CIRR XX (71) 2014, 121-151 Special Issue ISSN 1848-5782 UDC 364.2(1-622NATO) DOI 10.2478/cirr-2014-0011



How Long Before NATO Aircraft Carrier Force Projection Capabilities Are Successfully Countered? Some effects of the fiscal crises

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Abstract

Growth and fiscal policy conducive to economic development have been severely jeopardized in most NATO member countries since 2008. In sharp contrast, China has experienced only a relatively slower GDP growth, which it has mitigated with a fiscally expansionary outlook. Under these conditions, when can we expect the politico-military position of NATO to be challenged? This paper surveys amphibious force projection capabilities in six countries: the USA, the UK, France, Russia, India and the People's Republic of China (PRC). An assessment of the current capability for aircraft carrier building and a survey of carrier-related ambitions is undertaken to offer projections of probable aircraft carrier fleets by 2030. The three non-NATO countries are far better positioned to build aircraft carriers than the three NATO members, with China in the lead. Nevertheless, there is a high probability of the continued military dominance of the USA and NATO, but also of a military build-up focusing on the Indian Ocean.

KFY WORDS:

fiscal crises, force projection, NATO, aircraft carrier

Introduction

Are we living in an increasingly multi-polar world? It is true that NATO generally and the USA in particular have held a politico-military hegemonic position for decades. It is also true that the substantial force projection capabilities enjoyed by NATO cannot be surpassed, or even challenged, in a short time span. However, countries such as China and India have enjoyed a long sequence of years with high growth rates, while Europe and the USA have suffered very serious economic difficulties in the past seven years. These circumstances make themselves felt on a fiscal and military level. After all, global military dominance requires sustained and generous military budgets and these have diminished in many NATO member states affected by the fiscal crises since 2010. But how serious are these changes and when can we expect the politico-military position of NATO to be challenged?

First, to speak of a multi-polar world after Hiroshima and Nagasaki carries a horrifying implication. If an armed struggle materialized between roughly equal belligerents militarily speaking, armed with nuclear weapons, what could be done to ensure that they did not extinguish our civilization itself in their battle throes? In this thought, the forgotten horror of the early Cold War years returns to haunt us. And yet, we have lived with the possibility of nuclear annihilation for several generations; we regulate this possibility through treaties and enforce the relative scarcity of these weapons through concerted diplomatic action and imposed sanctions. Indeed, assuming they are never used, effective nuclear weapons can be no more than a political bargaining chip. In the hands of a recognized nuclear power, their use remains taboo. But if these weapons are not used, what will be used in their place? Which capabilities imply a credible threat? In a global war, what counts is the ability of force projection. Even enormous conventional armed forces are irrelevant if they cannot be deployed where they are deemed necessary. Therefore, if a state wishes its military force to be felt in distant locations, it requires large naval vessels: amphibious assault ships and landing platform docks (LPDs) to carry and support assault troops and aircraft carriers to ensure air domination and force weaker navies from the

water and weaker armies from the land.

Of course, this is not the only way in which force can be projected. We live in a world in which force projection is increasingly dissociated from the physical presence of troops. B-2 bombers taking off from mainland America are capable of attacking (more or less) any target in the world, while cruise missiles and unmanned aerial vehicles (UAVs) are effective without any physical presence of ground troops on site. Let us call this dissociated type of warfare a "Stage 1" intervention. It should be said that Stage 1 interventions are inherently destabilizing if not complemented by other forms of intervention. While it is entirely plausible to intervene in this manner whenever a localized target presents itself, it is impossible to even attempt to enforce a monopoly of violence without the presence of ground troops to take control over a territory. Let us call these ground troops a "Stage 2" intervention. For such an intervention in a non-adjacent state, amphibious assault ships and aircraft carriers are a necessary resource. As the lessons from Afghanistan and Iraq show us, we can only hope for full stabilization once we co-opt a portion of the population and thus attain a credible local partner. Let us call this "Stage 3". Even in the case that a NATO intervention supports an already existing local partner (e.g. in Libya in 2011), such support will necessarily primarily come from aircraft carriers and similar vessels. Therefore, while force projection capabilities are not exclusively tied to the resources described in this article, a credible, stabilizing force projection very well might be. It is aircraft carriers, amphibious assault ships and LPDs that provide states with a credible force to assist in the fulfilment of their political objectives.

If ours is an increasingly multi-polar world, this will show itself in the global equilibrium of the most important military assets. To ascertain the current state of the world, in the section following the theoretical background, I survey the existing capabilities in six chosen countries: the USA, the UK, France, Russia, India and the People's Republic of China (PRC). This is followed by projections of the probable relative sizes of aircraft carrier fleets by 2030; such projections allow us to assess the probable future military-political global equilibrium. This part of the article focuses exclusively on aircraft carriers as these take the longest to build and use the most resources for maintenance compared to other vessels.

Therefore, their construction should be the least problematic to predict. In the third section, a very simple model is suggested, combining economic growth, public debt levels and existing shipbuilding experience in a single measure to estimate the capability of the six states in terms of building aircraft carriers. The following section then assesses the ambitions of building such resources to complement the data on carrier-building potential. It also outlines the possibility of an increase in the Chinese carrier fleet and an expected response in India. This seems to indicate the possibility of an arms race focusing on the Indian Ocean. The paper then analyses the role of other possible blue water navies in the theatre. The conclusion summarizes the available information to project the two most probable developments by 2030: the continued military dominance of the USA and NATO and a military build-up focusing primarily on the Indian Ocean.

Theoretical background

The theoretical background to this article is the literature focusing on hegemonic and war cycles. This body of knowledge assumes a longterm historical perspective to explain the rise and fall of great world powers and the wars that precipitate them. In short, the assumption is that global wars are predictable with respect to the historical repetitiveness of the conditions that cause them. There are a number of authors who have pointed to the cyclical nature of global wars, starting with the pioneering work of Quincy Wright (1942) and continuing with Toynbee (1954), Modelski (1978), Goldstein (1985, 1988), Chase-Dunn and Podobnik (1999), Tausch (2006) and others. It is also helpful to refer to the world systems approach, which emphasizes the role of the changes in the world economy known as hegemonic or systemic cycles. There is only a single state that benefits most from the world system at a given time and this produces the fiscal capability for political and military dominance. Wallerstein (1980: 38) identifies three historical hegemonies: "...only Holland, Great Britain, and the United States have been hegemonic powers [...], and each held the position

for a relatively brief period, Holland least plausibly because it was least of all the military giant of its era". Following Immanuel Wallerstein and Fernand Braudel, Giovanni Arrighi (1994, 2007; Arrighi and Silver 1999) develops a similar scheme concerning successions of global power. It suggests a shift in global power once the production-driven economy of the core is replaced by an economy dominated by the financial sector, which itself crashes in several decades. These are in fact the precise conditions in which the world finds itself today.

This line of thought is quite worrying as it suggests a global confrontation might be upon us. And when are we to expect this carnage? As one of the most influential war cycle theorists wrote in 1988: "As a first approximation, I suggest the period around 2000 to 2030 as a 'danger zone' for great power war" (Goldstein 1988: 353). Writing much later, he would still persist in his prediction of a global war in the 2020s (Goldstein 2006: 143). By trying to gauge present and future multipolarity, this paper seeks to ascertain the current probability of a global confrontation by 2030. It does so under several assumptions:

- An all-out nuclear global war is not to be expected. Whatever form(s) the next global military confrontation takes, all major actors (states strong enough to hope for a hegemonic position) should be rational enough not to destroy civilization and themselves.
- A conventional global war between major actors would probably eventually lead to a nuclear confrontation. It is therefore also not to be expected.
- This does not preclude a military build-up. The type of force projection capabilities of interest to us are primarily aircraft carriers (and also large amphibious assault vessels). These may be used in a number of ways, most obviously in a military intervention directed at an opponent without nuclear capabilities (the only type of war they have been used in since WWII). Here, a number of states may pool their resources in order to provide a joint moral and military stand-point.

 Aircraft carrier building programmes are large, complex, costly and time consuming. During the long life-cycle of a modern aircraft carrier (50 years), specific strategies, foreign policy, friends and foes are all bound to change numerous times. Therefore, the focus of this article is by definition on long-term phenomena (carrier building programmes and expected comparative fleet sizes), rather than short- to medium-term phenomena (their organization and use).

Current global force projection capabilities

This article undertakes an in-depth comparison of the capabilities of six countries: the USA, the UK, France, Russia, India and the PRC. What these have in common is an aircraft carrier capability and a nuclear arsenal. These make each one of these countries a formidable player in world diplomacy. However, this selection does leave out several navies in states which have not developed nuclear weapons, most notably Spain and Italy. This omission will be discussed and defended by the end of this section. Three types of vessels were chosen for comparison of global force projection capabilities: aircraft carriers, amphibious assault ships and LPDs. Smaller warfare vessels and other surface combatants would certainly also be used in an amphibious operation. However, as explained in the introduction, it is the three chosen types of vessels that are the most important.

There is a large discrepancy in the comparative sizes of these forces as the USA often operates far larger and more numerous units than the rest of the world. This is why they are compared by both indicators (size and number); the bars in Figure 1 show the comparative displacement by country and type, while the labels note the number of vessels by country and type.

900000 800000 700000 USA 600000 UK 500000 PRC ■ France 400000 India Russia 300000 200000 11 100000 Amphibious Assault

Figure 1 – Current capabilities by type and country as of 1 June 2014

Sources: US Navy (2013a, 2013b, 2013c), Royal Navy (n.d.), Marine nationale (2013), Naval Technology (2014), MOD Russia (n.d.), O'Rourke (2014b), Ireland (2010), own calculations

The USA currently operates 10 Nimitz class nuclear powered supercarriers. These vessels displace approximately 88,000 metric tons¹, carry more than 60 aircraft and are staffed by over 5,000 men and women (US Navy 2013c). Amphibious assault ships are designed to land and support troops and provide a very important service to any global power. In this category is the sole remaining specimen of the *Tarawa* class (to be replaced by the new vessel, the *America*), as well as the eight vessels of the *Wasp* class. These displace 40,000–42,000 metric tons, carry 23 helicopters and six VSTOL aircraft, and are staffed² by approximately 2,800 men and women altogether. LPDs are somewhat smaller vessels with a similar role, but a far smaller aircraft complement, which limits their capacity. Two US classes are counted in this category: two *Austin* and nine *San Antonio* class vessels. These displace 17,000 and 25,000 metric tons respectively, carry 1,050–1,300 staff and can deploy 4–6 rotary aircraft.

¹ All of the displacement measures in this article are conveyed in metric tons rather than short tons or long tons

² For the sake of simplicity, I somewhat incorrectly count the crew, the air wing personnel and the standard transported marine infantry force as "staff" for all vessels.

The HMS Illustrious, an Invincible class carrier, is the only aircraft carrier in the UK. It has been relegated to the role of helicopter carrier in this late period in its life-cycle. It displaces 22,000 tons, is staffed by 1,100 personnel and can carry up to 24 helicopters. It will soon be replaced by a much larger vessel (see below). The HMS Ocean, the only amphibious assault ship, displaces approximately 22,000 metric tons, carries up to 18 helicopters and is staffed by 941 personnel. The two British LPD vessels, the Bulwark and the Albion, displace approximately 20,000 metric tons at full load and are staffed by 625 personnel (Royal Navy n.d.).

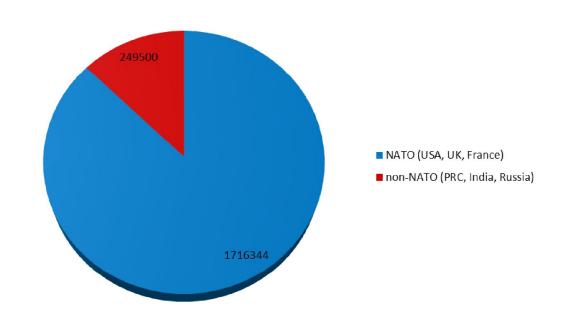
The French Navy operates what is still the only non-US nuclear aircraft carrier. The *Charles de Gaulle* displaces 42,000 metric tons at full load, carries 40 aircraft and is staffed by 1,950 men and women. The three *Mistral* class amphibious assault ships displace 22,000 tons, carry 16 helicopters and are staffed by 630 personnel. The sole LDP in service, the *Siroco*, displaces 12,000 tons, carries up to four helicopters and has a staff of 639 (Marine nationale 2013).

The Admiral Kuznetsov is the only currently available Russian vessel in any of the three categories. It is a carrier with a 55,000 metric ton displacement and a staff of 1,960. It carries 36 aircraft – 12 fixed-wing aircraft and 24 helicopters (MOD Russia n.d.).

The People's Liberation Army Navy (PLAN –the Chinese Navy) currently operates only the aircraft carrier *Liaoning*. Bought unfinished and disarmed from the Ukraine, it was rebuilt and was declared operational in 2012. It belongs to the same class as the *Admiral Kuznetsov* and similar capabilities should be assumed. PLAN also operates three Type 071 LPDs, displacing 18,000 metric tons and carrying four helicopters (O'Rourke 2014b: 66).

The Indian Navy currently operates two aircraft carriers: the *Vikramaditya* (formerly the Russian *Admiral Gorshkov*) and the *Viraat* (formerly the British *Hermes*), which displace 42,000 and 26,500 metric tons and are staffed by approximately 1,500 and 1,170 personnel respectively. Each vessel carries approximately 30 aircraft (Ireland 2010: 242–243). India also operates an *Austin* class (17,000-ton displacement, staff of 1,320 and up to six helicopters) LPD vessel.

Figure 2 – NATO and non-NATO displacement tonnages



Sources: US Navy (2013a, 2013b, 2013c), Royal Navy (n.d.), Marine nationale (2013), Naval Technology (2014), MOD Russia (n.d.), O'Rourke (2014b), Ireland (2010), own calculations

Adding the displacement tonnages from Figure 1 according to NATO membership, we can obtain the global comparative NATO position as a whole (Figure 2). As noted, this comparison omits the Spanish and Italian navies, both of which can substantially supplement NATO forces.³ Likewise, the non-NATO data omit several ambitious navies operating either aircraft carriers or amphibious assault ships, in particular the South Korean, Brazilian and Thai navies. It should be understood that Figures 1 and 2 apply exclusively to the six countries chosen for comparison according to the criteria outlined in the introduction. It should, however, also be emphasized that the capabilities of these six navies dwarf those of the rest of the world, which suggests that the projection of global trends would not substantially change with the inclusion of smaller navies in the comparison. Also, none of the nation states that currently possess aircraft carriers or amphibious assault ships (Italy, Spain, the Republic of Korea, Brazil and Thailand) could seriously be considered as aspiring to the current US position in the world order. Therefore, it seems

³ The Italian Navy operates two aircraft carriers and three small LPD vessels (Marina Militare n.d.), while the Spanish Navy operates a single aircraft carrier and two LPD vessels (Armada Española 2014).

safe to compare only the six original countries that combine the ability for conventional force projection with nuclear weapons. Nevertheless, some of the smaller navies are large enough to be formidable regional players. This article analyses the current fleet sizes, but also the future carrier building capabilities (next section). Considering the possibility of an arms race in the Indian and Pacific Oceans, the paper then analyses four further ambitious navies operating in that theatre (Japan, South Korea, Thailand and Australia).

The NATO membership status of the six selected countries will almost certainly remain stable until 2030 and this distinction has informed the comparison. However, the non-NATO category should not be construed as anti-NATO. India, in particular, has shown signals of moving towards NATO and the USA, perhaps caused by anxieties over the ambitions of the PRC.

Current aircraft carrier building capability – what can we expect?

The following two sections attempt to provide a prediction of global military power relations in the near future. For the sake of manageability and with a view to enabling accurate projection, the analysis focuses on aircraft carriers as the single most important asset of blue water navies.

Table 1

	Aircraft carriers recently produced (n)	Average real GDP growth rate 2003– 2012 (g)	Public debt as a percentage of GDP in 2012 (d)	Current capacity indicator (x)
USA	3	1.8	102	1.8
UK	1	1.4	89	-4.2
France	0	1.1	90	-7.9
Russia	0	4.7	13	3.3
India	1	7.8	67	4.3
China	0	10.2	26	7.4

x = 3.33n + 0.98g + 0.1d

The data in Table 1 quantify the current capacities for aircraft carrier building in the six selected countries. The first relevant indicator (n) is the number of aircraft carriers successfully launched or commissioned since 2003. This indicator shows whether existing shipbuilding capacities have recently been used to produce aircraft carriers. We can observe a large and proven capacity in the USA, which suggests no large investments in infrastructure would be needed for any further order to be accomplished. The UK and India have very recently built one aircraft each. In sharp contrast, France, Russia and China have not recently produced such vessels. With France in possession of significant shipbuilding infrastructure, this should not present a problem if funds were to be made available. China is currently expanding its capacities, but its inexperience in building aircraft carriers is bound to be felt when actual production starts (although the refit and rearmament of the former Varyag has no doubt presented a valuable lesson). Russia would be presented with the largest challenge in the sense of necessary infrastructure investments as the crucial sites of the Soviet aircraft carrier programme are located in western Ukraine.

The second indicator (g) is the average growth rate in the 10-year period 2003–2012. The first five years of this period were generally well-

n = successfully launched or commissioned aircraft carriers since 200g= average real GDP growth rate 2003–2012

d = general government gross debt in 2012 as a percentage of GDP

Sources: IMF (2014); own calculations

performing global boom years and the last five years were those of crisis/global recession. The average performance in this 10-year period for each country therefore reflects performance in the context of both boom and crisis. An economy that grows at high rates ensures large revenues for the government, which are a prerequisite for large military investments. This indicator should also be taken into account when surveying the third measure (d). This is the public debt level expressed as a percentage of GDP. First, the funds for large investments such as aircraft carriers can be ensured either through large revenues or through deficit spending. Under the current institutional checks and political atmosphere in the EU and the USA, large deficit spending is not possible, particularly not with the high debt levels shown in Table 1. Second, a rapidly growing GDP will, ceteris paribus, cause the ratio of debt to GDP to drop and vice versa. Therefore, a large public debt/ GDP ratio with high growth rates is far less problematic than the same ratio with low or even negative growth rates. This means high debt levels (d) and low growth levels (g), both of which would lower the final indicator of capacity, are indicators of the possibility of fiscal crises.

2012 was chosen as the end year as it is the most recent year with fully measured data from the IMF (2014) for all six countries in both indicators. The three measures are combined in a very simple model to ascertain current comparative capacities for aircraft carrier building.⁴ An alternative way of comparing the probability of carrier building would be to compare military spending. However, such data would need to be refined to be truly comparable as they may hide the real spending on large naval procurement projects. Also, the real amount may fluctuate substantially with respect to available funds and even production costs. In contrast to this, the method in this article seeks to determine the long-term capacity of states to build aircraft carriers. The three indicators (n, g, d) reflect the readiness of the shipbuilding industry to produce new carriers, the behaviour of the economy in various situations and the fiscal manoeuvring space.

The weights were chosen so that the maximum value in each column is calculated as an index value of 10. In this way, the spreads of values of all of the three indicators (n,g,d) are alloted equal weight in calculating the index (x).

The resulting index (x) shows us that the three major latent challengers to NATO are far better positioned to build aircraft carriers, with China in the lead. The USA is in a relatively neutral position. France is by far in the worst position and as the following section will show, this is mirrored by the aspirations of the French navy. Of course, these figures present a rough guide and will not necessarily be directly reflected in actual behaviour. After all, if a nation decides to build carriers for reasons of national pride, it may build them even if it is irrational to do so in the given economic/fiscal situation. Therefore, these figures should be viewed in the light of the analysis of shipbuilding plans in the next section.

Ambitions and plans

This section is intended to supplement the data in the previous section with accounts of actual carrier building ambitions in the six countries. The best available sources were used in order to make the most probable projections of carrier fleet sizes by 2030. However, readers should be aware that these projections are merely conjecture: a specific vision of a possible future.

The future of NATO force projection – how many carriers do we want to have?

USA

In the context of the late Cold War, the number of carriers deemed sufficient for the USA was 15. From the 1990s this number dropped to 12, which became the statutory minimum in 2006 (O'Rourke 2014a). This minimum was reduced to 11 in 2007 and is currently not being met with only 10 operational aircraft carriers. This legal discrepancy will be

remedied only after a period of several years when the CVN 78 Gerald R Ford is commissioned in the Navy.

The expected life span of US nuclear carriers is 50 years, with a necessary refuelling and complex overhaul (ROCH) procedure approximately halfway through the cycle (25 years). This creates a schedule for the availability of the fleet and dictates a continued building programme, with new carriers continually taking the place of those being decommissioned. The most recent 30-year US Navy shipbuilding plan (2014–2043) projects the availability of 11 carriers in 2030 and 10 by 2040 (Office of the Chief of Naval Operations 2013). Therefore, even building the maximum number of carriers if the funds are available will assure a slow decline of the number of US carriers in service.

The fiscal crisis in the USA culminated in a *budget* sequestering, or a severe limit on fiscal policy, including the possibility of a budget cut in fixed amounts. In this context, the size of the US carrier fleet was put on the agenda. Charles Hagel, the Secretary of Defence, proclaimed that a fleet of only eight or nine carriers may become plausible (Cavas 2013). If the need arises, the carrier fleet could be reduced in two ways:

- New aircraft carriers could stop being produced. Funding for CVN 79 and 80, which are to be produced through to 2023, are not yet secured, although Congress approved the building of CVN 79 and provided some initial funding (O'Rourke 2014a). A recent report by the Congressional Budgetary Office (CBO) analysed the possible savings from not buying any further carriers after CVN 79. If this option were adopted, it could reduce the fleet size considerably in the long term. However, the long interval necessary for building these ships suggests that the US Navy would keep the current level of 10 carriers until 2030 and it is only by 2040 that this number would dwindle to seven (CBO 2013).
- The oldest carrier currently in service is the CVN 68 Nimitz and it is not expected to be retired until 2027 (Yardley et al. 2008), but there are alternatives. Existing carriers nearing their mid-life ROCH could be disposed of instead. The CVN 73 George Washington is the next carrier in need of a ROCH procedure and the funding for

this is still unclear (LaGrone 2014). By the time the *Nimitz* is scheduled to be decommissioned, four carriers will need to undergo ROCH, including CVN 73 (Schank et al. 2011). Any or all of these could be skipped.

In the very unlikely scenario that all of these options were implemented, the US Navy would be left with only seven carriers after the Nimitz is retired in 2027. While this worst case scenario would only come to pass in the event of fiscal catastrophe on a far larger scale than 2012/2013, it is useful to bear in mind that this is the absolutely lowest possible number of carriers in 2030.5 The maximum long-term size of the carrier fleet is supplied by the navy shipbuilding plan (11 in 2030). Assuming some fiscal difficulties in the future, coupled with the desire for a large navy, the probable number of carriers in 2030 is nine or ten. If the seamless process of carrier production that has been in place at Newport News in Virginia for many decades is stopped, the unit cost for any further carriers would become substantially higher. Indeed, any vessel produced at this site would become more costly, as some overhead costs would have to be transferred (CBO 2013). Therefore, common sense logic dictates that it will be beneficial to keep production alive for as long as possible.

France

The French Navy currently operates only one aircraft carrier. As a governmental White Paper on Defence and National Security pointed out in 2008, the credibility of force projection can only be maintained if there is a carrier available at all times (Commission sur le Livre blanc sur la défense et la sécurité nationale 2008: 214). Due to necessary and prolonged maintenance, this is only possible with two or more aircraft carriers (which then take turns undergoing maintenance). This argument could be used in any one-carrier nation. However, the scarce resources available make two carriers a luxury for the austerity laden states of Europe and France is no exception. By the 2013 White Paper on Defence and National Security, ambitions for two carriers

Under the assumption that the Navy will find the rest of the necessary funding for CVN 79 and that it would not retire carriers before a large investment is needed or lose carriers due to unforeseen incidents.

had dissolved in favour of cooperation with Great Britain (Commission sur le Livre blanc sur la défense et la sécurité nationale 2013: 93). The White Paper specifically references the Lancaster House treaties from 2010, which will enable a joint Franco-British carrier strike group in order to circumvent the one-carrier deficiency.

UK

The British Navy recently (2010) retired one of its two small *Invincible* class aircraft carriers. The UK is currently building two larger aircraft carriers (65,000 tonne displacement) of the *Queen Elizabeth* class, although the most recent Strategic Defence Review allowed for the possibility of retaining only one of them and selling the other (HM Government 2010: 23).

Latent global challenges to NATO force projection

For many of the countries analysed below, the transparency of defence strategy might not be a priority. Whereas the analysis of the three NATO countries is facilitated by access to various official documents, here it is necessary to make do with statements by various officials covered by the media.

PRC

The PRC has a unique economic incentive to invest massively in its military. Real GDP growth in China⁶ has experienced a relative deceleration from 14.16% in 2007 to 7.7% in 2012 (IMF 2014). Nevertheless, this rate of real growth is far higher than comparative indicators in any NATO country. Therefore, the economic agility that can enable massive military investment is still present in the PRC. The fiscal ability to do so is also available. While EU members and the USA are doing their best to

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⁶ GDP corrected for inflation.

enact budget cuts wherever possible, China has chosen the opposite, fiscally expansionary route, which is roughly a Keynesian anti-cyclical crisis response. With its foreign markets reeling since 2007/2008, it was necessary to manage its aggregate demand at home. The active fiscal policies needed to achieve this expansion more than tripled China's general government gross debt in nominal terms in the period 2006–2013 (IMF 2014). As a consequence of the fiscal stimulus, the ratio of government expenditure to GDP rose steadily from 18.9% in 2007 to 24.8% in 2013 (IMF 2014). And so, just as many western countries stimulated their aggregate demand by militarization before and during WWII, China is doing so today. Economic ability meets with necessity in producing huge increases in the military budget (Martina and Torode 2014). This suggests that the PRC's ambitious plans for naval expansion will most probably be well funded and are therefore plausible.

The Liaoning (formerly the Varyag), the very first aircraft carrier of the PRC, has only recently become operational. Bought unfinished and disarmed from Ukraine in the late 1990s, the work necessary in completing it gave the Chinese shipbuilding industry the experience needed for future building programmes. There are currently reports suggesting the imminent -or perhaps already started - construction of two further aircraft carriers, the first to be built entirely in the PRC. The first such carrier is to be finished by 2020 (Blanchard and Lim 2011; Hoffman 2014; USNI 2014). Judging by the time needed for the production of the first indigenous carrier in India and assuming that initial work on a new aircraft carrier may have started as early as 2012, we should probably not expect the commissioning of this vessel before late 2021. However, if shipbuilding capacities are ambitiously expanded, the People's Liberation Army Navy (PLAN) could hope for as many as four commissioned aircraft carriers by 2030 (counting the already existing Liaoning). This would meet the desired fleet size stated by PRC officials in the Chinese state media in early 2014 (USNI 2014).

⁷ The components of aggregate demand (basically GDP) are consumer demand, investment demand, government expenditure and net exports. Chinese export growth was hurt by the global crisis and barring monetary or tax based stimulus, a fiscal solution was the only possibility.

Russia

The Russian military budget is set to increase substantially by 2015 and a number of naval projects are being funded (Oxenstierna 2013). Also, there have been sporadic statements by high military, political and shipbuilding industry officials predicting the building of anywhere between one and five aircraft carriers (Kislyakov 2007; Pettersen 2011; RIA Novosti 2011a). However, to the best of my knowledge, there were no official plans or funding for these projects at the time of writing this article. The fiscal position should not be a problem for Russia as the real GDP growth rate remains relatively stable and the general government debt/GDP ratio is comparatively very low (IMF 2014). The largest setback Russia will have to overcome in order to rebuild and maintain its carrier fleet is its lacking infrastructure. To create the blue water navy many Russian officials seem to desire, there will have to be ample investments in naval bases and the shipbuilding industry. The first tentative steps in this direction have already been taken. In late 2010, Russia purchased two Mistral class amphibious assault ships from France, with an option for two more vessels of the same class. Russian industry was to be included in the building of the first vessel at Saint-Nazaire, thus enabling Russia to gain experience (RIA Novosti 2010). The delivery of the Mistral ships is currently a controversial subject due to the Russian involvement in the 2014 crisis in Ukraine. If the third and fourth ships are also bought, they are to be built in Russia in currently non-existent shipyards (RIA Novosti 2011b). If the option on these two ships is taken up and they are built according to these plans, this will provide Russia with starting investment in the necessary carrier building capital. However, it is most probable that the size of the fleet by 2030 will still be one or two carriers.

India

In August 2013 India launched its first indigenously built aircraft carrier. The *Vikrant* displaces 37,500 metric tons and it is to be commissioned in the Indian Navy within the next few years (Indian Navy 2013). India is now ready to begin work on the second carrier built in India. The

planned *Vishal* is to be a nuclear powered vessel with a displacement of 65,000 metric tons and may enter the fleet by 2025, assuming the timely start of construction (Sharma 2012). With the *Viraat* (an aging ex-British vessel) being decommissioned before this date, India should have three aircraft carriers altogether in 2025. However, if the Chinese aircraft carrier building programme reaches the scope and speed outlined in the projections in this paper, India would have a strong incentive to pick up the pace of its programme, or to buy more vessels from abroad. Therefore, a three or four carrier navy seems most likely in 2030. Fiscal issues do not present a problem for India at this point as real GDP growth remains stable and the general government debt/GDP ratio continues to drop (IMF 2014).

To summarize, fiscal situations may have a great effect on the funding of large projects such as the building of aircraft carriers. From the point of view of Keynesian economics, the decision to enforce fiscal consolidation (austerity measures) during a recession is equal to inducing a self-perpetuating fiscal crisis. Off course, this is precisely what happened in the aftermath of the 2009 economic crisis for most NATO members. In sharp contrast, the growth rates and/or fiscal positions of India, China and Russia have remained enviably unproblematic in the post-2009 period.

The fiscal crises in the USA, the UK and France have prompted debates on the desired size of their respective carrier fleets. While there have been calls for a continued downsizing of the US fleet, the longevity of US nuclear carriers and the structure of the fleet suggest that the probable number by 2030 will be nine or ten, with the reasonable minimum set at seven. France and the UK have curtailed their ambitious plans somewhat and are opting for closer cooperation instead. For the foreseeable future, their joint size of carrier fleets will be two or three vessels, but may conceivably rise to four by 2030 if their economic growth and fiscal situations improve considerably in the next few years.

As far as China, India and Russia, as the major world power aspirants, are concerned, Russia is the least likely to fund an ambitious carrier building effort by 2030. The major obstacle to be overcome is the lack

of infrastructure, which requires considerable funding. However, it is fully plausible that Russia could fund a second aircraft carrier in time for it to be commissioned by 2030. India and China have both started indigenous aircraft carrier building programmes. While India is more advanced in experience and shipbuilding industry capacity, China seems to have a far larger manoeuvring space in terms of GDP growth and the public debt/GDP ratio. It is also facing the possibility of an export crunch, which has already prompted it to engage in fiscal stimulus and might further this effort in the future. This creates considerable incentives for China to invest in large military projects, including the construction of aircraft carriers. If China reaches or outpaces India's desired carrier fleet size of three, it is plausible that India will react with a further investment in aircraft carriers.

In this security dilemma scenario, it is possible that each navy could have four aircraft carriers by 2030. In this case, the three NATO states might conceivably have as few as 12 carriers in 2030 (and supported by the smaller NATO navies still as few as 14), while the three non-NATO states may have as many as 10. In this case, the global supremacy of the USA and NATO would be challenged by the growing military powers by 2030. However, these numbers suggest that NATO generally and the USA specifically will remain the strongest military global players by this date. A global war in the hegemonic transition vein would therefore be unlikely even if the major actors were not armed with nuclear weapons. As they are, a global, full-blown war among them hopefully remains impossible.

Military build-up focusing on the Indian Ocean

As explained above, the six analysed countries were chosen on the basis of two criteria: aircraft carrier and nuclear capability. However, the likely military build-up focusing on the Indian Ocean will surely involve other countries as well. Conventional wisdom on Indian Ocean strategic development states that the Chinese String of Pearls strategy,

seeking to envelop India, is pushing India into closer cooperation with NATO. The String of Pearls refers to the development and maintenance of ports by private and public actors from the PRC. While some of these ports are quite close to India (Pakistan, Sri Lanka and Bangladesh), they seem to be commercial rather than military in nature. On the other hand, China has reached the point at which its enviable long-term economic growth is spilling over to its ability to fund large military projects including the building of aircraft carriers. This may cause legitimate concerns among its regional counterparts. The previous section showed how China and India could become involved in an arms race. This section shows the proximate role of other actors in the region. Specifically, there are four countries (Japan, the Republic of Korea, Australia and Thailand) that either currently operate, are acquiring or are planning to acquire resources belonging to one of the two larger categories of interest here (aircraft carriers or amphibious assault ships).

Japan

Japan has a large and modern fleet, which has deliberately been limited in capability in line with the (in)famous Article 9 of the Constitution of Japan stating that Japan will not maintain land, sea or air forces. This has subsequently been reinterpreted as a prohibition on maintaining weapons that are offensive in nature (such as ICBMs, aircraft carriers or strategic bombers). In consequence, the Japan Maritime Self-Defence Force does not operate a single vessel belonging to any of the three categories covered by this article (aircraft carriers, amphibious assault ships or LPDs). However, Japan has attempted to meet the need for the roles played by these vessels by employing less conventional designs. Japan currently has three Helicopter Destroyer vessels (two in the Hyuga class and one in the Izumo class), with a further Izumo ship currently being built. These ships have relatively large decks and may operate helicopters (up to 11 for Hyuga and up to 14 for Izumo). The three Osumi class LSTs (tank landing ships) are also somewhat over-capable for their stated class and may operate up to eight helicopters. In effect, the navy of Japan has effectively bridged some capability gaps by carefully manoeuvring in relation to the existing political obstacles.

The need for such manoeuvres may be diminishing. On 1 July 2014, the Prime Minister of Japan announced a further reinterpretation of Article 9 (Sieg and Takenaka 2014). However, even if the political constraints on the navy of Japan should disappear, the experience gap will remain. Even in Japan, a country with a rich maritime tradition, which was one of the aircraft carrier design pioneers, it will not be easy to build aircraft carriers or amphibious assault ships without experience. It is probably for this reason that overtures to buying an amphibious assault vessel manufactured in the USA have already been made (Takahashi and Hardy 2014).

Therefore, while technically not possessing a fleet which would merit an inclusion in this analysis, Japan seems to be removing the obstacles that would prevent it obtaining one. By 2030, Japan may well play a considerable part in the expected military race.

Thailand

The Royal Thai Navy operates a single aircraft carrier – the diminutive *Chakri Naruebet* –built in Spain. The carrier was designed to carry VSTOL jet aircraft, but these have been retired and it currently only fields helicopters (Ireland 2010). The development of the Thai Navy was precipitated by the favourable economic conditions preceding the Asian crisis of 1997. While Thailand has purchased a number of new ships in recent years, the ambitious pre-1997 development programme was never restarted and it seems unlikely that Thailand will acquire further significant resources belonging to the categories analysed here by 2030.

Korea

The Republic of Korea Navy operates a single *Dokdo* amphibious assault ship (ROKN n.d.). Two more were originally planned and the eventual acquisition of one or both now seems likely. Bearing in mind the ambitious Korean tendencies in the development of blue-water capabilities since 2001, it is not unfeasible that Korea will attempt to

acquire naval resources capable of operating fixed-wing aircraft, either through reworking the *Dokdo* class or eventually acquiring aircraft carriers.

Australia

The Royal Australia Navy currently operates no vessels belonging to any of the three categories analysed here. However, it is currently in the process of acquiring two amphibious assault ships (the Canberra to be commissioned in 2014 and the Adelaide to be commissioned in 2016). They can carry 8–18 helicopters. Their design (a modification of the Spanish class Juan Carlos I) enables them to carry STOVL fighters, but it is not currently planned that they will do so (Royal Australian Navy n.d.). If Australia opts to obtain the F-35B aircraft, it could acquire a vastly improved platform in the Canberra and the Adelaide. It would also be the first time Australia could boast such capability since the carrier Melbourne was retired in 1982.

Conclusions

There is no evidence to suggest that NATO will lose global force projection primacy by 2030. Such a situation could come to pass only by a protracted exacerbation of negative economic/fiscal trends in the USA and Western Europe, coupled with the continuation of positive trends in India and China. Nevertheless, the failure of the West to resolve its economic difficulties even after seven years and the continued focus on fiscal responsibility does allow us to take this possibility seriously. Current trends suggest that in the decade following 2030 (i.e. beyond the projection horizon of this article), NATO generally and the USA specifically will probably become only one of several global players, with a force projection capability comparable to others – a fully multipolar world. However, nothing points to a global war in the 2020–2030 decade as predicted by Joshua Goldstein.

The decade 2030–2040 might bring a new global military hegemony (possibly China). This will be the final step of the journey started when the USA lost its global trade dominance. Among the six countries compared here, China has enjoyed the highest GDP growth rates both before and since the 2007/2008 global financial fiasco (IMF 2014). It also has considerable fiscal manoeuvring space (see Current global force projection capabilities), and strong incentives to use it (see Current aircraft carrier building capability – what can we expect?). However, it will have to contend both with the Indian Navy and the US Navy. The latter has a very large and very resilient carrier fleet, which it will probably continue downsizing as slowly as possible. The former, while small, has had a far earlier start than China as far as a blue water navy is concerned. The navies of South Korea, Japan and Australia and their desire to counter the flexing muscles of China are also not to be underestimated (see Military build-up focusing on the Indian Ocean). All of this spells out a high probability of a military build-up centring on the Indian and Pacific Oceans heating up in the period 2020–2040.

However, this projection is not the sole possibility. NATO members may eventually follow Japan in its recent expansionary fiscal policy frenzy. After all, it is only such fiscal behaviour -which would be considered reckless in current western mainstream thinking – that can hope to break the economic rut in which we find ourselves. Only a state which is unburdened by the permanent need to find more room for fiscal consolidation, a state that finds itself with the real ability to spend, can enact the large-scale projects needed for global force projection. However, this is unlikely for most NATO members. In the rapidly aging western world, the social expectations of the state are increasingly large. Likewise, in the world of rising fiscal controls (e.g. the Excessive Deficit Procedure in the EU and the current minority party blocks to further US debt), the fiscal playgrounds of the 1945–2007 period seem increasingly distant. It is for these reasons that we should expect the continuing reduction of aircraft carrier groups in NATO countries in the next 15-25 years. Only the future can tell the pace with which this downsizing will occur.

On the other hand, the ambitious Chinese aircraft carrier building programme could fail to materialize. The economies of China and

India could experience a hard landing. This would create fiscal and therefore military procurement problems. However, the fact that these export-oriented economies have weathered the global demand crisis of previous years so well does not suggest such a crash is imminent, particularly not in China. Therefore, as long as China's shipping industry capacities can match its ambitions, the projection of a military build-up which includes aircraft carriers does not seem unrealistic.

Under the assumption of the low likelihood of a nuclear war, no global war can be expected as a result of these processes. However, the literature on hegemonic transitions and war cycles seems to be justified in a different sense. The economic, military and political preconditions for a hegemonic transition will probably have been met by 2030-2040. Such conditions have historically precipitated global wars. On the other hand, this is the first transition that will have to take place in the context of the possibility of nuclear warfare. We will witness something unprecedented. There are two general possibilities for a radically new hegemonic transition. It may resemble the Cold War, with opponents conducting proxy warfare. Unlike the Cold War, the economic foundations and most probably the results of such warfare would be different. On the other hand, it may be directed in a spirit of partnership. In this case, a far closer military and political relationship with the new hegemony would have to be developed by the West. This suggests that even when the waning period in the NATO military position is reached, we will have an opportunity to guide this transition on the road to global peace and security.

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