326
South Korea	898	1012	1123	1002	902	1094	1202	1223	1305	1411	1378
UK	2511	2682	3064	2899	2377	2431	2611	2655	2721	3002	2858

Table 10 Foreign exchange reserves values (US$ Million) per country. Source: World Bank

Foreign exchange reserves (US$ Million)	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Australia	43,257	55,078	26,908	32,924	41,742	42,267	46,714	49,138	52,837	53,910	49,261
Brazil	53,799	85,843	180,334	193,784	238,539	288,574	352,010	373,160	358,816	363,570	356,465
China	831,410	1,080,756	1,546,364	1,966,037	2,452,899	2,913,712	3,254,674	3,387,513	3,880,368	3,900,039	3,405,253
France	74,360	98,239	115,487	103,306	131,786	165,852	168,490	184,522	145,161	143,977	138,199
Germany	101,676	111,637	135,932	138,564	179,040	215,978	234,104	248,856	198,535	193,485	173,731
Italy	65,954	75,773	94,109	105,649	131,497	158,478	169,872	181,670	145,725	142,757	130,592
India	137,825	178,050	276,578	257,423	284,683	300,480	298,739	300,426	298,092	325,081	353,319
Japan	846,896	895,321	973,297	1,030,763	1,048,991	1,096,069	1,295,839	1,268,086	1,266,851	1,260,680	1,233,098
Russia	182,272	303,773	478,822	426,279	439,342	479,222	497,410	537,816	509,692	386,216	368,043
South Korea	210,552	239,148	262,533	201,545	270,437	292,143	306,935	327,724	345,694	362,835	366,707
UK	43,593	47,039	57,275	53,024	66,550	82,365	94,544	105,194	104,419	107,728	129,601

Table 11 Government debt values (%GDP) per country. Source: Trading Economics

Government debt (%GDP)	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Australia	10.9	10.0	9.7	11.7	16.7	20.5	24.2	27.8	30.8	34.2	37.6
Brazil	55.5	55.5	56.7	56.0	59.2	51.8	51.2	53.7	51.5	56.3	65.5
China	26.1	25.4	29.0	27.0	34.3	33.7	33.6	34.3	37.0	39.9	42.6
France	67.1	64.4	64.3	68.0	78.9	81.6	85.2	89.5	92.3	94.9	95.6
Germany	67.0	66.5	63.7	65.1	72.6	81.0	78.7	79.9	77.5	74.9	71.2
Italy	101.9	102.6	99.8	102.4	112.5	115.4	116.5	123.3	129.0	131.8	132.1
India	80.9	77.1	74.0	74.5	72.5	67.5	69.6	69.1	68.5	68.6	69.6
Japan	186.4	186.0	183.0	191.8	210.2	215.8	231.6	238.5	244.5	249.1	248.0
Russia	14.8	9.8	8.0	7.4	9.9	10.6	10.9	11.8	13.1	15.6	15.9
South Korea	27.0	29.3	28.7	28.1	31.4	30.8	31.5	32.1	33.8	35.9	37.8
UK	40.1	41.0	42.0	50.2	64.5	76.0	81.6	85.1	86.2	88.1	89.0

Table 12 Inflation rate per country. Source: World Bank

Inlfation (%)	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Australia	2.67	3.54	2.33	4.35	1.82	2.85	3.30	1.76	2.45	2.49	1.51
Brazil	6.87	4.18	3.64	5.66	4.89	5.04	6.64	5.40	6.20	6.33	9.03
China	1.82	1.46	4.75	5.86	−0.70	3.31	5.41	2.62	2.63	2.00	1.44
France	1.74	1.68	1.49	2.81	0.09	1.53	2.12	1.96	0.86	0.51	0.04
Germany	1.55	1.58	2.30	2.63	0.31	1.10	2.08	2.01	1.50	0.91	0.23
Italy	2.00	2.07	1.82	3.38	0.75	1.54	2.74	3.04	1.22	0.24	0.04
India	4.25	6.15	6.37	8.35	10.88	11.99	8.86	9.31	10.91	6.65	4.91
Japan	−0.28	0.25	0.06	1.38	−1.35	−0.72	−0.27	−0.05	0.35	2.76	0.79
Russia	12.68	9.69	8.99	14.11	11.66	6.85	8.44	5.07	6.67	7.83	15.52
South Korea	2.75	2.24	2.53	4.67	2.76	2.94	4.03	2.19	1.30	1.27	0.71
UK	2.05	2.33	2.32	3.61	2.17	3.29	4.48	2.82	2.55	1.46	0.05

Table 13 Average yearly country credit spread per country. Source: Bloomberg

Country credit spread (%)	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Australia	0.10	0.08	0.24	0.98	1.05	1.06	1.42	1.44	0.97	0.62	0.72
Brazil	2.78	1.37	0.91	1.79	2.08	1.25	1.32	1.31	1.64	1.62	3.32
China	0.23	0.19	0.17	0.92	1.13	0.76	1.06	1.07	0.88	0.83	1.00
France	0.03	0.02	0.03	0.21	0.40	0.73	1.29	1.48	0.69	0.46	0.35
Germany	0.03	0.03	0.04	0.18	0.37	0.42	0.69	0.68	0.30	0.20	0.15
Italy	0.10	0.10	0.09	0.63	1.06	1.78	2.97	4.00	2.44	1.22	1.12
India	0.68	0.59	0.74	2.82	2.13	1.76	2.42	3.09	2.58	2.04	1.62
Japan	0.04	0.04	0.08	0.24	0.60	0.73	1.03	0.95	0.65	0.64	0.43
Russia	0.70	0.55	0.62	2.71	3.61	1.66	1.82	1.83	1.67	2.53	3.71
South Korea	0.30	0.23	0.25	1.63	1.96	1.06	1.26	1.17	0.74	0.57	0.57
UK	0.02	0.02	0.08	0.33	0.83	0.73	0.73	0.57	0.39	0.21	0.18

Table 14 Military expenditure per country. Source: SIPRI

Military expenditure (US$ Million)	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Australia	13,238	14,240	17,186	18,633	18,960	23,218	26,597	26,217	24,825	25,784	24,040
Brazil	13,589	16,405	20,486	24,453	25,649	34,003	36,936	33,987	32,875	32,660	24,618
China	45,919	55,337	68,012	86,362	105,644	115,712	137,967	157,390	179,880	200,772	214,093
France	52,909	54,516	60,595	66,009	66,884	61,782	64,601	60,035	62,417	63,614	55,342
Germany	38,054	38,092	42,552	48,081	47,470	46,256	48,140	46,471	45,931	46,103	39,813
Italy	33,526	33,408	35,962	41,244	38,301	36,032	38,130	33,733	33,892	31,572	25,295
India	23,072	23,952	28,255	33,002	38,722	46,090	49,634	47,217	47,404	50,914	51,295
Japan	44,301	41,553	40,530	46,361	51,465	54,655	60,762	60,012	49,024	46,635	41,103
Russia	27,337	34,518	43,535	56,184	51,532	58,720	70,238	81,469	88,353	84,697	66,419
South Korea	22,160	25,177	27,726	26,072	24,576	28,175	30,992	31,952	34,354	37,286	36,433
UK	55,152	57,483	65,986	65,619	57,915	58,083	60,270	58,496	56,862	59,183	53,862

Table 15 Military expenditure (%GDP) per country. Source: SIPRI

Military expenditure (in %GDP)	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Australia	1.80	1.82	1.82	1.80	1.93	1.86	1.77	1.68	1.65	1.79	1.97
Brazil	1.54	1.51	1.50	1.48	1.58	1.59	1.49	1.51	1.46	1.39	1.39
China	2.00	2.01	1.92	1.89	2.08	1.93	1.85	1.86	1.89	1.92	1.94
France	2.40	2.34	2.27	2.26	2.48	2.34	2.26	2.24	2.22	2.24	2.29
Germany	1.33	1.27	1.24	1.28	1.39	1.36	1.28	1.32	1.23	1.20	1.19
Italy	1.81	1.72	1.63	1.72	1.75	1.69	1.67	1.63	1.59	1.47	1.40
India	2.75	2.53	2.34	2.55	2.89	2.71	2.65	2.54	2.46	2.49	2.42
Japan	0.97	0.95	0.93	0.96	1.02	0.99	1.03	1.01	0.99	1.01	0.99
Russia	3.56	3.48	3.39	3.33	4.14	3.82	3.67	3.99	4.20	4.52	4.90
South Korea	2.74	2.49	2.48	2.60	2.72	2.57	2.58	2.61	2.63	2.64	2.64
UK	2.29	2.23	2.23	2.35	2.51	2.41	2.33	2.24	2.12	2.01	1.89

Table 16 GMI per country Source: BICC

Global militarization index (GMI)	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Australia	604.0	603.0	604.9	608.3	608.1	599.2	606.1	608.8	609.2	608.3	608.5
Brazil	605.0	597.8	603.2	598.8	601.5	600.6	596.2	598.1	595.4	593.4	593.5
China	596.4	596.8	592.7	580.9	576.9	566.2	563.8	560.1	563.3	564.4	564.3
France	641.1	639.5	649.1	652.3	655.6	633.0	631.6	628.0	623.2	621.3	613.8
Germany	639.S	612.9	612.1	613.2	612.7	584.4	561.0	552.4	546.8	546.4	540.9
Italy	639.0	639.1	628.1	632.4	633.1	621.0	628.0	611.9	589.3	585.0	579.5
India	598.8	590.6	587.4	588.6	591.7	587.3	585.7	578.3	575.5	574.9	573.0
Japan	524.0	522.5	520.1	518.1	520.3	526.6	526.1	527.5	526.5	524.9	524.7
Russia	842.6	840.5	839.3	837.0	843.7	840.3	839.0	841.1	801.8	800.1	808.9
South Korea	814.9	818.2	816.7	817.2	814.0	809.0	808.7	809.1	808.8	808.2	806.5
UK	661.8	651.2	650.2	646.6	650.4	623.8	615.6	612.9	611.9	606.7	603.7

Table 17 Democracy index per country Source: Global Democracy Ranking

Democracy score	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Australia	79.9	82.0	80.5	78.9	79.8	78.2	79.1	80.8	78.9	79.7	79.7
Brazil	54.9	58.3	59.4	60.4	61.1	59.6	63.0	63.8	62.8	64.6	64.6
China	36.2	36.2	36.2	36.2	38.4	38.2	40.2	39.1	38.9	40.8	40.8
France	75.2	76.9	77.1	77.3	77.2	74.8	76.0	78.2	77.7	79.3	79.3
Germany	80.7	81.4	81.5	81.6	81.1	79.7	80.9	82.2	81.0	82.0	82.0
Italy	69.3	72.4	72.4	72.4	71.8	69.1	70.6	71.2	69.9	71.6	71.6
India	46.9	51.5	50.1	48.7	52.3	50.8	53.7	54.1	53.1	55.3	55.3
Japan	72.4	74.4	74.2	73.9	74.6	72.7	73.6	74.8	73.0	75.3	75.3
Russia	44.5	44.5	44.5	44.5	45.0	43.5	45.7	45.8	44.4	45.5	45.5
South Korea	64.7	68.3	68.9	69.5	70.7	68.2	70.1	71.7	69.3	70.6	70.6
UK	78.8	80.5	80.3	80.1	80.1	78.6	79.2	79.9	78.4	80.0	80.0

Table 18 Political stability and absence of violence/terrorism per country Source: World Bank

Political stability	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Australia	0.88	0.91	0.92	0.95	0.83	0.87	0.93	1.00	1.02	1.02	0.90
Brazil	−0.23	−0.28	−0.38	−0.29	0.16	0.01	−0.14	0.05	−0.28	−0.10	−0.38
China	−0.48	−0.54	−0.49	−0.48	−0.43	−0.66	−0.61	−0.55	−0.55	−0.53	−0.56
France	0.38	0.57	0.55	0.53	0.47	0.67	0.59	0.55	0.44	0.31	0.27
Germany	0.86	1.00	1.00	0.92	0.83	0.78	0.83	0.77	0.93	0.92	0.72
Italy	0.47	0.50	0.43	0.53	0.34	0.47	0.50	0.51	0.50	0.46	0.34
India	−1.00	−1.06	−1.15	−1.10	−1.33	−1.23	−1.29	−1.25	−1.18	−0.98	−0.92
Japan	1.00	1.08	0.95	0.83	0.94	0.85	0.98	0.92	1.00	0.95	0.98
Russia	−1.25	−0.90	−0.86	−0.76	−0.95	−0.91	−0.99	−0.83	−0.74	−0.94	−1.05
South Korea	0.45	0.37	0.53	0.39	0.38	0.28	0.39	0.24	0.25	0.09	0.09
UK	0.09	0.64	0.56	0.45	0.11	0.40	0.35	0.41	0.49	0.43	0.56

Table 19 Real GDP growth per country Source: IMF

Real GDP growth (%)	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Australia	3.2	2.7	4.5	2.6	1.7	2.3	2.7	3.6	2.1	2.8	2.4
Brazil	3.2	4.0	6.1	5.1	−0.1	7.5	4.0	1.9	3.0	0.5	−3.8
China	11.3	12.7	14.2	9.6	9.2	10.6	9.5	7.9	7.8	7.3	6.9
France	1.6	2.4	2.4	0.2	−2.9	2.0	2.1	0.2	0.6	0.9	1.1
Germany	0.9	3.9	3.4	0.8	−5.6	3.9	3.7	0.7	0.6	1.9	1.5
Italy	0.9	2.0	1.5	−1.1	−5.5	1.7	0.6	−2.8	−1.7	0.1	0.8
India	9.3	9.3	9.8	3.9	8.5	10.3	6.6	5.5	6.4	7.5	8.0
Japan	1.7	1.4	1.7	−1.1	−5.4	4.2	−0.1	1.5	2.0	0.3	1.1
Russia	6.4	8.2	8.5	5.2	−7.8	4.5	5.1	3.7	1.8	0.7	−2.8
South Korea	3.9	5.2	5.5	2.8	0.7	6.5	3.7	2.3	2.9	3.3	2.8
UK	3.0	2.5	2.6	−0.6	−4.3	1.9	1.5	1.3	1.9	3.1	2.2

Table 20 Country ranking for GMI

Ranking	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
1	Japan	Japan	Japan	Japan	Japan	Japan	Japan	Japan	Japan	Japan	Japan
2	China	India	India	China	China	China	Germany	Germany	Germany	Germany	Germany
3	India	China	China	India	India	Germany	China	China	China	China	China
4	Australia	Brazil	Brazil	Brazil	Brazil	India	India	India	India	India	India
5	Brazil	Australia	Australia	Australia	Australia	Australia	Brazil	Brazil	Italy	Italy	Italy
6	Italy	Germany	Germany	Germany	Germany	Brazil	Australia	Australia	Brazil	Brazil	Brazil
7	Germany	Italy	Italy	Italy	Italy	Italy	UK	Italy	Australia	UK	UK
8	France	France	France	UK	UK	UK	Italy	UK	UK	Australia	Australia
9	UK	UK	UK	France	France	France	France	France	France	France	France
10	South Korea	South Korea	South Korea	South Korea	South Korea	South Korea	South Korea	South Korea	Russia	Russia	South Korea
11	Russia	Russia	Russia	Russia	Russia	Russia	Russia	Russia	South Korea	South Korea	Russia

Table 21 Country ranking for military expenditure (%GDP)

Ranking	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
1	Japan	Japan	Japan	Japan	Japan	Japan	Japan	Japan	Japan	Japan	Japan
2	Germany	Germany	Germany	Germany	Germany	Germany	Germany	Germany	Germany	Germany	Germany
3	Brazil	Brazil	Brazil	Brazil	Brazil	Brazil	Brazil	Brazil	Brazil	Brazil	Brazil
4	Australia	Italy	Italy	Italy	Italy	Italy	Italy	Italy	Italy	Italy	Italy
5	Italy	Australia	Australia	Australia	Australia	Australia	Australia	Australia	Australia	Australia	UK
6	China	China	China	China	China	China	China	China	China	China	China
7	UK	UK	UK	France	France	France	France	UK	UK	UK	Australia
8	France	France	France	UK	UK	UK	UK	France	France	France	France
9	South Korea	South Korea	India	India	South Korea	South Korea	South Korea	India	India	India	India
10	India	India	South Korea	South Korea	India	India	India	South Korea	South Korea	South Korea	South Korea
11	Russia	Russia	Russia	Russia	Russia	Russia	Russia	Russia	Russia	Russia	Russia

Table 22 GMI components per country Source: BICC

	Expenses	Personnel	Heavy weapons		Expenses	Personnel	Heavy weapons
2005				2006			
Australia	5.15	3.84	2.31	Australia	5.16	3.78	2.36
Brazil	5.06	4.57	1.69	Brazil	5.04	4.55	1.63
China	5.36	3.85	1.99	China	5.37	3.84	1.99
France	5.28	3.95	2.59	France	5.27	3.95	2.59
Germany	4.91	4.30	2.60	Germany	4.88	4.02	2.53
Italy	5.15	4.34	2.31	Italy	5.11	4.36	2.33
India	5.58	4.01	1.64	India	5.53	4.00	1.59
Japan	4.77	3.45	1.97	Japan	4.76	3.43	1.98
Russia	5.7	5.72	3.24	Russia	5.68	5.71	3.23
South Korea	5.46	5.95	2.85	South Korea	5.45	5.94	2.92
UK	5.31	4.38	2.43	UK	5.29	4.25	2.43
	Expenses	Personnel	Heavy weapon		Expenses	Personnel	Heavy weapons
2007				2008			
Australia	5.15	3.79	2.37	Australia	5.14	3.81	2.42
Brazil	5.04	4.6	1.66	Brazil	5.03	4.56	1.64
China	5.35	3.81	1.98	China	5.33	3.68	1.97
France	5.25	4.10	2.59	France	5.24	4.21	2.53
Germany	4.87	4.02	2.53	Germany	4.89	4.02	2.53
Italy	5.09	4.27	2.28	Italy	5.11	4.24	2.36
India	5.48	3.98	1.61	India	5.53	3.96	1.6
Japan	4.74	3.43	1.96	Japan	4.75	3.4	1.95
Russia	5.66	5.71	3.24	Russia	5.61	5.72	3.24
South Korea	5.44	5.93	2.92	South Korea	5.46	5.92	2.91
UK	5.29	4.22	2.45	UK	5.31	4.15	2.45
	Expenses	Personnel	Heavy weapons		Expenses	Personnel	Heavy weapons
2009				2010			
Australia	5.18	3.77	2.41	Australia	5.16	3.74	2.34
Brazil	5.06	4.55	1.65	Brazil	5.08	4.54	1.64
China	5.37	3.6	1.96	China	5.33	3.59	1.86
France	5.29	4.21	2.54	France	5.25	4.01	2.45
Germany	4.92	4.03	2.48	Germany	4.90	3.69	2.44
Italy	5.11	4.25	2.35	Italy	5.09	4.11	2.35
India	5.61	3.95	1.57	India	5.57	3.93	1.57
Japan	4.76	3.4	1.97	Japan	4.75	3.51	1.97
Russia	5.71	5.72	3.24	Russia	5.68	5.73	3.21

Table 22 (continued)

	Expenses	Personnel	Heavy weapons		Expenses	Personnel	Heavy weapons
South Korea	5.47	5.91	2.87	South Korea	5.43	5.89	2.87
UK	5.33	4.19	2.44	UK	5.31	3.94	2.34
	Expenses	Personnel	Heavyweap-ons		Expenses	Personnel	Heavy weap-ons
2011				2012			
Australia	5.12	3.75	2.47	Australia	5.09	3.77	2.52
Brazil	5.04	4.53	1.63	Brazil	5.04	4.52	1.66
China	5.29	3.59	1.86	China	5.28	3.54	1.87
France	5.22	4.01	2.46	France	5.22	3.97	2.46
Germany	4.88	3.68	2.15	Germany	4.89	3.55	2.14
Italy	5.08	4.15	2.41	Italy	5.06	3.95	2.41
India	5.54	3.98	1.54	India	5.52	3.91	1.52
Japan	4.76	3.51	1.95	Japan	4.74	3.51	1.98
Russia	5.66	5.7	3.24	Russia	5.70	5.67	3.25
South Korea	5.43	5.88	2.87	South Korea	5.43	5.87	2.88
UK	5.29	3.91	2.27	UK	5.26	3.87	2.29
	Expenses	Personnel	Heavy weapons		Expenses	Personnel	Heavy weap-ons
2013				2014			
Australia	5.07	3.81	2.5	Australia	5.12	3.75	2.5
Brazil	5.02	4.51	1.66	Brazil	4.99	4.5	1.66
China	5.28	3.55	1.91	China	5.29	3.54	1.92
France	5.21	3.96	2.41	France	5.22	3.92	2.41
Germany	4.84	3.51	2.15	Germany	4.82	3.53	2.15
Italy	5.05	3.93	2.12	Italy	5.00	3.92	2.11
India	5.49	3.92	1.50	India	5.49	3.91	1.49
Japan	4.73	3.51	1.98	Japan	4.73	3.51	1.95
Russia	5.73	5.11	3.24	Russia	5.78	5.06	3.22
South Korea	5.43	5.87	2.88	South Korea	5.43	5.86	2.88
UK	5.23	3.88	2.31	UK	5.20	3.84	2.30
	Expenses	Personnel	Heavy weapons				
2015							
Australia	5.17	3.74	2.46				
Brazil	5.00	4.51	1.65				
China	5.29	3.54	1.92				
France	5.18	3.91	2.36				
Germany	4.81	3.52	2.09				

Table 22 (continued)

	Expenses	Personnel	Heavy weapons
Italy	4.93	3.92	2.11
India	5.46	3.91	1.51
Japan	4.73	3.51	1.96
Russia	5.89	5.07	3.22
South Korea	5.43	5.84	2.88
UK	5.19	3.82	2.30

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