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A Tripolar century: USA, China and India

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WORKING PAPER NO 160

A TRIPOLAR CENTURY: USA, CHINA AND INDIA

Arvind Virmani

MARCH 2005



INDIAN COUNCIL FOR RESEARCH ON INTERNATIONAL ECONOMIC RELATIONS

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FOREWORD

The current paper is a companion to a previous ICRIER Working paper that analysed the economic basis of national power. The earlier paper focused on the implications of such an approach for global governance including the implications for UN reform. The previous paper also gave projections for the global economy and national power potential to 2035.

The current paper revises and extends these projections to 2050 and explores further the implications of these developments in the global economy and in national power potential. It concludes that the current unipolar world will be transformed into a bipolar world during the first quarter of this century and into a tripolar one (China, USA, India) during the second quarter of the century. If these projections come true, such a development will have implications for the USA, India, European Union and Japan.

The paper recommends the formation of an Asian Economic Community, patterned on the (former) European Economic Community, with China, India and Japan at its core and including other countries of Asia. Such an inclusive and co-operative venture would draw upon the experience of European History and of the European Union to minimise the risk of conflict in Asia. Improved bilateral relations between India and China, which hold great importance for peace and stability in Asia, would facilitate the building of such a regional organisation.

The paper also recommends the formation of an Indo-US partnership for peace. One element of this partnership would be a comprehensive economic co-operation agreement. Such a partnership would require a change in the attitude of the governing elite in both countries and a mutual recognition of each other's fundamental national interest. To become effective and mutually beneficial it also requires changes in laws, rules and bureaucratic procedures that affect the other country. Till such a genuine and balanced (broadly equal) partnership emerges intensified technological collaboration between Russia, UK, Germany, France and Japan (on one hand) and India (on the other) will remain important.

Arvind Virmani
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March 2005

1 INTRODUCTION*

The fast growth of Japan till the mid-eighties, gave birth to several books on the Pacific Century (Gibert (1988), McCord (1991), Gibney (1993)) and the Asia-Pacific Century (Sutter (1992), Cronin(1992)). This talk gradually disappeared after the bursting of the Japanese bubble. The talk revived with the phenomenal growth of the Tigers (Manning and Stern(1994), Lingle (1995), Mahbubani(1997)) but was soon overcome by the Asian Crises (Emerson (1998)). Virmani (1999a,b) showed that India (the elephant) was among the ten fastest growing economies of the World since 1980 and projected that in the next decade its growth rate would accelerate above that of the Tigers and reach the top three. It also asserted that though China's past growth had been overestimated by about 2% it (the dragon) would remain the fastest growing economy in the World during the first decade of the 21st century.

Krauthammer (1990/91) had heralded the arrival of "The Unipolar Moment" and set of a debate on its many ramifications. The reality of the unipolar world returned to center-stage after the Asian crisis even though some questioned whether the unipolar moment had passed (Nye(1999), Huntington(1999)). Since 9/11 the USA has asserted its primacy and the Unipolar nature of the World has been re-asserted. There is, however, a variety of views on how long the unipolar world will last.¹ Bergsten (2004) and Virmani (2004b) have written about the possibility of the unipolar World order of the past half century converting into a bipolar or tripolar one.

State power is the "extent that (one) effects others more than they affect [one]"[Waltz (1979)]. It is therefore a "combination of its capacity to resist the unwelcome influence of others and conversely to influence others to behave as it wants them to." With increasing globalisation, democratisation and inter-dependence, the form in which such power is expressed will likely change over this century. However, History is unlikely to end (Fukoyama) and old ways of using power may not fade away that quickly. The powerful will also find new ways to express their power.

* My thanks to K Subrahmanyam and Vice Admiral (retd) Premvir Das for detailed comments and to Dr. BimalJalan, Shri Lalit Mansingh, Shashank and T C A Srinivasa Raghavan for their comments.

¹ See for instance Mediros and Fravel(2003), Albright(2003), Nye(2003).

The current paper argues that the global economy is evolving in a direction that will result in a tripolar World by the middle of the 21st century. Thus the 21st century will be a ‘Tripolar Century’ with two of the poles in Asia and one on the other side of the Pacific. So ironically it could end up as partly a Pacific, partly an Asia-Pacific and partly an Asian century. This is based largely on an economic view of power a la Kennedy(1988). The next two sections outline this approach and present an index of Power Potential. Section 4 shows how this index captures the current unipolar world. Section 5 outlines the evolution of global power first into bipolar and then into a tripolar world based on our economic projections. Section 6 presents the rationale for the growth assumptions about China and India that underlie these results. Sections 7 discuss the reasons why the European Union may not become a fourth pole. Section 8 concludes the paper with some policy suggestions.

2 ECONOMICS OF GLOBAL POWER

The globalised world of the 21st century will be driven by economic growth. The relative power of nation states will depend on the relative size of national economies. The size of country’s economy is measured by GDP at purchasing power parity, which is the product of its population (N) and its per capita GDP at PPP (PCgdp). This in turn means that within the set of ‘emerging economies’ the rate of catch-up growth and relative population, indicate the shape of the likely future.

Developed economies with relatively high per capita income are at the frontiers of technology (knowledge) and grow relatively slowly. Growth varies among them based largely on technological change and invention. Low and middle-income countries lie well within the technology frontier and their growth rate depends on the transfer of technology (knowledge) from the developed countries, and its adaptation, application and diffusion. Such knowledge flows take place through multiple channels, such as machinery import and investment, FDI, foreign trade, internet, media and travel. The globalisation of the World economy during the 20th century has removed many of the constraints on such movement and reduced the cost of such flows. The low and middle-income economies can in principle grow much faster than the advanced economies as long as their income is well below that of the advanced countries. There is however a

much greater variance in growth rates among them, with many growing even slower than the developed countries. The Asian tigers were the first to take full advantage of the benefits of globalisation through appropriate policies. Other Asian countries have followed in their footsteps. Between 1980 and 2003, 8 of the 10 fastest growing economies in the world in terms of average per capita GDP (the measure of catch-up growth) were in Asia.²

If catch-up growth is sustained over several decades, as it has in Singapore, Hong Kong, Taiwan(China) and S. Korea, the economy will eventually reach the technology/income frontier.³ The growth rate of an economy is likely to slow as it comes closer to the frontier and the scope for catch-up growth is exhausted and more of the growth must come from its own technological innovation.⁴ With per capita incomes/GDP almost identical, the relative size of the population is the primary determinant of relative economic size. Thus over the medium-long term relative population is an important determinant of size. The economic size and therefore the relative power of large relatively fast growing economies will therefore rise over time. The two most heavily populated countries in the World are China and India. They are among the 10 fastest growing economies in the world and are projected to be among the 5 fastest growing economies. Their relative power will therefore inevitably rise. The question is only about the speed with which this will happen and the level that will be reached.

3 POWER POTENTIAL

We define an index of relative power potential that is parameterised by a weighting factor ‘a’ that can range from 0 to 1 (appendix). It is also shown that when a = 0 the power potential is captured by the relative size of GDP measured at purchasing power parity (PPP) and when a=0.5 the power potential is approximately equal to the relative size of the economy at current market exchange rate. The power potential index for country j (PPIj) is calculated as:

$$PPI_i = (N_j/N_u) * (PC_{gdpj}/PC_{gdpu})^{1+a} = (GDP_j/GDP_u) * (PC_{gdpj}/PC_{gdpu})^a,$$

² Table 3 in Virmani(2004b).

³ Defined as within 10-15% of the income of the richest country.

⁴ “Bell curve of catch-up growth,” Virmani(1999a,b). Singapore was able to overcome this constraint for a while because of increasing female labour participation rates.

Where N , GDP and $PCgdp$ are the population, GDP at PPP and Per capita GDP at PPP respectively. The sub-scripts j and u denote country j and the USA respectively. The last term in PPI therefore represents a technology factor that is applied to economic size.

The weighting factor 'a' gives extra weight to a country's inherent technological capability. The reasoning is as follows. As a result of globalisation knowledge/technology, capital and human skills can flow freely across countries given appropriate policies. If all technological flows were unconstrained by national restrictions then all technology can be freely purchased. Each country's ability to produce goods and services is measured by the GDP at purchasing power parity and is a summary measure of its resource endowments (technology, capital and human resources) and includes its ability to buy technology. In this case $a=0$ would be the best parameter.

The flow of Defence, Strategic and 'Dual use technologies' are however constrained by national policies and technology denial regimes. They *cannot* be commercially and freely purchased on the global market. In this situation inherent technological capability constrains access to such technologies. Such inherent technological capability is most simply and effectively captured by per capita GDP measured at purchasing power parity. The parameter $a > 0$ is the extra weight on this (technology) variable. In our view $a = 0.5$ captures the power potential of nations adequately and will be the focus of our analysis.

For those who think that military power and consequently strategic technological capability play a greater role than economic power, a could be set at 0.75 or 1. The main difference is that the USA's predominance over other countries is heightened if the technology weight is increased. In addition the relative position of the poorer countries worsens much more than that of the richer ones (details in section 4).

There is also a contrasting view that, even if military power was important in the past its importance will diminish to the point at which soft power becomes more important than military power.⁵ There are a number of reasons for an increase in the role of economic power vis-à-vis military power. (a) Increased economic interdependence

⁵ For instance K Subrahmanyam. For soft power see Keohane & Nye (1977), Nye(1990) and Held et al (1999).

means that the disruptions of war have a negative economic effect on oneself. This increases the costs of military action and reduces the probability. (b) Conventional war against a nuclear capable state will be highly risky, reducing its probability as well as its usefulness. (c) The ability of non-state actors to inflict enormous damage with little military power, reduces the power of conventional military threats. If this view is correct the EU would play a much greater role than in our mean scenario and the relative power of India would be enhanced vis-à-vis China.

3.1 Actual Power

Actual power can, however vary from the level indicated by the power potential index because of, (a) Differing national objectives (the will to power). For instance the will to power of post-war Japan was very low, while that of the USSR was and of China since 1980 is, very high. (b) Different allocation of national revenues to military and strategic R&D and equipment relative to that on other public goods and services (e.g. environment). Thus Russia continues to benefit from the high investment of the USSR in strategic technology.⁶ (c) Alliances that transfer restricted technology and equipment and thus effectively supplement national technological resources. For instance, in the past, China used its alliance with the USSR to develop its strategic technology and also benefited from its informal partnership with the USA.⁷ Many countries including Israel have benefited from their formal or informal alliance with the USA.

Sophisticated models of global power, such as those of Tellis et al (2000) have incorporated both economic and strategic technology dimensions of national power. The Index of Power Potential is designed to capture most of the economic factors analysed in such sophisticated models, in the simplest possible way (a la the principle of Ocam's Razor).

⁶ At that time the E. European countries were part of the Soviet empire and thus contributed their economic weight to its technological development and power.

⁷ It is only about five years ago that President Clinton called China a strategic partner.

4 SOARING EAGLE: UNIPOLAR MOMENT

The USA has been the sole super power since the collapse of the USSR and remains so today, even in terms of ‘power potential.’ Thus for instance Japan the second ranked power has less than 30% of the power potential of the USA today (column headed $a=0.5$ in Table 1). China and Germany the third & fourth ranked powers have about $1/5^{\text{th}}$ the power potential of the USA. France, UK and Italy occupy the next three positions with a power potential of about 13% of the US. Canada, *India* and Spain occupy the last three positions among the top ten with about 7% of the USA’s power.

Table 1: POWER POTENTIAL OF THE LARGEST COUNTRIES IN 2002

	PPI: $a=0$		PPI $a=0.5$		PPI $a=0.75$		PPI $a=1$	
	Rank	Index	Rank	Index	Rank	Index	Rank	Index
USA	1	1.00	1	1.00	1	1.00	1	1.00
China	2	0.57	3	0.20	5	0.12	8	0.07
Japan	3	0.33	2	0.29	2	0.27	2	0.25
India	4	0.27	9	0.07	14	0.04	16	0.02
Germany	5	0.22	4	0.19	3	0.18	3	0.17
France	6	0.16	5	0.13	4	0.13	4	0.12
UK	7	0.15	6	0.13	6	0.12	5	0.11
Italy	8	0.15	7	0.13	7	0.12	6	0.11
Brazil	9	0.13	11	0.06	12	0.04	13	0.03
Russia	10	0.12	12	0.05	15	0.04	15	0.03
Canada	11	0.09	8	0.08	8	0.08	7	0.07
Mexico	12	0.09	15	0.04	17	0.03		0.02
Spain	13	0.09	10	0.07	9	0.06	9	0.05
Korea, S	14	0.08	13	0.05	11	0.05	12	0.04
Indonesia	15	0.07		0.02		0.01		0.01
Australia	16	0.05	14	0.05	10	0.05	10	0.04
Netherlands	17	0.05	16	0.04	13	0.04	11	0.04

The USA’s predominance over all these countries is however heightened if we use $a=0.75$ or $a=1$. In addition, the relative position of the poorer countries such as Indonesia, India and China worsens much more than that of the richer ones. Currently China is a lower-middle income country while India is a low-income country. The position of Russia, which is ranked 12^{th} with $a=0$, also worsens though at $a=1$ it moves

just above India.⁸ Looking at this table one might easily conclude that the unipolar world will continue well into the 21st century, that China will not be a global competitor of the USA and India will remain a regional power. This conclusion is, however, very misleading.

There are many foreign policy experts who question the importance of economic factors in national power by citing the cases of Japan and Germany.⁹ According to the Power Potential Index their relative power was about 34% and 25.5% of the USA's respectively at its peak in the early 1980s. In 1975 the relative power of Japan was about 30%. Germany was divided so its (W Germany's) power was fragmented. This was not sufficient for either of them to have challenged US power even if they wanted to, given the fear and resentment that it would have aroused in their neighbours. It can also be argued that the victors of World War II the USA, France and UK ensured that the losers, Japan and Germany did not develop great power ambitions, by imposing a pacifist constitution and tying them into the EU/NATO and US-Japan alliances.

The case of Russia contrasts with that of Japan & Germany. Many observers continue to talk about Russia as a future great power. Russia's actual power appears to be much greater than its power potential. Its power potential as per the PPI is currently about 5% of that of the USA. It was however as high as 17% in the early 1980s but has declined steadily since then. The economy of the Soviet empire (including former USSR and E European satellite States), which constituted a unified 'virtual State' ruled from the Kremlin/Moscow, was much larger than the Russia of 1982. Therefore the power potential of the USSR (whose data is not available), was much higher than the 17% of Russia in early 1980s and its PPI was probably even higher in the 1970s. This allowed the USSR to devote much more resources to the development of strategic technology and equipment, a legacy from which the much smaller current day Russia benefits greatly.

⁸ Only if $a=0.8$ can the current power potential of Russia, Brazil and S. Korea be taken as greater than that of India. This suggests that a reasonable upper value for a is 0.6.

⁹ E.g. Krauthammer (1990).

5 A TRIPOLAR CENTURY

How long will this ‘Unipolar Moment’ a la Krauthammer last? For at least a quarter century (i.e. 1990 to 2015). The World is likely to become bipolar by the end of the first quarter of this century and become tri-polar by the middle of the 21st century. These conclusions are based on our projection of growth of per capita income and the population projections of the United Nations (summarised in appendix tables A1 & A2).¹⁰ The precise numbers and years emerging from them are not sacrosanct, but the trends are clear and show us the nature of the World that will emerge over the next 50 years.

5.1 Towards A Tripolar World

The Dragon has emerged from the dungeons of Maoist communism to grab the benefits of globalisation (FDI, Exports, education and skills) without singeing it with its fiery breath. It has successfully combined communist party ownership & control with elements of a globalised market economy. The vegetarian elephant has similarly emerged from the Indian version of Socialism to experiment with market reforms in its usual slow and steady but plodding democratic way.¹¹ Though both started the transition in 1980 the dragon has attained a lead over the elephant that may take a century to be *completely* eliminated.

During the first half of this century India’s population will increase from 3.6 times to 3.75 times that of the USA, while China’s population will decline from 4.5 to 3.4 times that of the USA. Population growth is *not* therefore the primary driver of the change from a unipolar to a tripolar world. The population trends in other countries relative to these three do however bear on whether world will become multi-polar. Russia’s (Japan’s) population will halve from about 50% (45%) of US today to about 25% (27%) of US by 2050. Similarly the total population of the EU6 would fall from 110% of US to about 75% of US. Thus the World is unlikely to become multi-polar, in terms of Nation

¹⁰ Source: <http://esa.un.org/unpp/p2k0data.asp> (2004)

¹¹ Both countries’ reforms started in 1980. Curiously India’s economic reforms followed its own temporary regression from democracy, the “Declaration of Emergency” in 1976, as part of which civil rights were suspended.

States, during this century. The question of the role and importance of an association of States such as the European Union (EU) is analysed separately (section 7).

The primary driver of the evolution of a unipolar world into a tripolar one is income convergence between India, China and the USA and other rich countries. Over the next 50 years both China and India will become high-income countries, with India lagging China by about a dozen years in reaching this level/category. China's per capita GDP at PPP will increase from 11% of the USA's to 57%. India's per capita GDP (PPP) will increase from 7% to 36% of US per capita GDP (by 2050). The global economy and polity will be transformed by this convergence of incomes, as the two most populous countries of the World will after centuries close the income gap that resulted from the industrial revolution.

Figure 1 shows the evolution of power potential of the biggest countries as measured by $a=0$, which is equivalent to the relative size of the economy measured at Purchasing Power Parity. China's GDP at purchasing power parity will equal that of the USA in about ten years (figure 1).¹² China will have become an upper-middle income country by then.¹³ India's GDP at Purchasing power parity will exceed that of Japan within 5 years and will exceed that of the US by 2040.¹⁴ By then India will be a high-income country.

Figure 2 shows the evolution of power potential of the biggest countries as measured by $a=0.5$ and can be taken as the mean scenario in terms of power potential. The curve also approximates the trend in relative GDP in US \$ (measured at 2002 exchange rates & prices), though the current deviations from the regression line are compounded over time (e.g. for China & India). In principle it can indicate the overall impact of each economy on the World economy (relative to that of the US). This impact is a composite of international trade, financial flows and movement of technology and skills.

¹² 2017 in the current projection.

¹³ The ratio of its GDP at purchasing power parity to India's will have peaked prior to this.

¹⁴ 2039 in the current projection

Figure 1: GDP at Purchasing Power Parity Relative to US (PPI a=0)

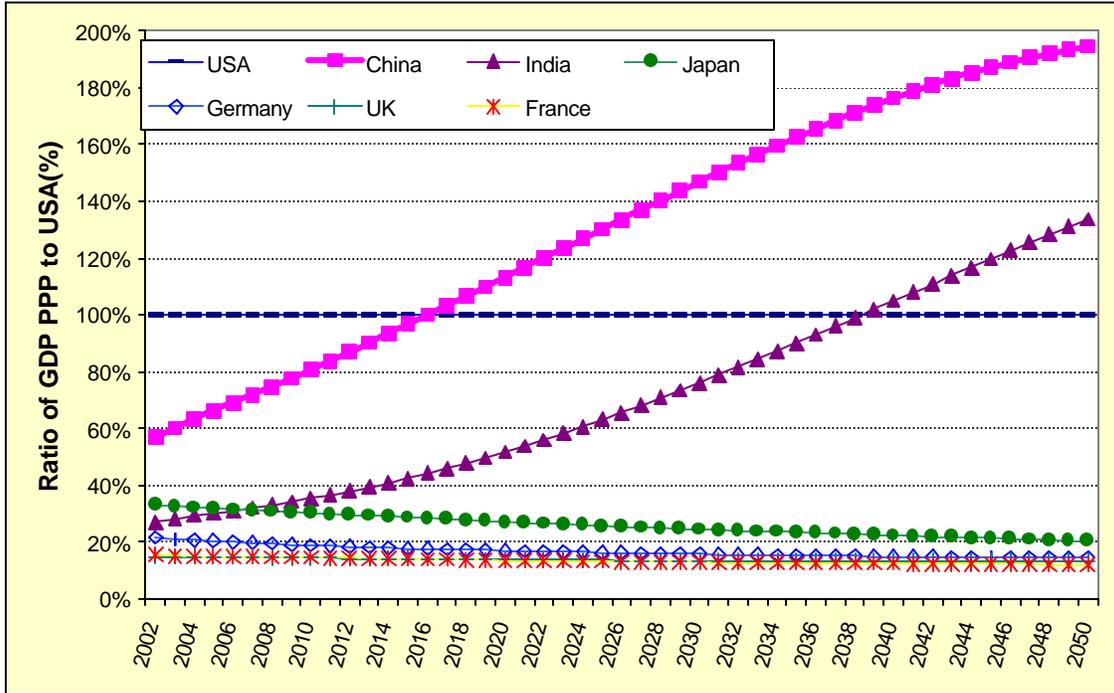
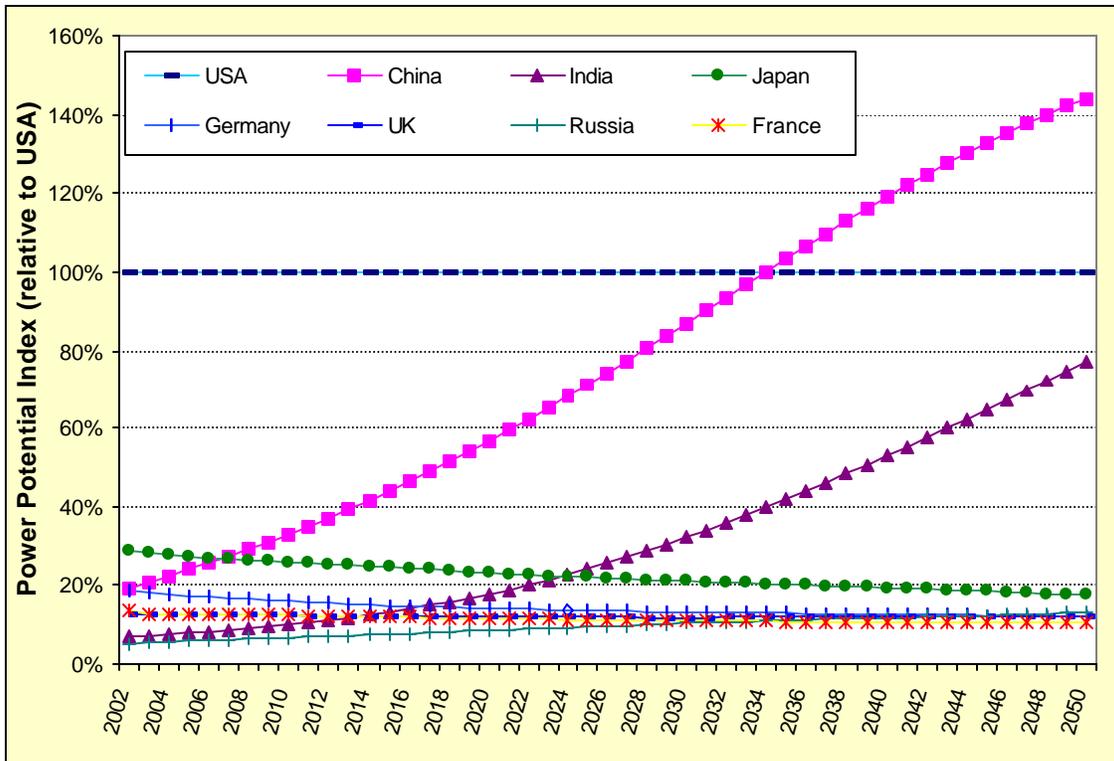


Figure 2: Projected Power Potential of The Major Powers (a = 0.5)



According to our mean scenario, China's and India's power potential will equal that of USA during the second quarter and third quarters of the 21st century respectively. This does not mean that income levels of the former will be equal to that of the USA. The remaining gap in income level will be offset by larger population size. Around 2035, China's per capita GDP at PPP will only be about 43% of the USA, but its power potential will equal that of the USA (figure 2) because its population will be about 3.8 times that of the US. Before the end of the first quarter of the century India's power potential will exceed that of Japan. India's power potential will also reach that of the USA during the third quarter of the 21st century, about 25 years after China. At this point India's per capita GDP at PPP will be around 40% of the US and its population about 3.9 times.

As bi-polarity or tri-polarity does not require that each pole be exactly equal, the World is likely to become bipolar by the end of the first quarter of this century and become tripolar by the end of the second quarter of the century.¹⁵ As half the century will be tripolar it could be called a *Tripolar Century*. It follows from this emerging tri-polarity that the nature and quality of relations between India, China and the USA will have an important bearing on peace and stability in Asia and on economic prosperity generally.

5.2 The Eagle and the Dragon

With China's economy equalling that of the USA in size in about ten years and equalling it in power potential in about thirty years, the balance of power in Asia will tilt towards China within the first quarter of this century. China will almost certainly challenge USA's economic power in Asia and across the globe and likely be much more unabashed in asserting its economic claims in the South China Sea and its economic interests in Asia, Africa and Latin America. The law recently passed by China authorising the use of force against Taiwan (China) is perhaps a pointer to this emerging reality. There are also signs that earlier US complacency about the relative military and technological power of the USA vis-à-vis China is giving way to heightened concern.

¹⁵ This is analysed further in section 4.6 and table 2.

This is reflected for instance in US efforts to stop the EU from lifting its arms embargo on China.

5.3 *The Dragon And The Elephant*

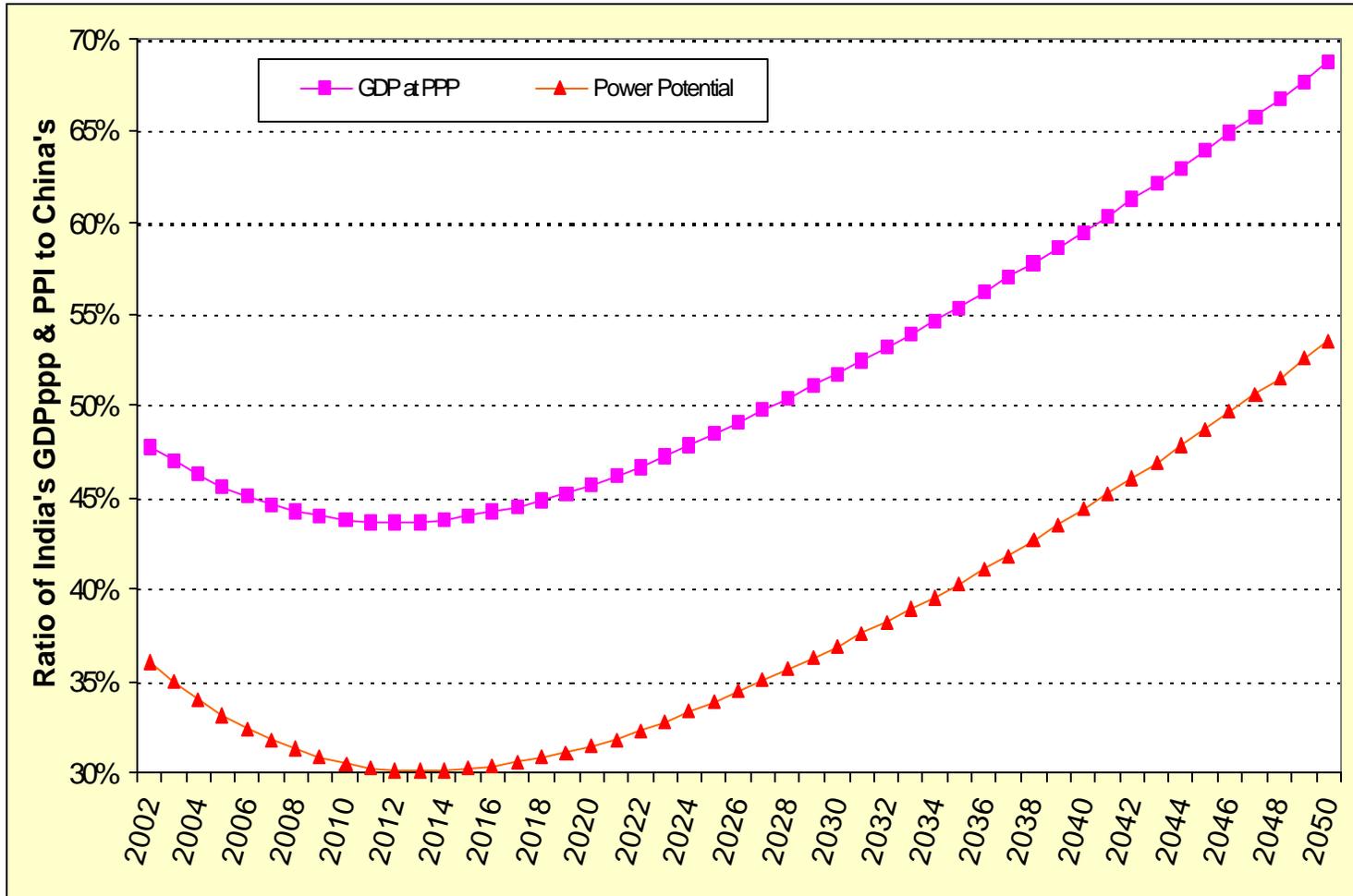
Sino-Indian relations will play a critical role in ensuring peace and stability in Asia during the second quarter of this century. Figure 3 shows the evolution of India's GDP at purchasing power parity and its power potential relative to China's. India's GDP has fallen from more than that of China's in 1980 to half of it in 2000. It will reach a relative trough of 44% around 2012 before starting to rise and close the gap. By 2025 the ratio of India's to China's GDP and power will be 50% and 35% respectively. By 2050 the ratio of GDP and power potential will have risen to 70% and 55% respectively. We project both gaps to be completely eliminated by the end of the century, thus restoring the position that prevailed in the early 1980s.¹⁶

It is therefore imperative for China and India to normalise their bilateral relations based on mutual respect and recognition of each other's role in Asia and across the World. As China is the stronger power its attitude to relations with India will be an important driver of the India-China relationship. There are three key issues that need to be addressed. First, a settlement of the India-China border. China's willingness to accept a settlement that is 'no worse' for India than the one proposed in the sixties by premier Chou en Lai would be a positive indication. Second, a credible policy regarding nuclear proliferation to countries ill disposed towards India.¹⁷ Third, a willingness to build new inclusive regional economic organisations, which give India and other Asian countries their due share in economic power. A border settlement and removal of restrictions and barriers to trade in goods and services could form the foundation for good relations.

¹⁶ A US-India partnership could help eliminate the gaps decades earlier.

¹⁷ Routine denial of internationally recognised proliferation activities does not enhance credibility.

Figure 3: India's GDP at Purchasing Power Parity and Power Potential Relative To China's



Based on the lessons of European history and the European Union, India and China must develop inclusive and co-operative structures in Asia that will ensure the peaceful development of all countries. China, India and other Asian oil importers could jointly bargain with the oil supply cartel that has been charging them an (unjustified) Asian Premium. This co-operation could be developed into an Asian oil community, patterned on the European steel community. India could also take the initiative in developing an Asian Economic Community patterned on the European Economic Community with India, China, Japan, Indonesia and other ASEAN countries at its core.

5.4 *The Elephant And The Eagle*

At the point at which the World becomes tripolar, China would be the strongest pole and India the weakest. The combined size of the US and Indian economy will be larger than China's, as would their combined power potential. This relative position is likely to prevail through the second half of the century and has important implications for economic and technological co-operation between the USA and India. As India and the USA share fundamental human, social, institutional and democratic values, it will be in the interest of the USA to ensure that the economic and technological gap between India and China is closed as rapidly as possible so that India can act as a stronger pole in Asia.¹⁸ This will also help expand the freedom of action of other countries in West Asia, Central Asia and of the members of ASEAN.

One element of Indo-US partnership would be a Comprehensive economic co-operation agreement (CECA) between India and the USA covering goods, services, FDI and temporary movement of skilled and semi-skilled persons. Another element would be for the USA to lead the abandonment of the nuclear apartheid imposed by the West on India after its Nuclear explosion in 1974.¹⁹ This requires changes in laws, rules and bureaucratic procedures. The third element would be a strategic partnership that deepens and widens India's access to defence, space and nuclear technology. Will the US, at the peak of uni-polarity have the farsightedness and wisdom to treat India (currently less than a tenth of its power) as an equal? The recent announcement by the US State department

¹⁸ Classical realist theory is consistent with this proposition.

about co-operation in the field of nuclear power and defence production in India and introduction of India into the G8 suggests that it might!

Though USA will remain the repository for the most advanced strategic technology for half a century, Japan, the EU6 and Russia will continue to have a competitive supply of some of these technologies. The traditional Indo-Russian co-operation will therefore remain important for closing India's technology gap, for at least a decade.²⁰ The interest of France and others in a multi-polar world could also spur enhanced technology transfers to India. If the democratic governing institutions in the USA and India move at their usual speed, the development of a true (genuine, balanced) partnership between the USA and India could take a decade. With US interests currently focussed on terrorism and West Asia (middle east), the USA appears to be overly-dependent on the Pakistan government.²¹ Given that strategic technology has strong elements of monopoly, India will have to continue tapping multiple sources so as to obtain the most cost effective technology.

5.5 Regional Powers

At mid-century China's economy will be almost the same size as the aggregate of the economies of India, Japan, Russia, Indonesia, S. Korea and Australia.²² Its power potential will thus be equal to (or greater than) the combined power potential of the six largest democratic economies in Asia. It would therefore be in the interest of these democracies to greatly enhance their economic and technological co-operation during the next two decades. It should also act as a spur to development of a comprehensive co-operation agreement between India and ASEAN based on the framework agreement for an India-ASEAN FTA that has been signed in 2004.

Figure 2 shows that Japan has passed the peak of its potential power and will be on a declining trend over this century. Its power potential has already fallen below that of China and will fall below that of India within the next 20 years. The gap between

¹⁹ India was the only major country not to sign the NPT in 1972. China became a nuclear power in 1968 and as a member of the NPT has had much freer access to Western technology since 1980.

²⁰ The emerging India-Israel relationship can also play a critical role in closing the technology gap.

²¹ Giving rise to US willingness to overlook Pakistan's acquisition of bomb designs (from China), its illegal purchase of equipment and materials from the West, its proliferation of nuclear technology through the nuclear black market, its role as a progenitor and supporter of the Taliban and the home of Osama.

Japan and the European powers of the 20th century will close steadily over this century. It will however remain a significant power during the first quarter of this century, if it changes its pacifist approach and develops a more muscular foreign and national security policy. Japan has been shaken out of its complacency by the N Korean missile test over its territory and the development of nuclear weapons by the latter.²³ Recent statements of the Japanese Prime minister and joint statements with the USA in the context of the US-Japan security treaty give a hint of this change. If Japan indeed becomes a “normal nation” it can play a critical role in securing peace in Asia in co-operation with other democratic countries of Asia during the first quarter of this century.²⁴ It is in the interests of an aging Japan to increase its economic and technological co-operation with India.²⁵ It could go further and partner India in promoting democracy, securing the sea-lanes from W Asia to E. Asia and strengthen ASEAN independence (freedom of action). The process of change in Japan’s policy may however be too slow and incremental (given the strong resistance and the nature of consensual decision making).

According to our mean forecast the power potential of Russia will rise slowly to exceed that of Germany by mid-century. It will however remain less than that of Japan, reaching about 3/4th of that of Japan by mid-century. If these scenarios turn out to be correct, both Japan and Russia would be classed as regional powers at that point. However, in the interim period, they can play a critical role in closing the India-China economic and technology gap (respectively) and thus help ensure a stable balance of power in Asia.

5.6 Timing of Tripolarity

Will it matter if the most appropriate technology parameter for measuring power is 1 rather than 0.5? Not really, as the only effect would be to increase the time it would take for the world to become bipolar and tripolar! It is not necessary for a country’s power to exactly equal that of the strongest power to emerge as a second pole. A power

²² The position will be even more asymmetric if Hong Kong and Taiwan are incorporated in China.

²³ Is China involved in this proliferation to larger/smaller extent than in Pakistan? Was the objective the same namely to undermine potentially powerful neighbours Japan and India respectively?

²⁴ One sign of non-normality was the contrast between Japan-China and Japan-India relations during the 1980s and 1990s.

²⁵ First to a level that it has had with China.

potential of 50% (with $a=1$) would make a country an alternative pole. China will clearly emerge as the second pole by the beginning of the second quarter of the century as its power potential will be over 50% of the USA by 2030 and equal it by 2045 (table 2). China will therefore be in a position to challenge the US power in Asia by the end of the first quarter of this century. Whether and how it chooses to do so will depend on many factors including the Balance of Power in Asia and its level of strategic technology.

Similarly in the case of India, even with a technology parameter of 1, India's power potential will exceed that of Japan by 2035. By the middle of the century it will be about 50% of that of the USA. Thus it will emerge as a third pole in a tripolar world. By way of comparison, second ranked Japan's power potential ($a=1$) at the height of its potential power in the early 1980s was less than one third of the USA. It has declined to one fourth of the US by 2000. France, Russia and other countries had a fraction of this power potential and were therefore in no position to challenge the USA. In the case of the rich countries the power potential does not vary much with the technology parameter.

Table 2: VARIATION IN POWER POTENTIAL WITH a

	2000	2010	2020	2030	2040	2050
China						
a = 0	0.50	0.81	1.13	1.47	1.76	1.94
a = 0.5	0.16	0.34	0.58	0.89	1.21	1.45
a=0.75	0.10	0.23	0.43	0.70	1.02	1.28
a = 1	0.06	0.15	0.31	0.55	0.85	1.11
India						
a = 0	0.25	0.35	0.52	0.76	1.05	1.34
a = 0.5	0.06	0.10	0.18	0.33	0.54	0.79
a =0.75	0.03	0.06	0.12	0.23	0.40	0.62
a = 1	0.02	0.03	0.07	0.15	0.29	0.48
Japan						
a = 0	0.34	0.30	0.27	0.25	0.22	0.20
a = 0.5	0.29	0.26	0.23	0.21	0.19	0.18
a =0.75	0.27	0.24	0.22	0.20	0.18	0.17
a = 1	0.25	0.23	0.20	0.18	0.17	0.15

6 DYNAMICS OF ASIAN GROWTH

Few observers have taken the possibility of India's emergence as a global power seriously or have acknowledged that China could challenge US power within the first

quarter of this century. As our projections for India and China differ significantly from those by earlier authors it is necessary to provide a rationale.

6.1 China

Collins and Bosworth (1996), later corroborated by the World Bank and IMF, have shown that China's growth from 1980 to end-nineties was overestimated by 1% to 2%. Young has asserted that China's growth is over-estimated by as much as 3%. If we make an adjustment of 2%, China has demonstrated its ability to sustain growth at about 7.5% per annum over 25 years. Most observers have, however, been forecasting a slow down in this growth rate and a few have even predicted a dramatic slowdown.²⁶

The IMF (2004) has shown that China's growth so far is on a trajectory similar to that of Japan and the NIEs in a similar period of their development, though it is faster than that of the ASEAN-4. The 1990s were a period of above average international trade growth and the current decade could see a slower growth in goods trade. As China's share of the World's goods exports rises to US levels its export growth will slow. The rise of its per capita income (and wages) to upper-middle income levels and then to high-income levels will contribute to this slowdown. Other factors (discussed below) will also contribute to the slowdown. In our mean forecast we have therefore assume that China's growth rate will fall gradually to more normal levels (table A1).

A stylised model of China's "socialist market economy" is needed to understand its strengths and weakness.²⁷ China is a corporate State with a clear vision of national power through economic growth and technological catch-up. The Communist party of China (CPC) forms a command and control network that is a mix of centralisation and de-centralisation. The CPC/State translates this vision into reality at multiple levels (large firm, city, province, nation) that are broadly coherent but far from perfect (not devoid of contradictions). A very large fraction of assets are still owned and controlled by the State/CPC network which appoints the top management in listed companies, co-operatives, T&V enterprises and State owned enterprises. The State therefore has a high

²⁶ See IMF, World Bank and ADB reports on China and Chang (2001). See also Virmani (1999).

²⁷ In the late 1930s Oskar Lange put forward the idea of "Market Socialism," an economy in which assets (means of production) were owned Socially (party), but which mimicked the supply-demand price adjustment of the competitive market economy.

share of national profits and consequently the ability to have both low tax rates and very high investment rates (including in infrastructure). These high investment rates are one element of the growth strategy.

We know from the USSR experience that this can lead to un-saleable inventory stock, falling capacity utilisation and collapse. China has successfully dealt with this problem by liberalising output/product markets and orienting its system to push exports. The promotion of export-oriented FDI is a vital means for achieving the latter. The parallel push to attract technology oriented FDI helps avoid the other failing of the USSR, stagnant or negative technical change in the civil economy (i.e all non-strategic areas). The primary “market” economy is in products (goods & non-infrastructure services) where even CPC controlled enterprises compete to maximise growth, as in a private corporate economy. The socialist planning system still operates, however, in factor markets (land, labour, capital) and infrastructure and the pricing of these inputs is used to provide (hidden) subsidies to Foreign investors and domestic exporters.²⁸

The key driver of economic growth since 1985 has been FDI and exports.²⁹ Adoption of an FDI-export led growth strategy converted China from an autarchy into an essential link in the global production chain developed by the NIEs and ASEAN 4 between 1965 and 1985. China created conditions (suspension of normal labour rights, capital subsidies to counter every negative) for a wholesale shift of labour intensive (LI) production by Chinese entrepreneurs from Hong Kong, Taiwan and other countries in S. E. Asia to the Special Export Zones and Regions. These labour intensive (LI) export goods are now highly competitive.

The conventional wisdom is that China’s phenomenal success in LI exports is due to the superior productivity of Chinese workers.³⁰ In reality the per-hour worker productivity is not much different from that in any other country at a similar level of

²⁸ Cities/Provinces can and do price land to any buyer at any price. The labour responsibility system determines where person can work legally and where it cannot. The banking system is like a government department where loans are decided by the concerned CPC boss on the basis of provincial/national objectives and ability to repay is irrelevant (Zero cost of capital). Infrastructure pricing and supply (particularly to foreign invested enterprises) is similarly decided on the basis of national/ provincial/ city objectives and can vary with enterprise.

²⁹ Like Thailand & Indonesia.

³⁰ To this a second point has been added in the last five years, the first class infrastructure in and around the FDI-export hubs. It is forgotten that poor infrastructure in Jakarta/Indonesia and Bangkok/Thailand did not prevent these two countries from growing fast for decades.

income (perhaps lower). The output per man-month is however much higher because hours worked per week/month are 50% to 100% higher than in equivalent democratic market economies, being unconstrained by labour laws.³¹ China does however have an unassailable comparative advantage in mass scale organised manufacturing and construction.

Non-labour intensive exports (even those produced by FDI) are not necessarily globally competitive. The banking system, provides loans to State enterprises producing capital goods, intermediate goods and infrastructure services at zero effective capital cost. 'Non-performing assets' (NPA) is a misnomer as it is known in advance that many loans will not be repaid.³² These implicit subsidies are then transformed through below cost prices, into explicit subsidies to the FDI-export complex and to hi-tech industry.³³ This is a significant factor in attracting hi-tech FDI and capital intensive exports.

The FDI-export drive is critically dependent on building and sustaining optimistic expectations about the economy and the Asian crises demonstrated the vulnerability of this model. The obverse of high social ownership of domestic assets and consequent high investment rates is a low share of private consumption in GDP. The rate of capacity build up is much faster than the growth of private consumption, leaving exports as the only means for balancing supply and demand. China's membership of WTO and rising job fears in OECD countries will result in increased scrutiny of and resistance to subsidised exports. Given the continuing generation of non-performing assets, China is somewhat more vulnerable on this count.³⁴ Its income distribution is also worse than in other successful Asian economies. On the other hand China's large economy has domestic strengths and bargaining power that were absent in the smaller Asian countries. These will result in a slowing of growth and not a sudden collapse if the CPC/Government continues to adapt its policy to the changing circumstances and imperatives as it has repeatedly done since 1980.

³¹ Reports suggest that 10 hours a day 7 days a week is not uncommon in labour intensive units producing for export. This ironically results in a reduction in per hour productivity below what it would be if working hours were the same as in State Owned Enterprises.

³² A McKinzie journal volume on China (2004) gives just of hint of this.

³³ The prices of intermediate goods in China are reportedly less than their price on the high seas outside India – i.e before taxes, delays or red tape.

³⁴ Which have resulted in a (disguised) National debt of 50% to 100% of GDP

There are political arguments for a sharp slowdown in economic growth. The distribution of income has worsened dramatically since 1979. Part of this deterioration is the reversal of unsustainable levels of equality reached during the Maoist years. The rest of the deterioration was a conscious decision to accelerate growth by focussing subsidies and infrastructure development into the FDI-export areas in the coastal regions during 1985 to 2000. Given the restrictions on internal movement of workers (the labour responsibility system) this translated into growing income inequality. Further, the retreat of the state from provision of social goods has also translated into greater inequality in the receipt of public and quasi-public goods. Out of total of 127 countries China ranks 91 in terms of the Gini co-efficient of inequality, and 94th in terms of the consumption share of the poorest 20% of the population. Rising inequality has a potential for socio-political upheaval and counter repression that could disrupt growth.

Some have gone further to argue that there is an inherent contradiction between the market economy whose success requires competition and plurality and the centralised political system that suppresses independent democratic thinking and impulses.³⁵ If the contradiction cannot be managed it has within it the seeds of a socio-political explosion that will bring growth to a halt for a substantial period of time (after which it could resume at a much slower rate). This contradiction is much more than it was in S Korea (say) and the latter eventually succumbed to the democratic impulse. The counter argument is that dictators can and have maintained highly repressive regime for decades after upheaval. Whether growth rate can be maintained along with repression depends on the response of the rest of the world. The probability of such an economic collapse is in our view less than 15%.

If the above contradiction can be successfully managed, we would have a third scenario in which China becomes even more powerful than is anticipated in the mean scenario. In this Communist China, the ultimate corporate state (mammoth version of Singapore) is able to maintain inordinately high growth for half a century to become the sole super-power by mid-century. This seems to us the least likely scenario with a probability of less than 10%.

³⁵ K Subrahmanyam et al.

In both these scenarios (with probability less than 25%) the danger to peace and security in Asia would be heightened. In the first case, because oligarchies are more likely to use nationalist jingoism and create external threats to divert the attention of the dis-affected. In the second case, because “power corrupts and absolute power corrupts absolutely.” In both these scenarios there would be a greater need for all democratic countries in Asia to co-operate much more closely with each other and provide mutual support. Similarly the logic of an Indo-US partnership for peace would be even stronger.

6.2 India

In contrast to China we assume a steady rise in the underlying growth rate of the Indian economy over the next 10 years. According to India’s National accounts data GDP and per capita GDP have grown at an average of 5.8% per annum and 3.7% per annum respectively during the last 24 years (1980-1 to 2003-4).³⁶ The comprehensive reforms instituted in the 1990s have increased competitive pressures on the Indian economy while at the same time enhancing its ability to compete globally. The growth rate has however increased by only about 0.6% point.³⁷ The opening of the economy to international trade seems to produce a J-curve effect: The direct negative effects of competition appear immediately as capacity utilisation falls in un-competitive product lines. With capital immobile, reduction in capital stock is limited by the rate of depreciation. The positive effects of competition on productivity appear gradually. New technology is first adopted by the pioneers and effected through new investment. It diffuses gradually to other firms in the industry.³⁸ Improvements in productivity will therefore appear at the aggregate level only after a lag. We therefore expect the underlying trend rate of growth in India to move up to around 6.5% over the next few years.

The growth rate is assumed to rise further to 7% thereafter on the assumption that reforms will continue at the average pace seen since 1991 (see Virmani (2004a) for

³⁶ The WDI data underestimate the GDP growth rate substantially though the per capita GDP growth rate is almost the same.

³⁷ From 5.5% per annum during 1980-81 to 1991-2 to 6.1% during 1992-93 to 2003-4.

³⁸ There are numerous cases of firms that have transformed their systems and shown large increases in productivity. The effects of these are not however available in the sector data.

details).³⁹ Three specific (modern services, FDI, demographic transition) and three general factors make this increased growth feasible and sustainable. First, the one area in which the improved competitiveness of the Indian economy is clearly visible is in the double-digit (20% to 30% per year) growth of Information technology (IT) and IT enabled services (ITES) export. Though such non-traditional (ie. excluding transport & tourism) service exports are already a significant share of India's total exports, they constituted a very small part of the economy. Therefore the impact on GDP growth was limited. With the continuing high growth of non-traditional service export, they are now becoming large enough to have a measurable impact on GDP and their contribution to GDP growth could rise from 0.5% to 1.5% points over a decade.⁴⁰ India is likely to become one of the largest suppliers of non-traditional services to the World over the next few decades (including R&D, financial, medical, educational and social services).⁴¹

The second factor is the un-exploited potential of foreign direct investment (FDI). The proportion of FDI in total investment and GDP is very low in India compared to other high growth Asian countries such as Singapore, Malaysia, Thailand, China, Indonesia and Vietnam. In contrast to China's FDI-export led growth model, India's growth has been led by domestic investment and entrepreneurship.⁴² The positive role of FDI in growth (marketing, technology, management systems) is therefore largely un-exploited. A doubling of FDI flows from the recent levels of \$ 3.5 to \$4 bi. to \$8bi to \$10bi per annum will give a substantial boost to productivity and growth.⁴³ India is already an attractive location for skill-intensive manufacturing because of the high quality and availability of middle management/ technical skills and knowledge workers.

³⁹ This book summarises the reforms proposed in a series of internal papers done in the Ministry of Finance (Department of Economic Affairs), Govt of India, from 1995 onwards. The underlying theme of these suggestions is to increase competition in every market and sector by removing the distortions introduced by the Indian version of socialism and to focus government effort on the supply of public and quasi-public goods and services.

⁴⁰ Starting at the lower end and going up to the higher end of the range.

⁴¹ OECD aging citizens will benefit greatly from the universalisation of services that their lower cost will make possible.

⁴² See Khanna and Huang (2003) for a comparison with China.

⁴³ Several ICRIER working papers by Rashmi Banga have shown the positive effects of FDI in India.

Several areas of competitiveness related to such skills are already visible, namely biotechnology, auto engineering (parts) and specialised chemicals.⁴⁴

With China's per capita income more than twice that of India's its hourly wage will eventually attain the same ratio. Membership of the WTO and scrutiny by global NGOs will make it increasingly difficult for foreign invested firms in China to make people work 100 hours a week. India will therefore become a more attractive location for low & medium scale labour-intensive manufactured exports vis-à-vis China. The new Special Economic Zone (SEZ) law can reduce red tape/bureaucracy, introduce much needed flexibility in labour laws, rules and procedures and accelerate development of high quality infrastructure, thus expediting this process. FDI can play a critical role in integrating India into the global supply chain for a host of products. If domestic hurdles to global operation are removed FDI could add at least a point to growth.

The third important factor is the demographic transition that is taking place across the World. The high growth of E & S.E. Asian countries was to a substantial degree due to the demographic transition (Bloom et al(2001)). This is the \cap (inverted U) shape followed by the ratio of labour force to population.⁴⁵ With the supply of labour rising faster than population per capita GDP growth accelerates. Further the changes in the age profile also result in a rise in the aggregate saving rate ensuring sufficient funds for investment. China is nearing the end of its demographic transition while India has entered its most positive phase. We estimate that this could add between 0.5% to 0.8% points to the growth of the Indian economy.

In addition the population of Europe and Japan is aging rapidly and there will be a great demand from these economies for '*youth-intensive*' goods and services.⁴⁶ Over the next half century India will have the youngest labour force in the world. India is therefore likely to become the largest exporter of such items.⁴⁷

⁴⁴ With the introduction of a product patent regime from this year, the protection of the legal system will now be available to drug developers.

⁴⁵ The dependency ratio follows a U shape first falling then rising.

⁴⁶ For instance a study has shown that Nobel prize winners in Physics did their most productive work below or around the age of 25.

⁴⁷ As China's population will age much earlier than that of India it is not in a position to exploit this opportunity.

There are also several general factors that will sustain growth. One is the existence of a large *under-utilised* pool (20 mi. to 100 mi.) of free thinking, autonomous working, high IQ people.⁴⁸ The second is the high quality and diversity of India's institutions and the social capital built over centuries.⁴⁹ The democratic system, including the relatively new non-governmental institutions and free & vibrant media, is a great source of long-term strength.⁵⁰ The third is the experience of working with citizens of very diverse backgrounds (religious, ethnic, language, sub-culture) and the facility with English. This pluralism and language facility is a unique advantage in the globalised 21st century. India is also ideally placed to partner OECD countries in the emerging global knowledge economy of the 21st century. These specific and general factors are sufficient to overcome any negative growth factors, to raise growth to a sustainable 7% or so.⁵¹

There are some questions raised by India-sceptics about poverty and inequality in India, which have to be viewed in the light of the following facts. India is a low-income country, so the proportion of poor is still high (about 23%).⁵² The absolute number of poor is thus larger than the total population of all but two countries (USA and China). It is democratic so the poor are free to live and work anywhere and are therefore **visible everywhere**. India's income distribution is, however, among the top quarter of the 127 countries for which the Gini co-efficient is available.⁵³ It does very well for the poorest 10% whose consumption share is the 6th highest among these 127 countries.⁵⁴ India is

⁴⁸ The normal distribution of IQ in a population, means that 2% of population has very high IQ and 10% has high IQ. Applying this to India we get 20mi and 100 mi people respectively. Bad economic policies till 1980 resulted in gross under-utilisation of this resource.

⁴⁹ Infirmities in its political system have led over the last 4 decades, to a deterioration in the quality and quantity of public goods (roads, policing, legal system.) and quasi-public goods supplied. The high fiscal deficit is merely a symptom of this deterioration in governance. This down trend in governance must and will be reversed. China had similarly high levels of social capital but much of this was destroyed during the communist revolution and the cultural revolution.

⁵⁰ Rodrik and Subramanian (2004) estimate that India's (China's) income level is 15% lower (higher) than that predicted by the quality of its institutions. India's income will therefore rise to the predicted level with the correction of wrong policies, while China will not be able to sustain the same growth at higher income levels where these institutions are critical.

⁵¹ A more optimistic scenario is also possible in which growth reaches the 7.5%-8% range and remains there for a decade or so. The probability of this is 10-15% in our view. Surjit Bhalla has been asserting for the last 3 years that India's growth rate will soon exceed 8%.

⁵² The poverty rate or Head count ratio is 29th out of 87 countries for which data is reported.

⁵³ 32nd to be precise.

⁵⁴ 14th for consumption share of bottom 20% and 25th for bottom 40% of the population.

one of a handful of high growth countries whose income distribution has not worsened significantly during the high growth period.⁵⁵ By 2010, when India becomes a lower-middle income country, the poverty rate will be reduced to about 15%.⁵⁶ Poverty is likely to be completely eliminated by the time it becomes an upper-middle income country around 2025.⁵⁷

What about the down side? The greatest long-term weakness is on the political side. Infirmities in the political system have led to a gradual deterioration in the quality and quantity of public goods (policing, legal system) and quasi-public goods supplied. The governments' lack of success in suppressing Maoist and other insurgencies in the interiors of the country is a reflection of this failure.⁵⁸ Political/governmental reforms are necessary over the next decade to ensure that the system remains on even keel.⁵⁹ Though Indian democracy responds slowly to such intangible threats, it has always been able to deal with them in a democratic and non-disruptive manner. The mean scenario assumes that the Indian economy will not grow above 7% because of this weakness despite other strengths. I would put the probability of a more serious governance failure that reduces aggregate growth significantly, at less than 10%.

Will India's power potential be translated into actual power as (implicitly) assumed? Historically Indian forays into the outside World have been driven by commerce and culture. Even the culturally Indian Kingdoms that came to be established in S.E. Asia had no connection with India – they were neither colonies controlled from India nor paid tribute or bore allegiance to any ruler in India. India therefore lacks a tradition of strategic thought and experience.⁶⁰ There are some who feel that there is an 'intrinsic timidity in the Indian character' that results in a lack of geopolitical will. If true this could open a gap between its power potential and actual power. Consequently the gap between the actual power of China and India could be even larger than the gap in power potential.⁶¹ This would increase the risks to global peace and make it even more

⁵⁵ Cornea and Court (2001).

⁵⁶ Based on official rate in 1999-2000 (26%) adjusted for survey changes (i.e.28%-29%). We assume a decline of 1% point per year based on the average decline since 1980.

⁵⁷ Before that the national poverty line will probably be raised.

⁵⁸ The high fiscal deficit is (merely) a symptom of this deterioration in governance.

⁵⁹ See Virmani (2004a) for the new development paradigm needed for high growth in India.

⁶⁰ See e.g. Tanham(1992).

⁶¹ There is little doubt about China's determination to become a 'Great Power.'

important for OECD democracies like the USA, Japan, UK, Germany and France to help and support India in acquiring a global role.

6.3 Japan and Russia

Our assumption for Japan is perhaps more optimistic than justified by its growth over the last 25 years. The growth projection could therefore be viewed as an upper bound. If Japan's growth is slower than assumed and India's growth does not match up to the forecast, balance of power will be even more unbalanced in Asia than in our base scenario.

Russia's growth is also assumed to be much higher than it has been in the past. Even though the oil price rise has led to an acceleration of growth this push will end after oil prices have stabilised. Russia has the advantage of a relatively educated/skilled work force and vast natural resources. The growth rate will depend on policies that ensure their effective utilisation.

Similarly our projections for Brazil are more pessimistic than that of others. We have assumed that Brazil's economic growth will pick up gradually above the average that has prevailed since 1980, but will not exceed three times this average. This is very modest compared to the performance of Asian economies at similar income levels. In other words, the assumption is that Brazil's growth will not get anywhere close to its growth performance during the high growth period of the sixties and seventies.

7 THE EUROPEAN UNION: MULTIPOLARITY?

Whether or not the European Union (EU) can emerge as another pole in a multipolar world depends on its evolution into a "virtual state." A 'Virtual State' is a super-national body with elements of a nation state, such as the power to tax and to use the tax revenues for security (defence and offence). As the primary focus of the EU has been on economic union, let us first analyse this aspect. The economy of Europe and Central Asia is projected to decline from a little over 125% of the US economy to about 90% to 100% of the US economy.⁶² The EU constitution, if and when passed, will certainly make the

⁶² This can be taken as approximating the future EU.

EU administration another player on the global scene. It is also within the realm of possibility that over the next few decades the EU government will take over all the functions of member states with respect to external economic policy. This would imply a one point EU/EC interaction on economic matters with other countries, regions, the IMF, World Bank and other economic bodies of the United Nation and surrender of their individual seats on the latter by member states. Such a unified EU could therefore have an economic clout equal to that of the USA.

Let us turn to the traditional attributes of national power in terms of national security and diplomacy. Conceptually the EU's global power could be the aggregate of its member countries if they all surrendered it to a single unitary EU presidency. If they surrender half their power, while retaining half of it, the EU virtual state's power would be approximately half that of the aggregate power of members, that is about 45% to 50% of the USA's power potential ($a=0$). This could make the EC a major player on the global scene. The other side of the coin, however, is that this would reduce the EU4 to minor global players in their own right. The EU4 (Germany, UK, France, Italy) whose aggregate power would still be about 48% of the USA in 2050 are unlikely, to surrender so much of their diplomatic & military power to the EU and become minor powers.

A surrender of mere $1/4^{\text{th}}$ of each member's power to the EU will mean that the latter has about 20-25% of US power in 2050. An alternative scenario is one in which all the smaller powers of the EU surrender most if not all of their global power to the EC, while the EU4 retain most of their independent national power. This could result in the EC having about $1/3^{\text{rd}}$ the power of the USA. This would put the EC in a position similar to that of Japan at its peak power.

Would the EC have the will to emerge as fourth pole if this means an eclipse of the individual power of the EU4. In other words would Germany, UK, France and Italy permit their individual global power to be completely eclipsed by that of the EC? According to current indications this amount of power accumulation by EU (surrender by member states) is unlikely. This is reflected in, (a) the increased resistance to surrender of financial power by UK and others to the EU. (b) The strong push by Germany to become a permanent member of the security council. (c) The move to include *Asian* Turkey into the *European* Union so as to strengthen multiculturalism and diversity in the

EU. Its current direction therefore appears to be towards an umbrella organisation with increasing soft power and not a powerful virtual state in the traditional mold. If soft power counts more than military power in the 21st century then the EU could be the fourth pole in a quadri-polar world.

8 A PARTNERSHIP FOR PEACE

Within a decade China's economy will become larger than the US economy and may be almost twice as large by the middle of the century (in terms of GDP at purchasing power parity). Its power potential will therefore equal that of the USA sometime during the second quarter of this century. The World will become **bipolar** much before that happens, probably at the end of the first quarter. In parallel, India's economy will overtake Japan's within five years to become the third largest in the world (GDP ppp). India will become global growth engine in about 15 years, with its impact on the world economy larger than that of Japan. The Indian economy will equal the US economy in size by 2040 (GDP ppp). The world will therefore become **tripolar** by the middle of the century. The size and power of China relative to India is projected to peak within a decade (at around 2.3 times and 3.5 times respectively). The gap will close steadily thereafter and be eliminated during the fourth quarter of the century. India will consequently be the weakest pole for most of this century, and China's attitude towards India will have a vital bearing on peace in Asia. Good relations between India and China based on mutual respect and equality will be critical to peace in Asia.

As peace and stability in Asia will be of vital economic interest to the rest of the World, the advanced democratic countries (EU, Japan, US) must consider how to ensure a stable balance in Asia. The USA and India share fundamental human and democratic values. It will be in their mutual interest to develop a strong partnership for peace in Asia. India's then Prime Minister, Mr Atal Behari Vajpayee stated on a visit to the USA that India and USA are "Natural Allies." The USA as the predominant power today should strengthen India's economic and technological capabilities so as to benefit in future from its young labour force and large potential supply of knowledge workers. One element of this partnership should thus be a comprehensive economic co-operation agreement. The USA must also recognise the critical strategic role that a democratic

India will play in the 21st century and change its laws, rules and procedures to help close the latter's technology gap with China. In parallel, India must recognise the critical role that current sole super-power USA can play in sustaining peace in Asia during the first half of this century and co-operate confidently with it for mutual benefit.⁶³

For the next decade or so US foreign policy will be driven by its traumatic experience of 9/11 and its desire to protect the US homeland and citizens from terrorist attack.⁶⁴ This factor is therefore likely to be a major driving force in its policy towards Islamic countries particularly those situated between India and Europe. A radical change in US policy towards India appears less likely than a gradual evolution, though recent statements by the US Secretary of State Condelezza Rice suggest that the former cannot be ruled out. India's traditional technology partnership with Russia and evolving ones with UK, Germany, France and Japan will likely continue to play a role in narrowing critical gaps in India's strategic technology.

The role of Russia, Japan and the EU in the tripolar world that will emerge three decades from now is uncertain. It is unclear whether Russia will focus on the opportunities and threats in Europe, Central Asia or East Asia. Japan's dependence on the Japan-US security treaty is likely to increase over time. This is however not inconsistent with a more assertive Japanese role in Asia. It is not clear, however, how long it would take for Japan to develop a new social consensus to acquire all the characteristics of a 'normal nation.' The EU can play a role similar to the US in Asia if it has the will to do so.⁶⁵

India must take the initiative in developing co-operative and inclusive economic structures in Asia, based on the lessons of European history and the European Union with support from the EU. A vital stabilising role could be played by an Asian Economic Community that includes all the major powers of Asia (China, India, Japan) as well as S.

⁶³ The pre-independence generation must jettison its post-colonial dread of economic & political exploitation by the West and the post-independence establishment must abandon its cold war, bipolar, non-aligned approach to national security. The Indian government and people will also have to learn that National security is not and cannot be based merely on fellow feeling, bon homie, grand words and charity, it requires hard headed evaluation of gains and losses from each partnership.

⁶⁴ While preserving its traditional role of Israel's protector.

⁶⁵ The EU and its member countries have only recently started re-evaluating their approach to India vis-à-vis China. How quickly the ground situation will change is unclear.

Korea and the ASEAN countries.⁶⁶ The Indian Prime Minister, Mr Man Mohan Singh has endorsed this concept at an ASEAN summit at which an India-ASEAN FTA (framework) agreement was signed. By analogy with the European coal and steel community the Asian Energy or (petroleum) oil community proposed by India's Minister (PNG), Mr Mani Shankar Aiyar, could act as a precursor to the Asian Economic Community. The European Union should support the formation of an Asian Economic Community in the interest of peace and stability in Asia.

9 APPENDIX

9.1 Derivation of Index

The Gross Domestic Product (GDP Y) of an economy combines population (N) and per capita income (y), in the most natural way. Namely,

Equation 1: $GDP\ Y = Population * Per\ Capita\ GDP = N * y$

Population N represents the manpower potential which can be used for both economic (workers) and military (soldiers) purposes. Per capita GDP y represents the average productivity of the population and summarises its diverse capabilities. These two variables have often been used historically as indicators of national power, along with GDP.⁶⁷

Many have argued that technological prowess is a separate input into the relative power of a country. This argument has weakened with globalisation. Technological mobility with regard to civilian technology has increased dramatically during the 20th century. The extent of this mobility is apparent from the fact that the USA (and EU) have, during the 1980s and 1990s, encouraged transfer of sophisticated technology to NPT nuclear member China, the country most likely to challenge their power in the 21st century. To the extent technology is mobile it is already reflected in GDP (and in growth). There are, however, restrictions on transfer of "Dual use" technologies and on advanced military technology, technologies that can be referred to as the "*technologies of power*." These restrictions are imposed so as to maintain an oligopoly or monopoly over strategic technology that can be translated into military power. Therefore inherent technological prowess is still a factor in determining national power.

We can define a measure in which technological achievement can be given different weights. In economic terms, per capita GDP (y), is closely correlated with capital intensity (average capital stock k), level of education/skills (h) and level of

⁶⁶ The possible inclusion of West Asian and Central Asian countries and Russia can also be considered at some stage.

⁶⁷ Singer, Bremer and Stuckey (1972)

technology (T). Formally, the aggregate production function defines the relationship between these as,

$$\text{Equation 2: } \mathbf{y} = \mathbf{T} \mathbf{f}(\mathbf{k}, \mathbf{h}, \mathbf{r}),$$

Where f is a function of k the per capita capital stock and h the per capita human capital (combination of education and skills) and r the per capita domestic availability of natural resources. Therefore technology level T is not directly measurable, but is implicitly defined by inverting the production function, i.e.

$$\text{Equation 3: } \mathbf{T} = \mathbf{y}/\mathbf{f}(\mathbf{k}, \mathbf{h}, \mathbf{r})$$

The level of technology is formally defined by T. Per capita GDP y however captures the level of technology along with the physical and human capital needed to convert this potential into actual goods and services (including military) as well as the efficiency with which it is being done. Power potential (PP) can therefore be defined as a weighted average of population (N) and per capita GDP at purchasing power parity (y):

$$\text{Equation 4: } \mathbf{PP} = (\mathbf{Population}) * (\mathbf{Per\ capita\ GDP})^{\mathbf{a}} = \mathbf{N} * \mathbf{y}^{\mathbf{a}}, \text{ with } \mathbf{1} < \mathbf{a} < \mathbf{a}_m$$

α_m is the maximum value of α . If $\alpha=1$, PP is identical to GDP at purchasing power parity. A value of α greater than 1 would give greater weight to technology than GDPppp, with the weight given to technology increasing with the value of α . On rearranging Equation 4 we obtain,

$$\text{Equation 5: } \mathbf{PP} = \mathbf{T}_f * \mathbf{Y}, \text{ where } \mathbf{T}_f = \mathbf{y}^{\mathbf{a}}, \text{ with } \mathbf{0} < \mathbf{a} = \mathbf{1} - \mathbf{a}_m < \mathbf{1} - \mathbf{a}_m$$

This equation shows that the Power Potential PP is the product of a technology factor T_f and the GDP at purchasing power parity Y. We can convert the PP into an index PPI by dividing the PP of each country j (PP_j) by the PP for the USA (PP_u) i.e. Average per capita GDP at PPP for the USA (Y_u) and USA population (N_u):

$$\text{Equation 6: } \mathbf{PPI}_j = \mathbf{PP}_j / \mathbf{PP}_u = (\mathbf{Y}_j / \mathbf{Y}_u) (\mathbf{y}_j / \mathbf{y}_u)^{\mathbf{a}}$$

Per capita GDP at current exchange rate (x) and at PPP(y) have the following empirical relationship (based on a regression of 65 large countries for 2002):

$$\text{Equation 7: } (\mathbf{x}_j / \mathbf{x}_u) = \mathbf{0.744} \mathbf{e} (\mathbf{y}_j / \mathbf{y}_u)^{1.38}$$

If the constant is restricted to be 1 then the relationship becomes

$$\text{Equation 8: } (\mathbf{x}_j / \mathbf{x}_u) = \mathbf{e} (\mathbf{y}_j / \mathbf{y}_u)^{1.52}$$

ε is an error term whose average (expected) value is 1. On comparing these equations with equations 4 to 6 for Power Potential Index it is seen that if the value of $\alpha=1.5$ ($a=0.5$), PPI is almost identical to Per capita GDP at current exchange rate (relative to USA), except for a multiplicative constant (0.744) and an error term.⁶⁸ In other words

⁶⁸ In any regression estimate there is also an error term. In other words individual countries will not lie exactly on the estimated curve but above and below it. For instance India, because of a major devaluation

the relative share and relative ranking given by the two will be broadly the same if the error term in the estimating equation for equations 7 or 8 is small. Any error will however be subject to compounding in case we are projecting far into the future.

9.2 Assumptions and Projections

The assumptions regarding future growth rates in per capita GDP at PPP are summarised in table A1. This gives the evolution of per capita GDP at PPP. These are used along with the UN's population projections to derive the Index of power projection. The evolution of the PPI ($\alpha = 0.5$) is summarised in table A2.

in 1992 lies below the long term curve. In other words its ranking in terms of GDP_{pr} is lower than would arise from the index which represents the long run position.

Table A1: Growth Rate of Per Capita GDP at PPP

	1980 to 2002	2003 to 2015	2016 to 2025	2026 to 2035	2036 to 2050
USA	1.8%	2.0%	2.0%	2.0%	2.0%
China	8.2%	6.6%	5.6%	4.9%	4.0%
Japan	2.0%	1.8%	2.0%	2.1%	2.0%
India	3.6%	5.2%	6.0%	5.7%	4.8%
Germany	1.6%	1.4%	2.0%	2.1%	2.2%
France	1.6%	1.8%	2.0%	2.1%	2.3%
UK	2.0%	2.2%	2.2%	2.2%	2.4%
Italy	1.8%	1.6%	1.9%	2.0%	2.0%
Brazil	0.7%	0.7%	1.5%	1.5%	2.2%
Russia		4.9%	4.5%	4.1%	3.6%
Canada	1.6%	2.5%	2.3%	2.2%	2.2%
Mexico	0.8%	1.8%	2.1%	2.3%	2.3%
Spain	2.3%	3.0%	2.8%	2.6%	2.2%
Korea, S	5.7%	4.3%	4.0%	3.7%	2.6%
Indonesia	3.7%	3.3%	3.7%	3.6%	3.5%
Australia	2.0%	2.5%	2.4%	2.1%	2.2%

Table A2: Index of Power Potential (a = 0.5)

Country	Actual		Projected				
	1980	2000	2010	2020	2030	2040	2050
USA	1.00	1.00	1.00	1.00	1.00	1.00	1.00
China	0.03	0.16	0.34	0.58	0.89	1.21	1.45
India	0.03	0.06	0.10	0.18	0.33	0.54	0.79
Japan	0.31	0.29	0.26	0.23	0.21	0.19	0.18
Germany	0.25	0.19	0.16	0.14	0.13	0.13	0.12
UK	0.14	0.13	0.12	0.12	0.12	0.12	0.12
France	0.17	0.13	0.13	0.12	0.11	0.11	0.11
Korea, S	0.01	0.05	0.07	0.09	0.11	0.12	0.11
Russia	0.15	0.05	0.07	0.09	0.11	0.12	0.13
Canada	0.09	0.08	0.09	0.09	0.09	0.09	0.09
Italy	0.17	0.13	0.11	0.09	0.08	0.07	0.06
Spain	0.07	0.06	0.07	0.07	0.07	0.07	0.07
Australia	0.05	0.05	0.05	0.05	0.05	0.05	0.05
Mexico	0.06	0.05	0.04	0.04	0.04	0.04	0.05
Brazil	0.08	0.06	0.05	0.05	0.04	0.04	0.04
Indonesia	0.01	0.02	0.02	0.03	0.04	0.04	0.05

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A TRIPOLAR CENTURY: USA, CHINA AND INDIA Arvind Virmani. MARCH 2005 The views expressed in the ICRIER Working Paper Series are those of the author(s). Contents. Foreword 1 introduction 2 economics of global power 3 power potential. 3.1 Actual Power. 4 soaring eagle: unipolar moment 5 a tripolar century.Â During the first half of this century Indiaâ€™s population will increase from 3.6 times to 3.75 times that of the USA, while Chinaâ€™s population will decline from 4.5 to 3.4 times that of the USA. Population growth is not therefore the primary driver of the change from a unipolar to a tripolar world. The population trends in other countries relative to these three do however bear on whether world will become multi-polar. Second, India and the United States exclude Pakistan from their strategies, while Chinaâ€™s view places Pakistan at the center. On the positive side, these geostrategic seams may be stabilizing if India, China, and the United States counter-balance each other and none is able to build a long-lasting, strong coalition to seriously threaten each other or dominate the region. However, more realistically, all three countries will find this constant triangular balancing frustrating.Â Risks and Prospects of a Tripolar Great Game. More than any other current factor, India and Chinaâ€™s relative emphasis on non-military foreign policy tools, in contrast to Americaâ€™s use of the armed forces to achieve foreign policy objectives, will determine the fate of the three competing strategies.