



**UNIVERSITAS PERTAHANAN INDONESIA**

**COMPOSITE NATIONAL POWER INDEX (CNPI): A  
CASE STUDY IN MEASURING AND OPTIMIZING  
SYMMETRIC POWER OF INDONESIA**

**TESIS**

Diajukan sebagai salah satu syarat untuk memperoleh  
gelar Magister dalam Ilmu Pertahanan

**ANDY DHARMA  
1 2010 020 2 001**

**SEKOLAH KAJIAN PERTAHANAN DAN STRATEGI  
PROGRAM STUDI EKONOMI PERTAHANAN**

JAKARTA  
MARET 2012

## HALAMAN PENGESAHAN

Tesis ini diajukan oleh :

Nama : Andy Dharma

NPW : 1 2010 02 02 001

Program Studi : Ekonomi Pertahanan

Judul Tesis : Composite National Power Index (CNPI): A Case Study In Measuring And Optimizing Symmetric Power Of Indonesia

**Telah berhasil dipertahankan di hadapan Dewan Penguji dan diterima sebagai bagian persyaratan yang diperlukan untuk memperoleh gelar Magister Sains Pertahanan pada Program Studi Ekonomi Pertahanan, Sekolah Kajian Pertahanan dan Strategi, Universitas Pertahanan Indonesia.**

## DEWAN PENGUJI

Pembimbing : Prof. Dorodjatun Kuntjoro Jakti, Ph.D



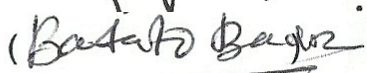
Pembimbing : Kolonel Lek Rujito D. Asmoro, MA



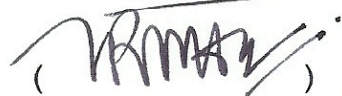
Penguji : Dr. Ir. Agus HS Reksoprodjo



Penguji : Dr. Bantarto Bandonu



Penguji : Brigjen TNI Herman, M.Si (Han)



Ditetapkan di: Jakarta

Tanggal : 28 Maret 2012

## **PERNYATAAN**

Dengan ini saya menyatakan bahwa dalam tesis ini tidak terdapat karya atau bagian karya yang pernah diajukan untuk memperoleh gelar kesarjanaan jenjang apapun di suatu perguruan tinggi; dan sepanjang pengetahuan saya juga tidak terdapat istilah, frasa, kalimat, paragraph, subbab, atau bab dari karya yang ditulis atau diterbitkan; kecuali yang secara tertulis dirujuk dalam naskah ini dan disebutkan dalam Daftar Referensi.

Jakarta, 28 Maret 2012

Andy Dharma

**PERNYATAAN PERSETUJUAN PUBLIKASI  
TUGAS AKHIR UNTUK KEPENTINGAN AKADEMIS**

Sebagai sivitas akademik Universitas Pertahanan Indonesia, saya yang bertanda tangan dibawah ini:

Nama : Andy Dharma  
NPM : 1 2010 02 02 001  
Program Studi : Ekonomi Perthanan  
Sekolah : Sekolah Kajian Pertahanan dan Strategi  
Jenis Karya : Tesis

demi pengembangan ilmu pengetahuan, menyetujui untuk memberikan kepada Universitas Pertahanan Indonesia **Hak Bebas Royalti Noneksklusif (*Non-exclusive Royalty-Free Right*)** atas karya ilmiah saya yang berjudul:

COMPOSITE NATIONAL POWER INDEX (CNPI): A CASE STUDY IN  
MEASURING AND OPTIMIZING SYMMETRIC POWER OF INDONESIA

beserta perangkat yang ada (jika diperlukan). Dengan Hak Bebas Royalti Noneksklusif ini Universitas Pertahanan Indonesia berhak menyimpan, mengalihmedia / formatkan, mengelola dalam bentuk pangkalan data (*database*), merawat, dan memublikasikan tugas akhir saya selama tetap mencantumkan nama saya sebagai penulis dan sebagai pemilik Hak Cipta/Karya Intelektual dari tesis ini.

Demikian pernyataan ini saya buat dengan kesadaran penuh tanpa paksaan dari pihak manapun

Jakarta, 28 Maret 2012

Yang menyatakan

( Andy Dharma )

## KATA PENGANTAR

Puji syukur saya panjatkan kepada Tuhan Yang Maha Esa, karena atas karunia-Nya saya dapat menyelesaikan tesis ini. Penulisan tesis ini dilakukan dalam rangka memenuhi salah satu syarat untuk menyandang gelar Magister Sains Terapan Pertahanan Universitas Pertahanan Indonesia.

Saya menyadari bahwa tanpa bantuan dan bimbingan dari berbagai pihak, tidak mudah bagi saya untuk merampungkan tesis ini. Oleh sebab itu, saya hendak mengucapkan terima kasih kepada:

- (1) Mayor Jendral Dr. Syarifudin Tippe, M.Si., selaku Rektor Universitas Pertahanan Indonesia yang telah memberi banyak perhatian dan dukungan kepada saya dalam penyusunan tesis ini;
- (2) Prof. Dorodjatun Kuncoro Jakti, Ph.D, selaku dosen pembimbing yang telah menyediakan waktu, tenaga, dan pikiran untuk mengarahkan saya dalam penyusunan tesis ini;
- (3) Kolonel Lek Rujito D. Asmoro, MA, selaku dosen pembimbing yang telah menyediakan waktu, tenaga, dan pikiran untuk mengarahkan saya dalam penyusunan tesis ini;
- (4) PT Bank Artha Graha Internasional, Tbk. dan Artha Graha Network yang telah memberikan dukungan penuh kepada saya untuk meneruskan program studi Ekonomi Pertahanan serta terselesainya tesis ini;

Akhir kata, saya berharap Tuhan Yang Maha Esa berkenan membalas segala kebaikan semua pihak yang telah membantu. Semoga tesis ini bermanfaat bagi pengembangan ilmu pengetahuan dan masyarakat.

Jakarta, 28 Maret 2012

Andy Dharma

## **ABSTRAK**

Nama : Andy Dharma  
Program Studi : Ekonomi Pertahanan  
Judul : Mengoptimalkan Kekuatan Nasional

Lingkungan strategis dunia sudah semakin kompleks. Dalam mengukur CNPI suatu negara, kita harus menggunakan seluruh elemen kekuatan nasional. Tidak ada yang dapat memprediksi perang di masa depan sehingga kita harus mempersiapkan diri diberbagai aspek. Kekuatan nasional Indonesia ada dalam urutan ke 60 di dunia dan ketiga anantara negara ASEAN. Urutan ini sepertinya agak rendah bagi negara yang tergabung dalam G20 dan memiliki salah satu luas wilayah dan jumlah penduduk terbesar di dunia. Amerika Serikat ada dalam urutan pertama sesuai dengan status negara tersebut sebagai negara hegemoni.

Kata kunci:

Ketahanan nasional, keamanan nasional, kekuatan nasional

## **ABSTRACT**

Name : Andy Dharma  
Study Program : Defense Economics  
Title : Composite National Power Index (CNPI): A Case Study In Measuring And Optimizing Symmetric Power Of Indonesia

The world's strategic environment is becoming more complex. In measuring a country's CNPI, we must include all elements of national power. No one can predict the future war, and hence we must be prepare ourselves in various aspects. Indonesia's national power is ranked 60<sup>th</sup> in the world and third among ASEAN countries. The rank seems low for a country that is among the G20, has one of the largest land area and population. The US ranks first, which is in line with its hegemonic power.

Key words:

National resilience, national security, national power

## TABLE OF CONTENTS

TITLE PAGE .....	i
ENDORSEMENT SHEET .....	ii
STATEMENT OF ORIGINALITY .....	iii
SCIENTIF WORK PUBLICATION APPROVAL SHEET .....	iv
FOREWORD .....	v
TABLE OF CONTENTS .....	vi
LIST OF APPENDIX .....	x
LIST OF FIGURES .....	xi
<b>1. INTRODUCTION .....</b>	<b>1</b>
1.1 Security Environment .....	2
1.1.1 Key Trends in International Security Environment .....	3
1.1.1.1 Rise of New Powers .....	3
1.1.1.2 Revival of Old Power .....	4
1.1.1.3 Increasing Influence of Non-State Actors .....	5
1.1.1.4 Rogue States Continue to Undermine Global Security ...	6
1.1.1.5 Proliferation of Weapons of Mass Destruction WMD .....	7
1.1.1.6 Asymmetric Warfare .....	7
1.1.1.7 Proliferation of Digital Technology .....	8
1.1.1.8 Regional Unstable State of Peace .....	8
1.1.1.9 Fragile Global Economy .....	9
1.1.2 Globalization and International Security .....	11
1.1.3 National Interest .....	13
1.1.4 National Power .....	16
1.1.5 National Security .....	17
1.1.5.1 National Security Dilemma .....	19
1.1.5.2 Military Spending and National Security .....	20
1.1.5.3 National Security in the Twenty-First Century .....	21
1.1.6 Indonesia Security Environment .....	23
1.1.6.1 Border Conflicts / Territorial Disputes .....	24
1.1.6.2 Resource Conflicts .....	25
1.1.6.3 Internal Conflicts .....	26
1.1.6.4 Terrorism .....	27
1.1.6.5 Natural Disaster .....	28
1.1.6.6 Transnational Crime .....	28
1.1.6.7 Food Security .....	29
1.1.6.8 Defense Industry .....	30
1.1.6.9 Shifting International and Regional Power Structure .....	31
1.2 Problem Statement .....	31
1.3 Research Objectives and Significance .....	34

1.4	Research Benefits .....	34
1.5	Research Design and Scope .....	36
1.5.1	Research Limitations .....	37
<b>2.</b>	<b>LITERATURE REVIEW .....</b>	<b>41</b>
2.1	International Relations Theory .....	42
2.1.1	Realism .....	43
2.1.2	Mercantilism .....	45
2.1.3	Polarity .....	46
2.1.4	Balance of Power .....	47
2.2	National Interest and Security .....	48
2.2.1	US National Interests .....	48
2.2.2	Indonesia National Interests .....	56
2.3	Power Theory .....	52
2.3.1	Instruments of National Power .....	55
2.3.2	Geography, Resources and MIDLIFE .....	58
2.3.2.1	Geography .....	58
2.3.2.2	Natural Resources .....	58
2.3.2.3	Population .....	60
2.3.2.4	Military.....	61
2.3.2.5	Information .....	61
2.3.2.6	Diplomacy .....	62
2.3.2.7	Law Enforcement .....	62
2.3.2.8	Intelligence .....	62
2.3.2.9	Financial .....	63
2.3.2.10	Economic .....	63
2.3.3	Power Index Model .....	63
2.3.3.1	Composite Index of National Capability .....	64
2.3.3.2	Cline's Model .....	64
2.3.3.3	Comprehensive National Power .....	65
2.4	Defense Economics .....	65
2.4.1	Defense Sector Inefficiencies .....	66
2.4.2	Four Principles of Defense Economics .....	66
2.4.3	Defense-Input Output Model .....	67
2.4.4	Defense Resource Limitations .....	68
2.4.5	Guns Versus Butter Model .....	69
2.4.5.1	Defense Spending and Economic Growth .....	71
2.4.5.2	Income Function and The Keynesian "Cross" .....	75
2.4.5.3	Arms Race and Alliances .....	77
2.5	Theoretical Framework .....	80

<b>3.</b>	<b>RESEARCH METHODOLOGIES .....</b>	<b>85</b>
3.1	Unit Analysis and Data Collection .....	85
3.1.1	Unit Analysis .....	85
3.1.2	Data Sources .....	85
3.2	Research Design .....	86
3.3	Research Procedure .....	86
<b>4.</b>	<b>INDONESIA'S COMPOSITE NATIONAL POWER INDEX AND ITS WORLD RANKING .....</b>	<b>90</b>
4.1	Composite National Power Index.....	91
4.2	Government .....	99
4.3	Legal .....	105
4.4	Fiscal and Monetary .....	107
4.5	Finance .....	108
4.6	Economy .....	111
4.7	Critical Production .....	114
4.8	Business .....	117
4.9	Resources .....	121
4.10	Global Link .....	126
4.11	Infrastructure .....	128
4.12	Demography .....	130
4.13	Social .....	131
4.14	Science and Technology .....	134
4.15	Security .....	136
4.16	Environment .....	138
4.17	Military .....	139
4.17.1	Military Budget .....	140
4.17.2	Military Personnel .....	141
4.17.3	Land Based Weapons .....	143
4.17.3.1	Tanks .....	143
4.17.3.2	Armored Combat Vehicles .....	143
4.17.3.3	Artillery .....	144
4.17.3.4	Anti Tanks .....	145
4.17.4	Sea Based Weapons .....	145
4.17.4.1	Submarines .....	146
4.17.4.2	Principal Surface Combatants .....	148
4.17.4.3	Patrol and Coastal Combatants .....	148
4.17.4.4	Amphibious Crafts .....	149
4.17.4.5	Logistic and Support .....	149
4.17.4.6	Miscellaneous Vessels .....	150
4.17.5	Air Based Weapons .....	151
4.17.5.1	Combat Aircrafts .....	151
4.17.5.2	Support Aircrafts .....	151

4.17.5.3	Combat Helicopters .....	152
4.17.5.4	Support Helicopters .....	152
4.17.5.5	Surface to Air Missiles .....	153
4.17.5.6	Anti Aircraft Guns .....	153
4.18	Recommendations .....	154
4.18.1	Strategic Defense Fund .....	157
4.18.2	Rice Farms .....	162
4.18.3	Offset Regulations .....	164
<b>5.</b>	<b>CONCLUSIONS .....</b>	<b>167</b>
	<b>REFERENCES .....</b>	<b>174</b>
	<b>APPENDIX .....</b>	<b>184</b>

## List of Figures

Figure 1.1	Visualizing The Interconnections Between Global Risks.....	12
Figure 2.1	Production Possibility Frontier (PPF) .....	68
Figure 2.2	PPF Comparisons .....	69
Figure 2.3	Economic Analysis of Defense (Guns vs. Butter Model) .....	70
Figure 2.4	Demand Function and Keynesian Cross .....	76
Figure 2.5	Arms Race Game Theory .....	78
Figure 2.6	Arms Race and Alliance Model .....	80
Figure 2.7	Research Framework .....	81
Figure 3.1	Research Procedure .....	88
Figure 4.1	Possible Submarine Patrol Routes.....	147

## **Chapter 1**

### **INTRODUCTION**

This chapter shall begin by providing a brief history of how the world has evolved since the beginning of the twentieth century that ultimately lead to the rise of the United States hegemonic power. Next it will describe in a concise manner the diverse security conditions that are prevalent in the global arena. These are the security threats that are commonly responded by the military power. However, this chapter will also describe that as we enter the twenty-first and with the continued rapid globalization security issues have spread into the non-military domain. So diverse are these security issues that military power alone is no longer an adequate response.

The security environment discussed in this chapter has the potential to negatively impact the national interest of many countries. With that it is also useful to review shortly what national interest is. The discourse on national interest cannot be disassociated as states build its national power to enable them to pursue their national interest without any interference. When national interests are achieved and protected by the national power, national security is achieved. Thus national power will also be discussed to complete the topic. The discussion will cover the complexity of national security in the twentieth century including the difficulty of balancing the definition of the concept to reflect the growing complexity with the dilemma of over securitization.

The later part of this chapter will introduce Indonesia's national interest. Finally the chapter will close by defining the problem this thesis attempts to research, as well as explain the research objectives and significance, research benefits, design and limitations.

## 1.1 Security Environment

The world is a global stage whereby the traditional actors (states) compete to increase their own national power to obtain a strategic advantage over other states to advance their national interests.

The world has undergone several eras during the last century, beginning from multilateralism that was dominated by several European powers. World War II ended the multilateralism era and the world shifted into bipolarism led by two superpowers, United States of America and United States of Soviet Russia. This bipolarism lasted more than four decades and is known as the Cold War era. The crippling of Soviet's economy resulted in a *détente* and ended the Cold War in 1989 (The Commission On America's National Interests, 2000). The implosion of Soviet Union (Jackson, 2008) meant that the global system abruptly turned into unilateralism with the US being the sole power (Hegemon). As the world enters the 21<sup>st</sup> century, the US remains the single superpower who is uniquely positioned to shape the international system. The US also acts as a "global police" to promote international peace (The Commission On America's National Interests, 2000).

Hegemony has many faces. In the early 1990s Washington set itself three objectives: to maintain the global balance resulting from the end of the cold war, to ensure its technological lead and military supremacy, and to create an economic environment favorable to its own interests... Admittedly, international balances are not static and hegemony does not mean absolute freedom of action. But no country or group of countries appears able to constitute a political counterweight to the US in the foreseeable future, let alone call into question its primacy in the hierarchy of nations. (Le Monde, 2000).

From the Cold War to the Global War on Terror, the United States is the dominant force maintaining international security and stability, employing military, diplomatic and economic means. These efforts have been driven by the enduring national interests of the United States (DoD, 2008). However, the state of unilateralism starts to get challenged since the early twenty-first century and may not last till the end of the century. Today, the US and the world are constantly confronted with more and complex issues. The world as we know of today is in a constant state of flux.

### **1.1.1 Key Trends in International Security Environment**

The United States, its allies and the world faces a spectrum of threats in the twenty-first century that pose greater complexity and uncertainty in the global security landscape with the pace of change continuing to accelerate (DoD, 2008) (DoD, 2010). The world is complicated, unpredictable, and dangerous (DoE & DoD, 2008).

#### **1.1.1.1 Rise of New Powers**

The distribution of political, economic as well as military power will inevitably shifts and becomes more diffused or scattered. Rising regional powers such as China and India will reshape the international system.

China is one ascending state with the greatest potential of competing with the US militarily, and actively seeks to counter the US in some or all domains of traditional warfare as well as to gain an advantage by developing disruptive technological capabilities to offset the US military superiority (DoD, 2008) (DoE & DoD, 2008). China continues to modernize the People Liberation Army (PLA) and has developed modern

weaponries (The Commission On America's National Interests, 2000). The current trend suggests that China will continue to expand and improve its conventional military capabilities for force projection with greater emphasis on anti-access and area denial assets that include long-range strike, space, and information warfare capabilities (DoD, 2008) (DoE & DoD, 2008).

China desires to boost its power and prestige within the current international system (The Commission On America's National Interests, 2000). However, its most immediate objectives would be to prepare for contingencies in the Taiwan Strait and possible US intervention. China's military transformation is supported by a robust industrial base and growing economic power (DoE & DoD, 2008)

China's expanding military capabilities will not only affect the East Asian military balances, its strategic capabilities will have implications well beyond the Asia Pacific region (DoE & DoD, 2008). Some also feared that China might secretly harbor "vengeance" against the powerful and bully nations that once "divided China like a watermelon" and occupied some of its territories.

#### **1.1.1.2 Revival of Old Power**

Russia's transition to a more democratic state with a less confrontational and more cooperative foreign policy has experienced setbacks (DoE & DoD, 2008). Russia has leveraged on its energy assets to reclaim its dominance. Not only is Russia modernizing its military, it even threatens physically countries that host "hostile" US anti-missiles defense bases (DoD, 2008) (DoE & DoD, 2008). Emergence of a Cold War-like threat from a nuclear armed Russia as evidenced by Russia's apparent increasing reliance upon nuclear weapons in its security policy coupled

with its ongoing nuclear modernization program is cause for caution (Joint Working Group of AAAS, APS and CSIS, 2008). All these points to suggest that Russia is seeking to renew its influence (DoD, 2008).

### **1.1.1.3 Increasing Influence of Non-State Actors**

Globalization has made it easier for non-state actors, including violent extremist groups to develop and acquire advance technologies to grow its power and influence that was once largely the purview of nation-states in the previous century (DoD, 2010). Violent extremist ideology such as those advocated by Al-Qaeda and other extremists alike rejects the rules and structures of the international system, and threaten the stability and legitimacy of key states (DoD, 2008).

Violent extremists and other non-state actors frequently exploit ungoverned, undergoverned, misgoverned, and contested areas as safe havens to operate with impunity (DoD, 2008), and in some cases receive support from states that attempt to use them as proxies. Hezbollah is one example of the extremists that is backed by Iran and Syria. The US policy is to hold state sponsors accountable for the actions carried out by their proxies (DoE & DoD, 2008).

The continued growth of their power and influence cannot be reversed or halted and if left unchecked, may create instability that could escalate into a regional threat (DoD, 2008). Countering their growing influence requires a new set of security paradigm. The deterrence enforced by Mutually Assured Destruction (MAD) doctrine that proved effective against enemy states becomes irrelevant (Jackson, 2008).

#### **1.1.1.4 Rogue States Continues to Undermine Global Security**

Rogue states such as Iran and North Korea similarly threaten international order. According to the US National Defense Strategy (2008) Iran sponsors terrorism and is attempting to disrupt the fledgling democracies in Iraq and Afghanistan. Iran is also “accused” by the International Atomic Energy Agency (IAEA) of pursuing nuclear technology and enrichment capabilities in defiance of UN Security Council that poses a serious challenge to security in an already volatile region (DoD, 2008). It is also developing long-range missiles and is procuring short- and medium-range ballistic missiles. On top of that, Iran has have made countless threats against the United States and its allies in the region (DoE & DoD, 2008).

Accelerated development of highly sophisticated weapon systems, particularly missiles and nuclear weapons in North Korea poses a serious nuclear and missile proliferation concern for the international community. North Korea threatens South Korea with its military and its neighbors with its missiles (DoD, 2008). North Korea’s irresponsible actions, including an August 1998 Tae-po Dong launch over Japan and the artillery shelling of Yeonpyeong island South Korea in October 2010, shows that Pyongyang is still a threat to stability (BBC, 2010). North Korea further accused of engaging in illicit activity, such as counterfeiting U.S. currency and trafficking in narcotics, as well as brutal treatment of its own people that contributes to global instability (DoD, 2008).

North Korea and Iran also had records of transferring sensitive weapons technology to others. The Commission to Assess the Ballistic Missile Threat to the United States noted in 1998 that a nation who wanted to develop its own ballistic missiles and weapons of mass destruction can obtain extensive technical assistance from outside sources (Winter, 2011).

#### **1.1.1.5 Proliferation of Weapons of Mass Destruction (WMD)**

The US nuclear arsenal has defended not only the United States and its military forces but also US allies in Europe, Asia and elsewhere. This nuclear deterrence played a crucial role in US non-proliferation policy by reducing the incentives of many allied countries from acquiring nuclear weapons on their own. This “nuclear umbrella” provides the glue that bond US strategic alliance (DoE & DoD, 2008).

The global security will continue to be undermined by the proliferation of weapons of mass destruction (WMD). North Korea and Iran have violated the Nuclear Nonproliferation Treaty (NPT) by illicitly pursuing nuclear weapons program that jeopardizes the international stability. Terrorist networks too, such as Al Qaeda, demonstrated interests in WMD. Besides nuclear weapons, several states also possess or are developing biological and chemical weapons program and transfer these weapons to terrorist groups (DoE & DoD, 2008). Perhaps the more troubling case will be the instability or collapse of a WMD-armed state that could accelerate such proliferation of WMD material, technology and weapons and lead to a global tension that pose a direct physical threat to many states (DoD, 2010).

#### **1.1.1.6 Asymmetric Warfare**

US dominance in large-scale conventional warfare compels prospective adversaries, particularly non-state actors and their state sponsors, to adopt asymmetric methods to counter US advantages and employ methods designed to offset US strength (DoD, 2008) (DoD, 2010).

#### **1.1.1.7 Proliferation of Digital Technology**

The technological revolution and explosive growth of the Internet has triggered in new changes. Social media played a significant role in the rapid evolution of the “Arab Spring” While the opposition forces was exploiting the Internet to rally against President Hosni Mubarak in Egypt, Al-Qaeda was using it to recruit new terrorists, train them, and coordinate its global operations (Winter, 2011).

#### **1.1.1.8 Regional Unstable State of Peace**

US greatest threat is the potential outbreak of localized wars in either the Taiwan Strait or Korean Peninsula (The Commission On America's National Interests, 2000). Besides the tension in the Korean Peninsula that was discussed earlier above (in section 1.1.1.3), the situation in the Taiwan Strait is no better. Though Taiwan and China have expanded their economic ties, their cross-Strait political relationship is an entirely different story. Taiwan and China remain deadlocked over the “one China” policy and fundamental sovereignty issues even though both states have expressed desires for political talks. At the same time both sides are engaged in an arm race by accelerating their purchases of advanced weaponry in preparation for a possible conflict (The Commission On America's National Interests, 2000).

China blames the US for Taiwan’s protracted separation. The US arms sales to Taiwan and plans to deploy a regional missile defense system as well as the strengthened security alliance between the US and Japan are viewed as evidence by the Chinese as a growing US hegemony that runs counter to China’s vision of a multipolar world (The Commission On America's National Interests, 2000).

Taiwan's absorption into China through force would represent a failure of US leadership and US credibility and reliability as an ally would be called into question. As such notwithstanding its position on what Taiwan's status ought to be, the US will continue to provide implicit military backup to the island (The Commission On America's National Interests, 2000). The United States has around 70 allies toward whom it has made formal defense commitments (O'Hanlon, 2010) and in which the US relies on the strong alliance system with them to ensure its success in the Asia Pacific region

The recent conflicts in the South China Sea over Spratly Islands may intensify the region's tension. US President Barrack Obama reaffirms US commitment to the region despite faced with mounting pressures to cut budget deficit (The Commission On America's National Interests, 2000).

Other regions too have experienced sudden outburst of turmoil in recent times. The "Arab Spring" revolution rapidly spread from Tunisia to Egypt to Libya in matter of months. Yemen and Syria are not spared either (The Commission On America's National Interests, 2000). The new regime in several Arab states and the continued struggle to topple the dictatorship regime in Syria will pose great challenge to the international security and stability.

#### **1.1.1.9 Fragile Global Economy**

The global economy is in fragile state. It is constantly faced with energy shocks with oil prices reaching all time highs. The world also entered into deep recessions during the Wall Street meltdown triggered by sub-prime mortgage crisis back in 2008 that wiped off billions and possibly trillions of dollars of wealth. Just as the crisis is about to bottom out, the recovery

track is derailed by the prolonged European debt crisis that has yet to see a possible solution till this day.

Increased population and consumption patterns further put pressures on demand for resources especially from the emerging markets like China and India, resulting in inflationary pressure during a weakening economy. Additionally, rapid urbanization of littoral regions, effects of climate change, emergence of new strains of disease (pandemics) as well as some other transnational issues could combine with rapid social, cultural, technological and geopolitical change to create even greater uncertainty. This uncertainty may be further exacerbated by both the unprecedented speed and scale of change, as well as by the unpredictable and complex interaction among the variables and might probably spark or aggravate future conflicts (DoD, 2008) (DoD, 2010).

Thomas Homer Dixon (Edwards, 2007) identified five drivers of change or tectonic stresses that will call for a new security paradigm and they are population stress, energy stress, environmental stress, climate change and economic stress. Incumbent power must reassure stability and its access to the global commons, which is defined as domains and areas that no one controls but on which all rely such as the seas in which global shipping relied on and space. The spate of cyberspace attacks, piracy and anti-satellite weapon tests encased the challenges to stability of the global commons (DoD, 2010). Major power like the United States could seek to pursue its national interest through cooperation, diplomacy, economic development and engagement. Nonetheless when necessary, the US will resort to force to defend their interests, whether through an internationally sanctioned coalition with its allies or unilaterally.

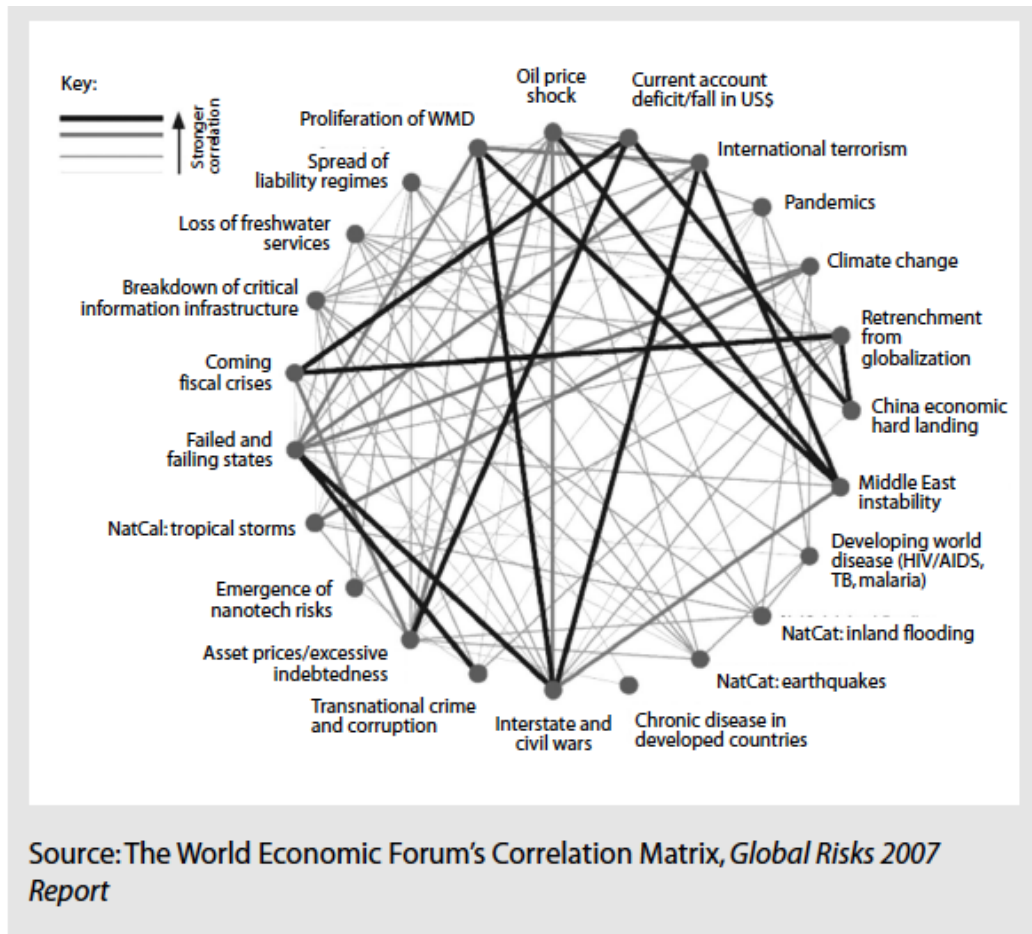
### 1.1.2 Globalization and International Security

Globalization continues to drive change across the world at unprecedented speed, coupled with innovations in technology, changing demographics, and revolutions in the global economy, they are transforming the structures and hierarchies of societies, business and government. Thomas Friedman once coined the term that the world is becoming flat to describe the convergence of political and economic, social and technological forces across the globe (Edwards, 2007).

The increased flow of goods and services, information and capital resulting from globalization has the potential to create wealth, freedom and security. On the other side of the coin, however, such connected world increases interdependencies and hence its vulnerability to shocks, disruptions and uncertainties from within the system (Edwards, 2007). As such, it will be almost impossible to localize shocks and disruptions to within a national boundary.

As Figure 1 illustrates that the world is faced with multitude of risks. These risks are increasingly interconnected and can no longer be clearly delineated in time and space. These risks poses security threats to states and the diagram clearly showed that the security threats are no longer the domain military. It has spread to economic domain, finance domain, health domain, human security domain and environment domain. In the current connected world, issues switch effortlessly from the domestic to the international arena with greater immediate impact, and often take the world by surprise. (Edwards, 2007).

**Figure 1.1** Visualizing The Interconnections Between Global Risks



Source: Edwards 2007

Barnett (2004) identifies two rule sets: the economic rule set and the security rule set and explained what events unfolded during the different phases of globalization (Appendix 1). Conflicts arise between states that embrace globalization and states that are disconnected from globalization, termed the Functioning Core and the Non-integrating Gap respectively. Barnett defines a nation to be in the Functioning Core if it attempts to harmonize its internal rule sets to with the prevailing or emerging global rule on democracy, rule of law and free markets. He discovered that in recent years, the US had intervened militarily largely in the Non-integrating and also asserted that while non-state actors constitute the biggest direct threat to the Core, the failed states are indirectly a threat to the Core. He explained that non-state actors are

expendable puppets and the failed states are the puppet masters who finance and direct the puppet show. He went on further to suggest that preemption is the new security rule set against these failed states. (Barnett, 2004).

### **1.1.3 National Interest**

Lord Palmerston once quoted that “England has neither permanent friends nor permanent enemies; she has permanent interest.” This axiom is applicable for the United States and any other nations.

National interests is often linked to reason of the state or *raison d’État* in French; is a nation’s objectives whether economic, military, cultural or other areas. National interest is multi-faceted and just like Maslow’s motivation pyramid, they can range from the state’s survival and security at the basic or primary level to the pursuit of wealth, prosperity and power and even cultural preservation (Wikipedia, 2011). Put simply national interest is what's good for the nation as a whole in international affairs and not what's good for the nation as a whole in domestic affairs, which falls under the domain of public interest (Roskin, 1994). In addition, national interests do not necessarily mean global interests or good for the international community (Shah, 2001). What is good for one country may be poison for another.

The pursuit of national interest is the very foundation of the realist school where states may openly engage wars purely out of self-interest. Mercantilism is the economic justification of the aggressive pursuit of the national interest (Wikipedia, 2011). No two countries, and not even allies will have identical national interests, and they are most likely to be complementary at best. It is the job of the country’s diplomats to find

those complementary interests so that two or more countries and cooperate to work towards achieving them (Roskin, 1994).

Every nation has its own prescription for foreign policy to ensure its interests are accepted by the international community, and uses or abuses its power to put forward its national interest and agendas, sometimes without any regards to the nations and people they directly or indirectly. Different national interest may escalate into conflicts. The United Nations, an international body, who is supposedly tasked with tackling and resolving global issues impartially, has been constantly abused by those in power to act unilaterally when the international community's views and opinions do not agree with their own national interests. Consequently this often results in resented against some superpowers whoa are viewed as bullies who got away with their acts of hypocrisy (Shah, 2001).

Idealist interventionist have misused national interest thinking by expanding US interests to include certain "world interests", hoping to ride on US power to right the wrongs the world over. True national interest thinking must be tightly limited to within specific national boundary (Roskin, 1994). Government officials tend to use the term "vital national interests" promiscuously, as if all national interests were vital. US Secretary of Defense Weinberger argued in the 1980s that defining national interests in a broad and general fashion was dangerous and therefore developed six distinct tests or known as "litmus test" (Appendix 2) to counter this danger, which define when forces should be employed and later became known as the Weinberger Doctrine (Measuring A Nation's Vital Interest).

Feulner (1996) identified five US vital interests (Feulner, 1996) as follows:

1. Safeguard U.S. National Security
2. Prevent a Major Power Threat to Europe, East Asia, or the Persian Gulf
3. Maintain Access to Foreign Trade
4. Protect Americans Against Threats to Their Lives and Well-Being
5. Maintain Access to Resources

The US vital interests stated by Feulner above and detailed in Appendix 3, resonates those of the US Department of Defense that identified US interests to include protecting the nation and its allies from attack or coercion, promoting international security to reduce conflict and foster economic growth, and securing the global commons and with them access to world markets and resources (DoD, 2008). For the 21<sup>st</sup> century, the U.S. must again ask itself and redefine what is America's national interest? (Appendix 4)

Even hegemon cannot escape scarcity. With limited resources, the US must be selective on which issues to address seriously (The Commission On America's National Interests, 2000). The US cannot do everything, everywhere, at the same time.

Elites, the top or most influential people, pay more attention to foreign policies than the public at large and are instrumental in defining a state's national interests. Economic elites may define US holdings and assets abroad as vital national interest and this led some critics to wonder if the US war against Iraq was a defense of national interests or oil-industry interests. Educational elites may revive or keep alive issues and convince students that distant problems are vital national interests (Roskin, 1994). Mass media too plays a significant role in awakening the

general public to issues of national interests. As the media can be highly selective on what news to broadcast, this casts doubts on the media's objectivity and neutrality (Roskin, 1994).

#### **1.1.4 National Power**

A prerequisite to pursuing national interest is the possession of adequate national power. Niccolò Machiavelli once succinctly explained that without sufficient power and the willingness to use it, one would accomplish nothing. Hans Morgenthau also wrote "International politics, like all politics, is a struggle for power" (Morgenthau, 2006).

In pursuit of its national interests, the US has developed superior military capabilities, build alliances and coalitions, supported economic institutions, used diplomacy and soft power to shape the behavior of individual states and the international system, and use force when necessary (DoD, 2008). Any action taken by the state is considered rational as long as it serves to preserve and strengthen the state's power, regardless of its moral values. This, however, must not be confused with territorial expansion, which is the hallmark of dangerous and disruptive imperialist powers (Roskin, 1994).

Power connects national interests to feasibility. When a state has insufficient or use inappropriate power to execute its will, it has an infeasible strategy. Realism assumes that there is a universal rationality behind states' quest for power (Mearsheimer, 2001). India's eleventh president Avul Pakir Jainulabdeen Abdul Kalam quoted (Basu, 2008):

... Only strength respects strength. We must be strong not only as a military power but also as an economic power. Both must go hand-in-hand.

War has been touted as the ultimate acid test for proving national power as suggested by various scholars such as Karl Haushofer, George Perkovich and Chang Chin Lung (Hwang, 2010) (Chang, 2004). Major victories and major defeats have historically been the entry and exit points for membership in the league of great powers (Nayar & T., 2003).

Democratic peace theory states that democracies don't fight other democracies (Mearsheimer, 2001), hence it points that power is a contest between the Core and the Gap discussed earlier. Abrupt rise to power may bring negative consequences such as preemptive containment strategies by incumbent powers in which the Chinese have avoided by wisely following Deng Xiaoping's 24 Character Strategy.

Sanjaya Baru (2009) attempts to infer the connections between economics and military affairs. The military strength is largely affected by the nation's treasury. A nation can never attain a superpower status without wealth. A famous Chinese maxim stated “以钱抓权，以权抓钱” which translate to the use of wealth to obtain power and the use of power to obtain wealth. In other words wealth begets power and power begets wealth. A country's national security is protected not just by its armed forces but by its comprehensive national power (Kumar, 2002).

### **1.1.5 National Security**

National security by definition refers to "how a state employs all elements of power to ensure survival of the state and maintain its place in the international arena (Owens, 1997) (Wikipedia, 2011). Walter Lippmann, in 1943, defined national security as "a nation has security when it does not have to sacrifice its legitimate interests to avoid war, and is able, if challenged, to maintain them by war" (Romm, 1993). The National

Defense College of India defined it in terms of elements of national power, "national security is an appropriate and aggressive blend of political resilience and maturity, human resources, economic structure and capacity, technological competence, industrial base and availability of natural resources and finally the military might" (Marg, 1996). National security required the national leaders to ensure the survival and sovereignty of their nation by employing all instruments of national power (Aheon, 2010). National security is a concept applicable in both wartime and peacetime as it increasingly employs nonmilitary elements as well, and hence is an inherent element of statecraft.

The US Armed Forces defined national security within simple dual parameters; a military or defense advantage over other nations or group of nations and a favorable foreign relations position (Wikipedia, 2011). In 2010, Barack Obama included an all-encompassing worldview in his definition of America's national security interests. Besides security of the US, its citizens and allies, it includes a growing US economy in an open international economic system, respect for universal values and an international order led by US leadership (Obama, 2010)

The Clausewitzian view of diplomacy and war being the instruments to advance national interest, added to the view of national security being sought by nations by exercising self-interest at all times (MacFarlane & Khong, 2006). A state is understood to have an effective monopoly on the use violence within a given. Any threat to the monopoly on the use of violence whether caused by external invasion or internal revolt, is a threat to the security of the state. Since the end of WW II, the threat to national security shifted from external to internal in nature (Sachs, 2003).

International treaties can no longer guarantee domestic peace (Hwang, 2010). A new concept known human security has been gaining popularity in recent times that transforms the concept of security away from state

centric towards human centric (Sachs, 2003). Accordingly, individuals rather than states move to the center of attention as it is individuals who are the primary consumers of insecurity in terms of civilian (Hwang, 2010).

The nature of wars have changed over the last 250 years, starting from two or so years in duration, to undeclared war without definitive beginning and ending and dragging over decades, and to increasing internal security threats. National liberation, unification and secession are the main reasons behind intrastate wars. (Sachs, 2003). In the past, security strategy has often been focused on external threats, specifically external military threats, and hence requires an appropriate military response. With the changing nature of conflicts in the future, one can no longer rely solely on material capabilities or military preponderance as the predominant response (Sachs, 2003). Certain security threats may entail a military response, i.e. natural disaster, but is not a military threat per se (Burke, 2009).

#### **1.1.5.1 National Security Dilemma**

National security itself has no straightforward definition. The simplest definition is perhaps the one provided by George F. Kennan (U.S. foreign service officer, diplomat and historian) who defined national security as the continued ability of a country to pursue its internal life without serious interference (Bergen & Garrett, 2006). The concept that developed mostly in the United States of America after WWII, focused on military power initially. Today, it encompasses a broad range of dimensions, all of which impinge on the non-military or economic security of the nation and the values espoused by the national society. Accordingly, in order to possess national security, a nation needs to also possess sub-national security components such as economic security, food security, energy

security, environmental security, etc. Non-defense Issues is only worth considering if it will be a source of future conflicts (Sachs, 2003). The national security concept still remains ambiguous today, having originated from a simpler definition which initially emphasized the freedom from military threat and political coercion to later increase in sophistication and include other forms of non-military security as suited to the circumstances of the time (Romm, 1993).

#### **1.1.5.2 Military Spending and National Security**

The logic says that military spending and national security is positively correlated. José L. Torres from University of Málaga made an attempt to measure hostile external threat in a 2011 study and find that in addition to strategic environment assessment of potential external threats, national security also depends on military expenditure. With a given strategic environment, the objective of military expenditures is to obtain a certain level of national security and national security is thus considered a public good. Given an exogenous strategic environment, the government will choose the optimal level of military spending in order to produce the optimal level of national security. The role of the government is to balance the declining marginal utility of the extra security with the increasing marginal cost of providing that extra security. The strategic environment can be defined in terms of other countries' military expenditure. (Torres, 2011). Hartley (2006) claimed that military spending is assumed to improve a country's ability to defend its national interests against the threat of foreign adversaries.

Torre's study showed that a shock to the national security production function reduces output, investments and military spending, yet increases private consumption and security at the same time. Whereas a shock to the strategic environment (i.e. a rise in the external threat)

increases military spending, investment and output but reduces consumption as more resources are devoted to military expenditure to counteract the deteriorating national security. The optimal level of military spending increases as output does but the ratio of military spending to output will decline (Torres, 2011).

### **1.1.5.3 National Security in the Twenty-First Century**

The national security situation in the twenty-first century is far different from what existed during the Cold War as discussed at the beginning of this thesis. National security has traditionally been concerned with territorial integrity and arms races. However since WWII, interstate military conflicts have decreased relative to domestic conflicts and violence and this will weigh heavily on the new security thinking. Locations of threats can also shift on short notice (Winter, 2011). Responding to these wide-ranging threats was impeded by the demand for peace dividends that resulted in the reduction of military force in most countries.

Given the rapid pace at which threats evolve today, every nation should prepare ahead of time and not wait for a challenge to emerge. The viable approach to national security in the present is to maintain an adequately sized, well trained and equipped force that is able to respond in a timely manner and capable of dissuading, deterring, and if necessary defeating a diverse set of future adversaries. As such, the state must invest in sea and air mobility assets needed to respond quickly to challenges in any part of the world. These assets will take years to build and must be developed before future threats emerge (Winter, 2011).

The September 11 tragedy and the Global War on Terror demonstrated the tension between the demands of national security and the demands

of democracy that are moving in opposite directions and having contradictory implications for political participation (Rosati, 2004). By categorizing terrorism as acts of war, the US president can exercise greater authority and civil liberties become a luxury item (Baker, 2002).

The security of nations will increasingly depend on the security of natural resources, or “natural security.” The global economy relies on the availability of potable water, arable land, fish stocks, energy, minerals and other renewable as well as nonrenewable resources to meet the growing demand. Yet the availability of these resources is scarce (Parthemore & Rogers, 2010). According to the National Intelligence Council (NIC) rapid economic growth and population growth will put increased pressure on resources particularly food, water and energy (Fingar, 2008). Increasing consumption of these resources also has adverse implications such as climate change, which will challenge national security in the future (Burke, 2009).

In an open economy, security threats can come from within an economic realm. In 2007, the US Congress passed the Foreign Investment and National Security Act (FISIA) to define the role that national-security concerns should play in the regulation of foreign investment. The Committee on Foreign Investment in the United States (CFIUS), an interagency body headed by the Department of Treasury, is charged with reviewing foreign-investment transactions for potential security threats in hope of finding the proper balance between open economic policy and national security (Weimer, 2009). The interaction between Foreign Direct Investments and national security has been studied by Edward Graham and David Marchick in 2006 and they identified a whole list of risks The list is not exhaustive (Appendix 5). Concerted action of state-backed enterprises and investment entities to destabilize entire sectors of the economy should not be ruled out as a possible threat to domestic markets (Weimer, 2009).

### **1.1.6 Indonesia Security Environment**

Indonesia's first president, Soekarno, believed that foreign powers are a direct threat to Indonesia's independence and adopted a strong anti colonial posture. Soekarno's policy has been focused towards external issues to reinforce Indonesia's independence from the outside world. President Soeharto's New Order government took a contrasting stance and perceived internal issue to be the major threat to national security (Anwar, 1998). This focus on internal insecurity has mandated a development-oriented policy that covers all aspects of national life that aimed to improve welfare, and maintain national unity and political stability. The New Order government managed to achieve political stability by restricting political activities by the military and delegitimizing government opposition through conformity with Pancasila. Geographical fragmentation and weak military force meant that Indonesia placed heavy reliance on diplomacy and regional cooperation as part of its defense strategy (Anwar, 1998).

With the transition to democratic rule in 1998, the government undertook steps to reform the Tentara Nasional Indonesia (TNI) in order to improve public opinion about the military and to transition the military to be under civilian control. One of the steps undertaken is the devolution of the national police from the armed forces to the Office of the President. With that, the responsibility for internal security is officially transferred from the TNI to the police in April 1999, focusing the military's attention on national defense rather than public security (Butler, 2006).

The TNI however, resisted the transformation of its territorial command structure because of threats of terrorism and separatism. After several years in disrespect because of extensive human rights abuses, the TNI has regained much of its lost prestige. Many Indonesians appear to favor

military firmness as the country is facing terrorist, separatist, and ethnic conflict as well as a moribund economy (Butler, 2006).

Indonesia's national security continues to evolve till this date. Professor Emil Salim defines 'national defense' in a broader context covering food security, energy security and the security of coastal areas besides deterring foreign aggressions or attacks (Satriastanti, 2011). Climate change bears greater impact on Indonesia than what most people would expect. Environmental degradation that result from rampant deforestation like illegal logging, are not just environmental issues but could even threaten Indonesia's national defense (Satriastanti, 2011). The Ministry of Maritime Affairs and Fisheries, Freddy Numberi, once warned that if Indonesia fails to do anything, Indonesia may lose 2,000 islands by 2030 without war and without conflict.

Though internal security is the primary concern, it is by no means that Indonesia put less weight on external security issues. The greatest threat from external sources is not in the form of direct military aggression. Rather, Indonesia is more concerned with problems of unresolved territorial / border disputes with its neighboring countries and violation of Indonesia's territorial sovereignty by other states. To a lesser degree, Indonesia is also concerned with the strategic implications of power shift among major powers for the future of regional security architecture in East Asia (Sukma, 2011).

#### **1.1.6.1 Border Conflicts / Territorial Disputes**

Indonesia has serious territorial disputes with Malaysia, first over Sipadan and Ligatan Islands, and now over the jurisdiction of Ambalat in the Sulawesi Sea. Malaysia's claim over Ambalat, and the regular patrols conducted by Malaysia's vessels in the area, may be viewed as "a threat

to use force” by Indonesia (Juwana, 2009). This problem coupled with various naval incidents in the area between the two countries led Indonesia to believe that “the potential for the violation of Indonesia’s territory by other countries is very high. As such Indonesia needs to prepare the readiness of its defense force” (Pertahanan, 2008). Previous TNI Commander General Endriartono Sutarto stated that “the most dangerous threat comes from other countries” and that “Malaysia dares to claim our territory and acts rudely to our migrant workers because they know that we are not that strong.” (Witular, 2005).

The lost of Indonesia’s outermost islands meant more than the lost of land territory but also territorial waters and its resources (Febri, 2008). For that reason, Indonesia’s government asserted that “securing border areas and outermost islands constitutes a function of national defenses aimed at upholding state sovereignty.” (Pertahanan, 2008). The Commander of Indonesia’s Navy, Admiral Agus Suhartono, believes that security issues of outermost islands could become a source of conflict with other countries if left unattended (Antara, 2010).

#### **1.1.6.2 Resource Conflict**

Rapid global economic development has increased pressures on demand for resources to ensure its continued sustainment. The 200 nautical mile Exclusive Economic Zones (EEZs) serves as important sources for resources especially oil and gas, and other marine resources including rich fish stocks, but it also serves a potential ground for battle over resources. This security issue is exacerbated by the problem of overlapping territorial claims, especially in resource rich areas. In this context, resource security becomes critical for Indonesia and breach of Indonesia’s sovereignty by external actors, both state and non-state,

should be considered as a serious threat to national security (Sukma, 2011).

### **1.1.6.3 Internal Conflicts**

Internal order and political stability remains the main preoccupation of Indonesia's security and defense establishments since its independence in August 1945 (Sukma, 2011). Internal security involving problems with secession, communal hostility, religious violence, religious tensions and political discord among elitist class threaten national unity. These internal conflicts can be categorized into two groups: (1) Self-determination conflicts and (2) Communal conflicts.

Self-determination conflicts are those in which major political organizations demanded independence or for significant autonomy. These threats occurred in Aceh, West Papua and previously, East Timor, which have gained independence in 2002. Armed insurgencies results from such threats. The TNI has been battling with Free Aceh Movement (Gerakan Aceh Merdeka, GAM) until the signing of the Helsinki Peace Accord in August 2005 (Sukma, 2011). Indonesia also faces similar challenges in the Papua Province with Free Papua Organization (Organisasi Papua Merdeka, OPM) till today (Sukma, 2011).

Communal conflicts are significantly different as they involve violent conflict among groups typically organized along ethnic, religious, or cultural lines (Gershman, 2002). Communal and religious violence is considered a security problem by Indonesia (Pertahanan, 2008). Internal conflicts among ethnic and religious groups such as those in Kalimantan, Maluku and Poso would undermine nation-building process and threaten national unity. Besides ethnic, religiously or culturally motivated, the

issues at stake in such conflicts may involve struggles over economic, environmental, and political resources (Gershman, 2002).

Both types of conflicts arise out of grievances over the inequitable distribution of Indonesia's abundant economic resources. These grievances have been shaped and aggravated by a number of developmental policies including centralized and elite ownership and control of natural resources, transmigration, and the displacement of indigenous inhabitants from their sources of livelihood, typically land and forest resources (Gershman, 2002).

With the enactment of Regional Autonomy Act in 1999, local and regional governments have more control over regulating access to and sharing the benefits from natural resources. However, this has not solved the injustice. In many cases, national elites were simply replaced by local elites as the beneficiaries of benefits, and the basic inequalities have not been addressed (Gershman, 2002).

#### **1.1.6.4 Terrorism**

Just as international system is troubled by violent extremists, Indonesia too cannot escape from the issues of terrorism. The spread of terrorist network such as Jemaah Islamiyah (Community of Islam) poses an ever increasing and more serious threat to Indonesia's security. Over the last decade, Indonesia is shock by several bomb blast incidents (appendix 6) Prompt police investigative actions and international cooperation resulted in the arrests of dozens of suspects and revealed an extensive network of affiliations among al-Qaeda, Jemaah Islamiyah, and Islamic extremist groups inside Indonesia. Even though Indonesia's attempts to combat terrorism have resulted in significant successes, terrorism continues to pose a formidable threat.

According to Owen Harries (2002) the TNI is the only institution that is capable of suppressing terrorism in Indonesia. His arguments are based on the fact that Indonesia enjoyed decades of stability under the military rule of Soeharto that also brought increasing prosperity and many referred to those times as Indonesia's golden era (Harries, 2002).

#### **1.1.6.5 Natural Disaster**

Indonesia, being located within the "ring of fire", has been constantly haunted by natural disaster. Some even joked that Indonesia is the "supermarket" for disasters. The earthquake and tsunami in Aceh Province in December 2004 serves as a wake up call of Indonesia's vulnerability. Several other devastating earthquakes like those in Central Java in 2005, Bengkulu and West Sumatera in September 2007 and again in 2009 demonstrated the devastation, material destruction and loss of life resulting from such disasters to be staggering. Flooding and landslides also contribute no less to the material and immaterial losses. Natural disasters pose a serious threat for Indonesia, especially in the area of ensuring human security and safety of its people (Sukma, 2011).

#### **1.1.6.6 Transnational Crime**

Another daunting challenge facing Indonesia originates from transnational crime. These include wide-ranging maritime-based threats such as piracy, illegal fishing, maritime poaching, trafficking of drugs and human and illegal logging as well (Sukma, 2011) (Butler, 2006).

Piracy continues to pose a threat to the safety in and around Indonesia's territorial waters (Sukma, 2011). It disrupts international trade and

threatens the safety of vessel crews. The problem of piracy is also faced by Indonesian vessels and crew members beyond Indonesian waters such as off the coast of Somalia. Illegal fishing by foreign parties in Indonesia's waters, which has been ongoing for many years, has cost Indonesia some US\$3 billion a year (Suharto, 2007). The problem of illegal fishing also constitutes a major source of tension between Indonesia and states such as Australia, China and Thailand.

The problem of marine pollution, especially in the Malacca Straits, has also threatened the livelihood of the coastal people along the straits that depended heavily on marine resources as sources of livelihood. The security implications of marine environmental degradation are self-evident (Bradford, 2005).

Incidents of smuggling, both goods and drugs, and trafficking of people, are also considered as posing precarious security problems for Indonesia. Number of women and children being trafficked are estimated to be between 100,000 to 1 million people every year (Verona, 2008) (Suyanto, 2003).

#### **1.1.6.7 Food Security**

Famine in Indonesia may kill hundreds or even thousands of Indonesians such as those in Papua's Yahukimo district that has reportedly killed at least 113 people in 2011 (Satriastanti, 2011). Pro-poor economic growth and a successful Green Revolution, led by the planting of high-yielding rice varieties, massive investments in rural agricultural infrastructure and ready availability of fertilizer made significant improvements in Indonesia's food security over the past four decades (Timmers, 2004). However, Indonesia has yet to achieve food self-sufficiency, particularly rice which is the staple food. Rising food prices will impact the lowest

income earners and aggravate poverty that may trigger social unrest and thus pose a security threat (Timmers, 2004).

#### **1.1.6.8 Defense Industry**

No country can achieve complete national security if it relies on foreign supply of weapons and components. However, investments in the defense industry are huge and thus require large production runs to achieve economies of scale. Indonesia has abundance of natural and mineral resources and maintain quite a large standing conventional force. These meant that Indonesia is able to support its own defense industry.

In order to strengthen national security by reducing reliance on foreign weapon systems, Indonesia must revitalize its domestic defense industries. In February 2010, Defense Minister Purnomo Yusgiantoro said that revitalizing the defense industry is one of 15 programs that President Susilo Bambang Yudhoyono has highlighted. Although the President has spoken of his determination to reduce dependency on imported defense equipment by increasing purchases from the domestic industry, there has been little progress since a program to this effect began in 2007 (Business Monitor International, 2010).

To resolve the problem, the defense acquisition strategy, policy and process must be reformed. The practice of giving preferences to foreign procurement must be scaled over time. Defense expenditure ought to consistently lead to improvements in defense capabilities as well as to the sustainability of the domestic defense industry (Business Monitor International, 2010).

Having gone through the bitter experience of embargo by the United States, Indonesia is continually diversifying its procurement sources for defense equipment to eastern European countries, as well as China and South American countries, to lower its dependence on the US. (Business Monitor International, 2010).

#### **1.1.6.9 Shifting International and Regional Power Structure**

To a lesser degree, Indonesia is also concerned with shifts in international and regional power structures. In East Asia, the rise of China constitutes the most salient aspect of such changes. However, China's rise from the Southeast Asian perspective is not conceived so much as a "China Threat" issue but more in terms of China's future role and place in the region, and how it will affect regional security architecture" (Sukma, 2011).

Though China has persistently emphasized its commitment to a peaceful rise, its growing assertion over Spratly in South China Sea as well as territorial claims of disputed islands and areas with Japan and South Korea cannot be ignored. Being the largest ASEAN country, Indonesia would be expected to act as the "big brother" and represent the member nations such as Philippines and Vietnam, to help them negotiate and resolve the issue with China. Escalating tensions may destabilize regional stability and undermine Indonesia's national interest and security.

## **1.2 Problem Statement**

The general public tends to associate national power to national defense and with that it implicitly refers to military power. Then again for the

twenty-first century, security issues or threats have become more complex and diverse in nature. We must move on from the Cold War paradigm of security that is fixated with military power and embrace a new viewpoint on national security that employs all elements of national power.

Many also make the common mistake of thinking that military power has lost its relevance in the twenty-first century and instead economic power takes predominance. We have seen in recent times how economic / debt crisis created so much distress and turmoil to several countries. We have also learnt about how the economies of several countries came under the mercy of China who flooded their market with cheap and quality products. Conversely, we have witnessed how China managed to gain increasing prestige and elevate its international status among the league of powerful nations with its remarkable economic growth. China has managed to overtake Japan who enjoyed similar economic eminence in the 80s.

It is essential to also look at events occurring around the world and realize that many security threats still mandate for a military response.

There has been much literature that discussed on national power that sought to explain its importance as well as provide various measurement models. Some measurements are simple, easy to duplicate but suffers the weakness of incomprehensive while others such as those proposed by Ashley J. Tellis et. al. from Rand Corporation are much too detailed that makes it duplication and global comparison a colossal effort if not impossible. There need to be a balance between comprehensiveness and duplicability.

In the case for Indonesia, there has been “dissenting” a voice claiming that the TNI is weak or unable to perform its duties optimally due to

ageing weapons systems. Efforts to modernize Indonesia's military have been impeded by the limited national budget allocated to defense spending. A significant portion of the "meager" budget is used to cover routine operational expense, leaving an even more miserable allocation available for capital expenditure and weapons modernization. Despite the increasing complexity of the security environment, there has not been any concrete actions taken by the Dewan Pertahanan Nasional (Wantanas), the US National Security Council equivalent, to formulate Indonesia's National Defense Policy and National Security Strategy, much less attempt to measure Indonesia's national power.

Based on the above a research gap exists on how to balance the need for detail and breadth with the need for simplicity and practicality in measuring national power. Measuring national power is one matter and manipulating its components in an attempt to maximize national power is another matter.

With that this thesis will attempt to answer the following research questions:

- I. **What is Indonesia's national power score (index)?**
  - a. What are the elements or components of national power that will be measured?
  - b. How will the power index equation be structured or formulated?
  - c. What is Indonesia's global standing in terms of its national power?
  
- II. **How can Indonesia optimize national power to strengthen national security?**
  - a. What are the strong and weak elements of Indonesia's national power?

- b. Which elements of national power should Indonesia focus on improving given its resource limitations?
- c. If, Indonesia choose to boost its military power, will Indonesia be viewed as being over-militarized or sparks fear among its neighboring states that trigger another round of arms race?

### **1.3 Research Objectives and Significance**

The objective of this research is to formulate a power index model, which we will name Composite National Power Index (CNPI) in this thesis that is designed to be comprehensive and uses readily available public information to enhance the model's simplicity and ease of duplication as well as attempt to harmonize the various existing models when possible. It is also the author's intention to use Absolute National Power Index to measure Indonesia's CNPI score and therefore ascertain Indonesia's global standing or position, particularly in respect to its neighboring states.

This research also aim to learn about the elements that are the main contributors to Indonesia's CNPI and determine whether the contributors are fairly distributed across the board or predominantly concentrated in a few of the variables. By further drilling into each of the element, we can compare each of those elements with other states to determine the global standing or positioning for that particular element.

### **1.4 Research Benefits**

An assessment of National Power can be used to forecast power relations among the nations in the future security environment (Pillsbury, 2000). A famous ancient military strategist Sun Zi wrote that by

assessing the enemy's strengths and weaknesses, one could predict the outcome of war. Such assessment of nation's strengths and weaknesses is similar to concept of national power assessment.

Chairman Mao Zedong wrote that victory or defeat in war is predominantly determined by both side's military, political, economical and natural conditions, but also determined by the subjective leadership capabilities of both sides in combat (Pillsbury, 2000).

The number of scholars and research contributions to this area of study are still quite limited. Power Index model is imperative to the field of Defense Economics that studies diverse topics including defense resource management and allocation constraint by scarcity. Defense Economics is a relative new field developed since the end of World War II (Kong, 2011). It is hoped that this research will be beneficial to both the academicians and practitioners.

#### Academicians

- It is hoped that this research will enrich the existing knowledge in the field of Defense Economics particularly for Indonesia that is still new to this field of study.
- It is also hoped that this research can bring a new paradigm in thinking about national power that challenges the dominant thinking of military numbers as the main source of military power.
- The use of this research may also be extended to other areas of study such public policy and management, and others.

#### Practitioners

- State planners can also benefit from this research, as they are able to use Absolute National Power Index as a "dashboard" for comparison with other states as well as across time.

- By quantifying and weighting the various elements and variables, state planners can also make policies aimed at influencing certain elements to improve the total CNPI and improve the country's national security.
- Political observers and analyst can use the CNPI model to monitor and evaluate the government's effectiveness and performance.
- By keeping track of the APNI trends, we can also predict the future international security environment and better position ourselves by anticipating foreseeable "hot spots" in the future and by adopting the appropriate foreign policies.

### **1.5 Research Design and Scope**

The research will adopt a mix method. Descriptive statistics will dominate the quantitative analysis. To ensure its content validity, only reliable and reputable data sources.

This thesis will adopt a cross-sectional design covering various nations when possible subject to the availability of data to measure the Absolute National Power Index. A state that has many missing data will be excluded from the list.

As to the computation of military capabilities index, the primary focus in on conventional military power covering land, sea and air and disregards the other domains such as space and cyber. Nuclear weapons shall be regarded as conventional weapons for the purpose of this research.

### 1.5.1 Research Limitation

Hart (1976) identifies three main approaches to the measurement of power in international relations:

- Control over resources
- Control over actors
- Control over events and outcomes

This research adopts the first approach. There will be gaps between potential and actual power that is caused by power conversion effectiveness. In this thesis it is assumed that the actors are sovereign states and therefore cannot be controlled. Another reason is that we can only forecast events and outcomes but no human or state can have control of the outcomes. Of course by having plenty of resources, once may exercise control over actors through bribery, or increase the likelihood of certain outcomes.

### Chapter Summary

This chapter has shown the world faces a barrage of security issues in the twenty-first century that includes:

- **Rising of New Powers** such as India and China that will reshape the international system. China, in particular, has enjoyed rapid economic growth that has given China a new power status. Its economic growth also enabled the PLA modernization.
- **Revival of Old Power** refers to Russia who is retreating back to its previous cold war stance. Russia continues to threaten physically countries that host “hostile” US anti-missile defense bases and increase its reliance on nuclear weapons.

- **Increasing Influence of Non-State Actors** including violent extremist groups are attained through acquisition of advanced technologies. They often exploit undergoverned areas to operate with impunity and often received state sponsors. The MAD doctrine has proved ineffective towards non-state actors.
- **Rogue States Continue to Undermine Global Security.** Besides developing nuclear weapons, rogue states like Iran and/or North Korea supports terrorism, counterfeit US currencies and traffic narcotics, contributing to global instability.
- **Proliferation of Weapons of Mass Destruction (WMD)** continues to disrupt global stability. Rogue states and violent extremists groups are eager to acquire WMD including nuclear, biological and chemical weapons.
- **Asymmetric Warfare** are more commonly employed to counter the US advantages and offset US strengths
- **Proliferation of Digital Technology** though meant to improve people's lifestyles may be exploited to conduct illicit activities such as the recruitment of terrorists. Government will find it harder to contain news with the explosion of social media.
- **Regional Unstable State of Peace** with the continued tensions in the Taiwan Straits and Korean Peninsula. Taiwan's absorption into China through force will question US credibility and jeopardies its alliance system. Tensions in South China Sea may also color the international security environment in the 21<sup>st</sup> century. There are also risks that Arab Spring revolution may continue to spread and destabilize the region.
- **Fragile Global Economy** that resulted from energy price volatility, Sub-Prime mortgage and European debt crisis as well as increasing consumption patterns.

Not only are issues / threats becoming complex, they are also becoming more interconnected resulting from globalization. As such it can no

longer be delineated along national borders. Threats are also spreading from military domain to the non-military compelling us to review the existing security paradigm. All elements of national power will need to be deployed to tackle these security threats.

States neither have permanent friends nor permanent enemies, they only have permanent national interests. States pursuit of national interest is the very foundation of realist school that allows states to engage in war to protect its interest. US national interests include (1) safeguarding US national security, (2) preventing major power threat to Europe, East Asia and Persian Gulf, (3) maintaining access to foreign trade, (4) protecting Americans against threats to their lives and livelihood and (5) maintaining access to resources.

To pursue its national interest states must possess the power to do so. International politics is a struggle for power. National power connects national interests to feasibility. A country must be strong both in economic and military power.

National security refers to how a state employs all elements of national power to ensure survival and maintain its place in the international arena. National security is a blend of political resilience and maturity, human resources, economic structure and capacity, technological competence, industrial base and availability of natural resources and finally the military might. It required the national leaders to ensure the survival and sovereignty of their nation by employing all instruments of national power. National security is a concept applicable in both wartime and peacetime as it increasingly employs nonmilitary elements as well, and hence is an inherent element of statecraft.

Defining national security can be dilemmatic. It needs to balance the increasing complexities without the risks of over-securitization. A study

has also showed that national security depends military expenditure. States should prepare ahead of time in the 21<sup>st</sup> century and maintain adequately sized and well equipped forces capable of responding in timely manner to deter and defeat adversaries. National security will increasingly depend on natural security (natural resources). In an open economy, security threats can also come from the economic realm.

Indonesia faces its own set of security environment namely:

- **Border Conflicts / Territorial Disputes** particularly with Malaysia.
- **Resource Conflicts** particularly in exclusive economic zone and disputed territories.
- **Internal Conflicts** that include self-determination and communal conflicts.
- **Terrorism** continues to jeopardize public safety and deteriorate the business environment.
- **Natural Disaster** that results in both material and immaterial losses and pose a threat to human security.
- **Transnational Crime** covers wide ranging issues including piracy, illegal fishing, illegal logging, drugs and human trafficking, and poaching as well, that costs Indonesia billions of dollars a year.
- **Food Security** as rising food prices will impact the lower income segments and aggravate poverty that may trigger social unrest.
- **Defense Industry** will reduce Indonesia's reliance on foreign supply of weapons and thus increase its national security. However, Indonesia is faced with a fledging defense industry.
- **Shifting International and Regional Power Structure.** Indonesia perceives China rise not as threat but is more concern with China's future role in the region and how it will affect regional security architecture.

## **Chapter 2**

### **LITERATURE REVIEW**

In this chapter, we will first begin by discussing the various theories and literature applicable to this research. Since there are no similar works done before for Indonesia and Indonesia neither has a National Defense Policy nor a National Security Strategy, we will use the relevant theories as proxies in formulating the Composite National Power Index.

The chapter starts off by discussing the relevant international relations theory to understand how states behave in conducting its international affairs. It also looks into the inseparable relationship of military and the economy also known as political economy. This section also explains the concept of polarity and balance of power to gain insights into a state's foreign policy and about alliance.

The United States is a hegemonic power and therefore it is important to look further into its national interest. This chapter will visit again US and Indonesia's national interest and discuss how these interests are formulated or derived. Readers can also make comparisons between the states' national interest to determine its similarities and differences as well.

This chapter will also touch on theory of power and detail out the elements of national power. Several power indexes will also be explained in this section.

The last part of this section will draw on theories from defense economics to explain the rivalry between defense and non-defense spending and see the impact of a shift in the allocation of the state budget.

## **2.1 International Relations Theory**

National Security Policy is formulated and implemented within the framework of international environment. International relations theory (IRT) helps facilitates the understanding of global events and world politics by attempting to categorize and explain the behavior of international actors as well as to explain the roots or cause of conflicts. Policymakers broadly use IRT as conceptual framework to determine the conduct between nations (Mastapeter, 2008). The concept of nation-state first came into conception after the Peace Treaty of Westphalia in 1648, however, the discipline of IRT was established following WWI with the objective of gaining further understanding of the dynamics of interstate relations to avoid future intense conflicts (Mastapeter, 2008).

Political units are composed of collections of actors who behave, act and make decisions rationally and irrationally. To survive, various actors of any system must not only adapt to the external environment but to one another as well. The behavior of an actor within a system is a major element of the environment and their collective behavior can change the nature of the external environment, thus rendering the system unpredictable. Any group of humans, ranging from families and clans at the micro level to states and empires at the macro level will interact and over time, form intertwined networks known as social, economical and political systems that create their own rules and hence contributes to their unpredictability (Mastapeter, 2008). Political actions may result in unintended consequences. The ripples from one action may unpredictably magnify or nullify the ripples from other actions. The cumulative effects of these factors reaffirm that the strategic environment is uncertain and unpredictable.

A state has the monopoly to the use of violence and failure to assert its monopoly may threaten its existence. The state will likely be taken over by a new entity that is willing and able to take on this fundamental role. Hence a state exists within a precarious zone between order and chaos. (Mastapeter, 2008).

### **2.1.1 Realism**

Realism, also called power politics focuses on state security and power above all else (Evans & Newnham, 1998). It portrays an anarchic international system whereby self-centered states are the primary actors who continually struggled to maximize their power. Relations among states are antagonistic in nature and any cooperation or alliance between states is justified by the need to maximize each state's security as opposed to idealistic attempts to attain peace (Morgenthau, 2006). Realists are generally pessimistic about the prospects of eliminating conflicts and wars (Walt S. M., 1998)

States having the monopoly to use violence inherently poses some military capability, which makes them potentially dangerous to one another. None can be certain about the intentions of other states and therefore provoke distrust. Power seeking, military capability, self-help nature and distrust culminate to the anarchic international system. It is somewhat inaccurate to associate war with nation-states and blame it on the anarchic nature in the international system, with the rise of threat posed by non-state.

Neo-Realism or structural realism differs from "classical" realism as it ignores human nature and seeks to more scientific (Waltz K. N., 2001). States strive for survival through power balancing.

The offense-defense theory that postulates war is more likely when states could conquer each other easily. John Mearsheimer, the prominent scholar on Offensive Realism stated that states seek power at each other's expense. In an anarchic system with an accepted behavior of "self-help", the best guarantor of security is to maximize their power, more than their rivals, with hegemony as their final goal. A hegemon also strive for large power gaps between the hegemon and the next most powerful state. Therefore the hegemon will continually seek to increase its power while impeding other nation's efforts (Mearsheimer, 2001).

Because of this continuous power seeking, Mearsheimer contended that a multipolar system is more prone to wars than bipolar systems. The prospect of war increases as there are more potential conflict dyads. Imbalances of power are more common, thus the major powers are more likely capable of winning wars, making deterrence more difficult and war more likely. Finally there are more rooms for potential miscalculations (Mearsheimer, 2001)

States go to war believing that they could win the war, and that should they lose, the price of defeat will be bearable. However, nuclear warfare would render defeat unbearable and catastrophic. This is the reason Waltz supported the proliferation of nuclear weapons as deterrent of war (Waltz K. N., 2004). When defense is easier than offense, security will increase, imperialism decline and cooperation can flourish. When defense has the advantage and states could distinguish between offensive and defensive weapons, acquiring means to increase one's defensive capability, will not threaten other states and therefore the anarchic nature inherent in the international system can be restrained (Walt S. M., 1998).

### 2.1.2 Mercantilism

Mercantilism describes the role of the state in the economy and compels the nation-state to use its state power to direct the economy to generate wealth by promoting exports, limiting imports, thereby generating trade surplus. It requires the state to adopt a variety of trade protection, investment and other economic instruments and policies to sustain that wealth, protect its industries and condition the behavior of other states. Mercantilism is based on the foundation that a state is obligated to pursue its national interest by creating wealth and power to enhance the nation's independence and national security. To the extent that wealth enables military modernization that boosts military power that enhances the national security (Balaam & Veseth, 1996).

Friedrich List linked national interest to the promotion of industry and thus championed protectionist trade policies. Accordingly, productive power is more important than wealth itself. States therefore must promote this productive power through education, technology advancements and industrial development. List also stressed the importance of making short-term sacrifice to ensure long-term gain. (Balaam & Veseth, 1996). Manufacturing is preferred to agriculture as it develops greater human skills and opportunities. Such views of national interest, positive role of the state in the economy and sacrifice for future gains are classical prescription for nation building.

Neomercantilism attempts to create political and economic advantages for its industries and counter the advantages that other states give to their industries. Neomercantilism are at times adopted in a tit-for-tat strategy.

Mercantilism was popular during the classical imperialism era of the 15<sup>th</sup> century. Many wars were fought then and to finance the wars, states

need to generate trade surpluses. (Balaam & Veseth, 1996). Commerce generated wealth that enhanced the state's power. Economic gains by one state were perceived as losses by competing states, conferring mercantilism a zero-sum disposition. For mercantilist as well as realist, states are the primary actor and the highest sovereign political authority (Giplin, 2001).

### **2.1.3 Polarity**

Polarity describes the distribution of power and national influence within the international system. Uni-polarity describes a distribution of power that is concentrated on one single state also known as hegemony in which the state is a hegemon or hyper power. Hegemony is defined as the predominant influence of a state, region or group, over another or others. A hyper power is state that is militarily, economically and technologically dominant on the world stage (Lawson & Ferraro, 2008), and can force its will unto others, dictates the policies of all other states as well as able to defeat other power or combination of powers that it might be at war with. Bi-polarity describes a distribution of power or balance of power between two states. In many instances, spheres of influence and political-military alliance surrounds these states (center of gravity) as occurred during the Cold War era 1947 – 1993. Multi-polarity describes the distribution of power in which three or more nations enjoy nearly equal power. This system is the least stable of all the systems. This is caused by the dynamism explained earlier and the continually shifting alliances until temporary stabilization is achieved.

There is abundance of countries that fall in the middle, meaning they are neither powerful nor powerless, but they still wield some degree of global influence.

We have seen the world shifts from multi-polarity to bi-polarity after the WWII and into a uni-polarity at the end of Cold War. As we enter the 21<sup>st</sup> century, the world seems to enter a hybrid uni-multi-polar system with one super power and several major powers. New powers are rising on almost every possible fault lines: France and Germany in Europe, Russia comeback in Eurasia, China, Japan and North Korea in East Asia, India and Pakistan in South Asia, Iran in Southwest Asia, Brazil in Latin America, and South Africa and Nigeria in Africa (Huntington, 1999). It is uncertain whether the U.S. alone can secure victory when at war with combination of these major powers. The major powers prefer a multipolar system where they can pursue their interest either unilaterally or collectively, without being subject to pressure or coercion from the hegemon.

#### **2.1.4 Balance of Power**

According to George Liska, the balance of power is “the fundamental law of interstate relations” (Sheehan, 1996). It can mean any of the following:

- The actual distribution of power regardless of the inequality of the distribution.
- A system in which two or more entities possess equal power
- A system in which actors shifts alliances in order to ensure no one entity becomes dominant

This thesis adopts the third meaning. The concept of balance of power (BoP) became recognized after the Peace Treaty of Westphalia in 1648. Post-Westphalian conflicts and wars still occur in order to maintain the approximate equality of the great powers or contain/defeat the occasional “sharks” who sought hegemony. Balance of power attempts to achieve security and not peace (Mastapeter, 2008). Balancing is more common than bandwagoning – which occurs when weaker states seek to

maximize power by aligning with stronger states, because states prefer to join alliances to avoid domination by stronger powers. States that seek security over power will engage in balancing (Walt S. M., 1985).

## **2.2 National Interest and Security**

National interest roots traced back to the Machiavelli era in the 15<sup>th</sup> century. National interest take supremacy above all else and thus states could employ all means, moral or immoral, for its attainment. States are considered amoral and can do things individual humans cannot do. During the 19<sup>th</sup> century, Clausewitz argued that states should only go to war to safeguard its interest, which is motivated by the need to survive and prosper (Clausewitz, 1997). (Roskin, 1994) Later in the 20<sup>th</sup> century Hans J. Morgenthau contended that only two interests exists: vital and secondary. It is easier to define vital interest as it concerns the very life of the state whereby states should not compromise or hesitate to go to war to protect those interests. Secondary interests are more diverse and thus harder to define. It is disconnected from sovereignty issues and therefore may be subject to compromise through mutually advantageous deals and negotiations (Moegenthau, 1962). Realist scholars have identified other types of interests (Appendix 7). Vital interests may exist within an economic domain. For example China's vital interest are at stake if Europe cannot resolve the debt crisis. China has around a quarter of its USD 3.05 trillion foreign currency reserves in Euro denominated assets (Reuters, 2011).

### **2.2.1 US National Interests**

US interests are inextricably linked to the integrity and resilience of the international system and chief among these interests are security,

prosperity, broad respect for universal values, and an international order that promotes international cooperation action” (DoD, 2010). The US national interest also includes the maintenance of open sea-lanes and the expansion of international free trade (Wikipedia, 2011). The US Quadrennial Defense Review Report (2010) also stated that the US will advance its interests by strengthening their domestic foundation and integrating all elements of national power, engaging abroad on the basis of mutual interests and mutual respect, and promoting an international order that advances their interests by reinforcing the rights and responsibilities of all nations (DoD, 2010).

The Commission on America’s National Interests identified four levels of national interests; (1) Vital interests (2) Extremely important interests (3) Important interests and (4) Less important or secondary (Appendix 8)

US vital interests were first formulated in the late 1940s: to “preserve the United States as a free nation with our fundamental institutions and values intact”. Defining the US national interests is much easier and clearer during the Cold War era. From 1945 to 1989, containment of Soviet communism expansion provided the fixed point for the compass of American engagement in the world concentrating minds in a deadly competition with USSR in every region of the world that resulted in the build-up of large, standing military forces and nuclear arsenals (The Commission On America's National Interests, 2000).

Defining US interests became challenging as the US is constantly called upon to address disparate regional problems of uncertain relevance to US security (Measuring A Nation’s Vital Interest). The Commission on America’s National Interest (2000) identifies five vital US national interests, eleven extremely important interests, ten important interests and four less important or secondary interests today (Appendix 9). The vital and extremely important interests are still predisposed towards

security issues that required the use of hard power or specifically military power. The Commission also suggested that the US must be prepared to commit itself to fight, even if it has to do so unilaterally and without the assistance of allies. For “extremely important” interests, the threat should be neutralized with a coalition of forces with allies whose vital interests are jointly threatened and led by the United States. While for “important” interests, the United States should only participate militarily on a case-by-case basis, and only if the costs are low or other countries bear the lion’s share of the burden.

Based on the Commission’s recommendation the US can invade and attack other countries when its vital interests are threatened. This can turn into precarious doctrine unless neutralizing threats to the vital national interest is construed so narrowly as to be equivalent to “self-defense.” In a broad sense, this will be a direct repudiation of the central principle of international law that prohibits aggressive. The UN Charter’s outlawing of war has stopped the United States from declaring war but not from going to war (Joyner, 2007).

The use of force to protect vital national interests has been subject to serious debates. For Liberals, preventing genocide is in the US vital interest while the Realist will view the case as mere humanitarian disasters that do not justify forcible interventions. Realist on the other hand view war as necessary to maintain a favorable balance of power, secure access to scarce resources, deprive hostile states of weapons of mass destruction, and the like whereas Idealists tend to stress the need of diplomatic resolution of those disputes (Joyner, 2007).

### **2.2.2 Indonesia National Interests**

The core of Indonesian's indisputable national interests are partially covered in the preamble of the National Defense Policy contained in the Presidential Decree No. 41 Year 2010 regarding National Defense Policy 2010 – 2014 (Kepres, 2010), and covered (1) National sovereignty (2) Territorial integrity and (3) Protection and safety of its citizens.

In modern times, protection and safety of its citizens would implicitly include the economic well-being of the people that result in social and political stability as well. The first two interests can be considered vital while the third is considered as extremely important interests. Besides the core national interests, it is also an expression of national's values projected into the international arena. In the case of Indonesia, our national values are embodied in Pancasila. National interest must be promoted and advanced by the national institution. They must also be protected and Indonesia must be prepared to enter into war to protect its national interests.

Indonesia is located at the crossroads between the Indian and Pacific ocean as well as between Asia and Oceania continent. It has four major strategic sea lanes of communications (SLOCs): (1) Malacca Straits (2) Sunda Straits (3) Lombok Straits and (4) Wetar Straits. Foreign merchant vessels and warships have the rights of innocent passage through these SLOCs. With that Indonesia "cannot afford" to ally itself with any nation and has to maintain its neutrality and independence.

Sam C. Sarkesian (1989) defined national security as:

National security is the confidence held by the great majority of the nation's people that the nation has the military capability and

effective policy to prevent its adversaries from effectively using force in preventing the nation's pursuit of its national interests

National security policy is that part of government policy concerned with formulating and implementing national strategy to create favorable military environment for national interest. In order to pursue its national interests while maintaining its neutrality in the international system, Indonesia must bolster its power including its military.

### **2.3 Power Theory**

Power is defined as the ability to direct the decisions and actions of others and the ability to influence the behavior of others to get the desired outcome. Power derives from strength and will and in turn strength comes from the transformation of resources into capabilities. Power provides the means to attack and the means to resist attacks. Therefore, by its very nature, power is neither good nor evil. The ability to successfully carry out national security policy is a direct result of the instruments of power the nation possess and its ability to use that power, individually or in any combinations, effectively (Sarkesian, 1989). Power does not mean that the state possesses the ability to get its way all the time (Waltz K. N., 2001).

At the most primitive level, national power can be measured by a variety of indicators ranging from the total number in the armed forces and the ability of the nations to mobilize for war, to the nation's economic capacity. By such standards, only large states with large population and vast resource stand the chance of becoming powerful. (Sarkesian, 1989). The result of Vietnam War has proved otherwise. National power is in part determined by military factors but even more determined by non-military factors such as the size and location of territory, the nature of

frontiers, population, raw material resources, economic structure, technological development, financial strength, ethnic mix, social cohesiveness, the stability of the political process and decision-making and, the intangible quantity known as national spirit or will (Cline, *World Power Assessment: A Calculus of Strategic Drift*, 1975).

A nation's power was largely determined by the military force during the Cold War era. However as the world is transitioning towards multipolarity, other non-military factors began defining national power. Deng Xiaoping was once quoted in *Renmin Ribao* on 26 February 1990: "In measuring a country's national power, one must look at it comprehensively and from all sides" National power theories are usually associated with issues of war, which required the mobilization of various forms of national resources and not just military capabilities. Hence the measurements of national power must reflect this too. (Pillsbury, 2000).

Wu writes, "never advocated relying only on military power to conquer the enemy, but emphasized combining military power with the nonmilitary power related to war in order to get the upper hand" (Wu, 1995). Another famous ancient scholar on military strategy Wu Zi once wrote that war should be avoided when the enemy is superior on six conditions or factors which was interpreted by Wu Chunqiu as national territory, population, domestic embodiment power, the legal system, servants, the quantity and quality of troops and international aid (Wu, 1995) Wu believes that Sun Zi's *stratagem*: "To subdue the enemy without fighting is the acme of skill" as strategy to achieve foreign policy goals without going to battle will be more applicable to the future security environment. However, "victory without war" does not mean the absence of war. Instead the wars are fought on a different front such as political wars, economic wars, science and technology wars, diplomatic wars, etc.; a war of Comprehensive National Power. Military power though very important shall serve as a "backup force" during peacetime (Wu, 1995).

The dynamics of international relationships over time has downplayed the significance of military strength in judging a state's power. Deng stated that war restricting power will increase when China attains a comparatively well off level and once it becomes a developed country, it will be even harder for a war to be fought (Zhu & Meng, 1995). Deng's views that economic strength can be a force for peace and can counter military strength showed that economic power is the ultimate and most essential factor in Comprehensive National Power (Zhu & Meng, 1995).

Even so, this does not mean that we should start "abandoning" efforts to enhance our military strength as Deng also noted that military power is the basic means for ensuring economic prosperity and continued rise of economic power, protecting the nation's general interests as well as carrying out global strategic goals. Hence both elements of powers must be emphasized and developed coherently (Pillsbury, 2000).

Though there were only a handful scholars focused on developing power indexes (Appendix 10) this does not reflect the insignificance of power Index. In measuring a state's power, power indexes are generally a more tangible source of information because the variables are already quantified and weighted; by knowing the details of power formulas one may thus infer national priorities and possibly make predictions regarding national strategy (Hwang, 2010).

War, which is defined as a contest or armed conflicts between sovereign powers, nations or states, carried by force various purposes. In the purest sense the means of war is combat – the physical aspects of attacking, defeating and defending. However, war is not limited to purely military means, which constitute one of the instruments used to implement a national strategy. The relative importance of military aspect varies greatly depending on the nature and the particular circumstances of the struggle. All instruments of power must be fully exploited in conflict

and/or war. No one element alone can determine national power. Mistake of doing so has been identified by Morgenthau and termed as the “Fallacy of the Single Factor” that manifested in *geopolitics*, *nationalism* and *militarism* (Morgenthau, 2006).

The second error typical in evaluating national power is “The Absolute Character of Power” – that is to neglect the relative characteristics of power and treat it as absolute instead. The third common error is “The Permanent Character of Power” – the treatment of certain instruments of national power as being permanent (Morgenthau, 2006). National power is dynamic, not permanent. The strategic environment is complex and subject to the interplay of dynamic factors; all of which influence the strength and weakness of each element of national power individually and in combination. (Morgenthau, 2006). Revolution in military affairs (RMA) as well as development in non-military elements intensified the dynamism power shifts. Hence power is situational / contextual, not dispositional, relevant to the existing circumstances of a particular situation.

An extension of this error is the failure to distinguish between potential and actual power. A nation’s ability to convert potential power into actionable or operational power is based on many factors including the political interrelationships of such factors as government effectiveness and national unity (Cerami & Holcomb Jr., 2001). National power must be evaluated in terms of all the power elements and in relation to other actors and the situation in which power is being exercised. Hence power must be places in the context of power over whom and with respect to what? (Spanier & Wendzel, 1996) (Papp, 1984).

### 2.3.1 Instruments of National Power

The instruments of national power falls into two basic categories:

**Natural**, or dispositional – consisting of geography, resources and population.

**Social** or situational and/or contextual – consisting of military, informational (ideological), diplomacy, law enforcement, intelligence, financial and economics (MIDLIFE), derived from, and concerns the ways in which people of a nation organizes themselves and the manner in which they alter their environment

Source: (U.S. Air War College)

The social determinants of national power may also be further differentiated into “hard and soft” power and the combination of both hard and soft power is termed smart power. It is much more difficult to systematically develop, manage and control soft power than hard power.

Hard power refers to the influence, leverage and capability that is derived from direct military and economic means and describes an actor’s ability to induce another actor to perform or stop performing an action. This can be done by threatening the use of force or economic means such as assistance, bribes, or economic sanctions. (Campbell & O'Hnalon, 2006). Soft power describes the ability of an actor to indirectly influence the behavior of other actors through cultural, information (values, principles, morals, ethics, and diplomatic and foreign policies) or ideological means. Soft power uses attraction power to get other actors to want what you want.

Power need not be used to be effective. In many instances, it is sufficient for the other actors to acknowledge the presence of power, real or perceived, either implicitly or explicitly, and the acknowledged or

perceived power can be as intimidating as its actual use; hence the concept of deterrence (Mastapeter, 2008).

Hans J. Morgenthau (2006) identified 9 elements of national power: (1) Geography: The most stable power of nation (2) Natural Resources (3) Industrial Capacity (4) Military Preparedness (5) Population (6) National Character (7) National Morale (8) Quality of Diplomacy and (9) Quality of Government. These elements are similar if not identical to the natural and social dimensions of national power.

Power sometimes manifests itself in material (tangible) such as the economic power of money or other resources, the possession of physical means (weapons and armed personnel) for coercion. At times, power may be psychological (intangible) in nature such as scientific or intellectual authority, social prestige, charisma, and reputation, whether accurate or illusionary. Actors respond differently to one aspect of national power.

Strategy is the art and science of deliberate calculation, formulation, development and implementation of concepts and resources (instruments of power) in a synchronized and integrated fashion within acceptable boundary of risks, to accomplish objectives and create more favorable outcomes that might otherwise exist by chance or at the hands of others. Strategy marshals all capabilities and brings them to fruition. Statecraft attempts to magnify and operationalize the relevance and impact of power through strategy and embraces the art of war, espionage and diplomacy (Freeman Jr., 2007).

## **2.3.2 Geography, Resources, Population & MIDLIFE**

### **2.3.2.1 Geography**

Geography is the most stable natural determinant of power. Geographical factors include location, climate, size and topography. Location is particularly tied to foreign policies. The connection between foreign policy and location gave rise to the study of geopolitics. Location is also closely related to climate. Climate change acts as a threat multiplier from the instability in some of the more volatile regions of the world (Center for Naval Analysis, 2007). Size and topography can be both advantageous and disadvantageous. Technological advancements may nullify some or all of the advantages of geography.

Land is undeniably a potent factor as room for dispersal and maneuver are assets. However their value is enhanced only when they have adequate communications; empty spaces and inaccessible areas are virtually liabilities. Therefore any calculation of geography as a source of national power must factor in effective occupancy and communications quality (German, 1960).

### **2.3.2.2 Natural Resources**

Natural resources include minerals, energy, agricultural and water resources. Natural resources determine the nation's ability to grow and defend itself. Industry needs to be fed by resources as productive inputs. Resources can become reserves over time as technology improves and price rises hence changing the economics of extraction and processing

Resources are unevenly distributed around the world and are becoming increasingly scarce. Very few nations, if any, are self-sufficient (Cerami &

Holocomb Jr., 2001). Nations that lack sufficient resources within their boundaries must obtain them from the international market where prices may be volatile and supply unreliable. In times of war, the international market may be inaccessible partially or entirely, and critical resources may be unavailable for imports.

Substantial amount of resources are vital for a nation to wage war, operate industrial base and reward international actors through trade and aid. Geopolitical ownership of resource rich area and the physical possession of natural resources does not necessarily translate into source of power unless the nation can develop these resources and maintain political control over their disposition. In their raw state, minerals are generally useless. Rapid industrialization has created a supplier's market and conferring economic power and influence to the commodity exporting nations. In the past, countries in the Middle East were nothing more than vast lands of sands (Morgenthau, 2006). Continued industrialization and economic growth increased the world's dependence on oil, increasing the economic leverage of the Organization of Petroleum Exporting Countries (OPEC) since 1973. So important is oil that the US federal government maintains a Strategic Petroleum Reserve to help offset the potential effects of oil supply interruptions or embargo (Mastapeter, 2008).

Certain critical metals have strategic values and essential to national security. The U.S. enacted the Defense Production Act on 8 September 1950, aimed at sustaining a credible and effective capability to harness the mobilization potential of the US to support the armed forces, while meeting the needs of the national economy and other civil emergency preparedness requirements and providing for the maximum civilian contribution to military operations as well as for the continuation of essential civilian services (Brinkerhoff, *The Strategic Implications of Industrial Preparedness*, 1994). It also provides for the effective

utilization of military resources to assist civilian authorities in responding to peacetime and wartime emergencies (Brinkerhoff, The Emergency Preparedness Mobilization Board, 2001). The Act is now managed by the Department of Homeland Security / Federal Emergency Management Agency (DHS/FEMA).

Another class of resources is agricultural land and water, which are vital to national security. Food and water satisfy the most basic needs of a nation and its people. Shortages of these resources may catapult a nation into social unrest that threatened the legitimacy of the incumbent government.

### **2.3.2.3 Population**

Population structure and balance are also imperative for developed nations. What is important is the composition of the population that are productive, normally between the ages of 18 to 45, that can best meet the needs of the nation's military and industry (Morgenthau, 2006) as well as create future generations. A nation with a greying population, coupled with generous welfare benefits will eventually face hard choices between "guns and butter" on one hand and possible limit to its national power and economic growth on the other (Mastapeter, 2008).

Virtually all population projections forecast a declining population growth in the more developed regions and a more rapid growth in the less developed region. The fastest growing regions in the Third World areas are least likely to share Western values and could potentially produce fractures in international order, more dangerous than the Cold War (Eberstadt, 1991). Population can serve as a double-edged sword. It can be a source of national power as long as the population is productive and a source of burdens if otherwise (Morgenthau, 2006).

#### **2.3.2.4 Military**

Military power is directly dependent upon the financial and technological strength of the nation's economy. Military power is a critical instrument of national power, often reserved for those crises in which other forms of national power have failed in protecting the national interest, hence known as power of the last resort. The military power is the sum of a nation's weapons and equipment, armed personnel, organizations, doctrines and industrial base. Historically, military strength has been used to gauge national power and continue to be the dominant contemporary discriminator. The military instrument of national power is highly sensitive to changes in military technologies. Revolution in military affairs (RMA) has to be accompanied by appropriate changes in military organizations, doctrines, operations and tactics (Mastapeter, 2008).

#### **2.3.2.5 Information**

The information instrument also known as psychological or strategic communication includes awe, admiration and. It refers to use of information and ideas to advance national interests and achieve the objectives of the nation. The objective is to influence the perceptions and attitudes of other actors in the international system by commonly employing propaganda. It also includes national will, morale, national character and national integration. At times this power may be the deciding factor between victory and defeat (Joint Chief of Staffs, 2006). Informational power also includes the sympathy and antipathy inspired by a nation's culture, ideas, values, morals, ethics and principles. In sum, it affects the rational and emotional components of the human mind. It directly supports and augments diplomatic instrument of power. This power is also described as soft power (Nye, 2004).

### **2.3.2.6 Diplomacy**

Diplomacy represents the political instrument of national power, which is the execution of foreign policy through diplomatic means. Diplomacy relies on the power of persuasion, to convince others to take a course of actions that allow for the successful execution of nation's foreign policy. Diplomacy needs to be supported by other instruments of power to be successful and when supported by military power it becomes commonly known as Gunboat Diplomacy. Diplomacy is the instrument of national power that builds political will and international cooperation that advances mutual interests (Mastapeter, 2008).

### **2.3.2.7 Law Enforcement**

Law enforcement instrument represents the legal means within the operational environment. It ensures the internal sovereignty and physical security. It enforces the law to protect the interest of the nation and ensure the public safety.

### **2.3.2.8 Intelligence**

The intelligence instrument of national power integrates foreign, military and domestic capabilities through policies, personnel, and technology actions to provide decision advantage to the various stakeholders. Besides supporting the other instruments of power, intelligence must have the capability to prevent, preempt and deter adversaries. It attempts to enable a nation to guard against surprises. Intelligence attempts to accurately forecast the future environment and anticipate future threats and missions (Mastapeter, 2008).

### **2.3.2.9 Financial**

The financial instrument of national power covers a smaller scope and is fundamentally concerned with the transfer of funds and banking. It endeavors to deny terrorists of access to the international financial system and prevent the movements of terrorists' assets through alternative financial networks.

### **2.3.2.10 Economic**

The economic instrument of national power attempts to leverage on the nation's wealth to influence the behavior of other actors and are concerned with issues such as regional and bilateral trade, infrastructure development and foreign investments. Specific economic means includes trade regulations, loans, foreign aid, subsidies and technology transfer. Nations use economic means to protect their industry, promote economic development, improve welfare of the people and deter destabilizing actions by other nations. Economic power is one of the predominant powers during peacetime (Mastapeter, 2008). A nation may use trade or monetary policies, economic sanctions or embargo to "punish" an adversary state. Military power may also be indirectly weakened by weakening the economic power. Economic capacity and development are the key links between the natural and social determinants of power.

### **2.3.3 Power Index Model**

To determine the national power that a state poses, we must first formulate means of measuring national power. Since national power consists of multidimensional elements, it must be expressed in the form

of an index. Not all instruments of national power especially soft power can easily measured, while some can be estimated with proxies.

### 2.3.3.1 Composite Index of National Capability

The Composite Index of National Capability or CINC in short, is a statistical measure of national power created by J. David Singer for the Correlates of War project in 1963.

$$\text{Power}^1 = \frac{(\text{tpop} + \text{upop} + \text{sp} + \text{fc} + \text{mb} + \text{saf})}{6}$$

It uses an average of nominal or ratio of world totals in six different components. It is still “among the best-known and most accepted methods for measuring national capabilities.” The CINC only measures hard powers and may not represent total national power (Chang, 2004).

### 2.3.3.2 Cline’s Model

Ray S. Cline proposed a different model that looks simple on the surface but difficult to implement. Two of the variables, strategic purpose and national will, are almost impossible to quantify with reasonable measure of objectivity (Cline, *The Power of Nations in 1990s: A Strategic Assessment*, 1994).

$$\text{Power}^2 = (C + E + M) \times (S + W)$$

---

<sup>1</sup> tpop = Total population, upop = Urban population, sp = Steel production, fc = Fuel production, mb = Military budget and saf = Military personnel

<sup>2</sup> C = Critical mass (territory and population), E = Economic strength, M = Military strength, S = Strategic purpose and W = National will

Finding suitable proxies to substitute the two variables are difficult. Still the Cline Model is popular among Indonesian military officials who often cite it to demonstrate national power.

### **2.3.3.3 Comprehensive National Power**

There are two dominant publications on Comprehensive National Power. The first one is by the Academy of Military Science (AMS) that draws heavily from the previous work of Senior Colonel Huang Shuofeng. The second one is by the civilian Chinese Academy of Social Sciences (CASS) who had a noted author as their senior advisor. Both institutes use the premises established by Deng Xiaoping much earlier on and some of the authors were directly involved with Deng's estimates.

The CASS version of comprehensive national power covered eight major areas comprising of sixty-four indexes (Appendix 11).

## **2.4 Defense Economics**

Defense economics is very much relevant for the military element of the national power. Defense economics is not just about money and budgets as much as it is also about the economics of war times and peace times; war economics, disarmaments, conversion, etc. Some defined it as the application of economic tools and analysis to defense such as analyzing the impact of defense spending or cuts (peace dividends) on the civilian (Hartley, 2011).

Defense policy issues such as whether defense is a worthwhile investment continue to prevail. The common argument is that defense is necessary to address threats, but then again the question arises at what

costs? This naturally leads to the next question of what is the appropriate size of the defense budget? (Hartley, 2011)

#### 2.4.1 Defense Sector Inefficiencies

The defense sector has long been accused to generate considerable inefficiencies (Appendix 12) for a variety of obvious reasons. Firstly, the defense market is imperfect. Prohibitive barriers to entry and exit make the supply side oligopolistic while the demand side is characterized by monopsony. Secondly, Governments usually give preference to their defense industrial base (DIB) on the grounds of jobs creation, technology innovation and improvement in the balance of payment. These make it difficult to achieve substantial cost savings through competitive procurement policy.

#### 2.4.2 Four Principles of Defense Economics

##### 1. Principle of Substitution

For a given objectives, i.e. security, there are alternatives means of achieving it. The objective is to optimize resource usage. Optimization is diabolical with the following maxims:

- |                                      |                                     |
|--------------------------------------|-------------------------------------|
| (1) Output Fixed, Minimize Resources | $O \rightarrow \bar{\text{Min.}} R$ |
| (2) Resources Fixed, Maximize Output | $R \rightarrow \bar{\text{Max.}} O$ |

Just to cite an example of illegal fishing where fast patrol boats may be substituted with maritime patrol aircrafts (MPA) or helicopters. Defense planners in many instances are compelled to choose between quality and quantity, i.e. between new equipment or used and upgraded equipment.

## 2. Principle of Contestability and Rivalry

There is an unwritten rivalry between the branches of armed forces for the limited defense budget. The allocation of the defense budget should be on the basis of each branch comparative advantage. For example the defense of airspace need not automatically be assigned to the air force if and when the army's land-based guided missiles can do a better job. Rivalry can exist too between in-house providers and outsourcing contractors or among defense contractors.

## 3. Principle of Self-Interest

Neither the Ministry of Defense nor the armed forces have any incentives for economizing. To them the more the defense budget, the better it is. None of the branches is willing to "sacrifice" its budget for the other branch. All this is because every ministry or branch is acting to serve its own interest.

## 4. Principles of Incrementalism

The law of economics mandates a diminishing return or utility. Investments in defense must consider equalizing returns at the margin. That is the marginal benefit must equal the marginal cost.

### **2.4.3 Defense Input-Output Model**

The inputs to defense are rather obvious which includes personnel, weapons and equipment, and support including technology. Defense is a public good in the form of service hence intangible. Therefore its outputs are less obvious:

#### 1. Peace

Defense protects the nation's citizens, assets, firms, infrastructures as well as its national interests as reflected in deterrence and war fighting

capabilities, contributions to peace making, disaster relief and humanitarian aid. Looking at a different point of view, defense resembles an insurance policy against the known and unknown future threats and contingencies.

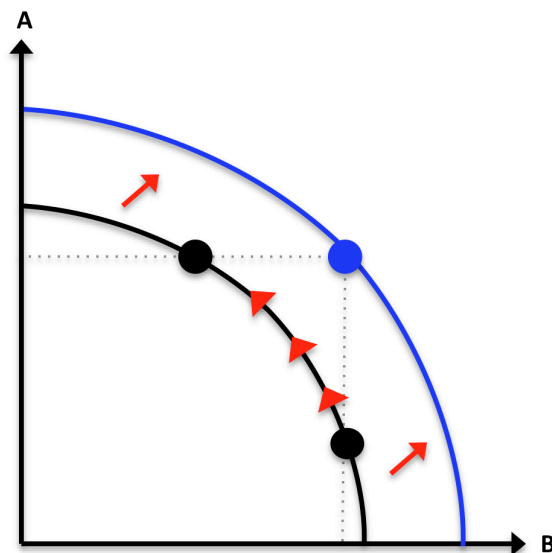
## 2. Prosperity

Defense makes trade routes safe and therefore facilitates international trade and investments.

### 2.4.4 Defense Resource Limitations

As with all economies and sectors, the defense sector faces resource constraints and tradeoffs. This situation can be more succinctly explained using a simple diagram known as the Production Possibility Frontier (PPF).

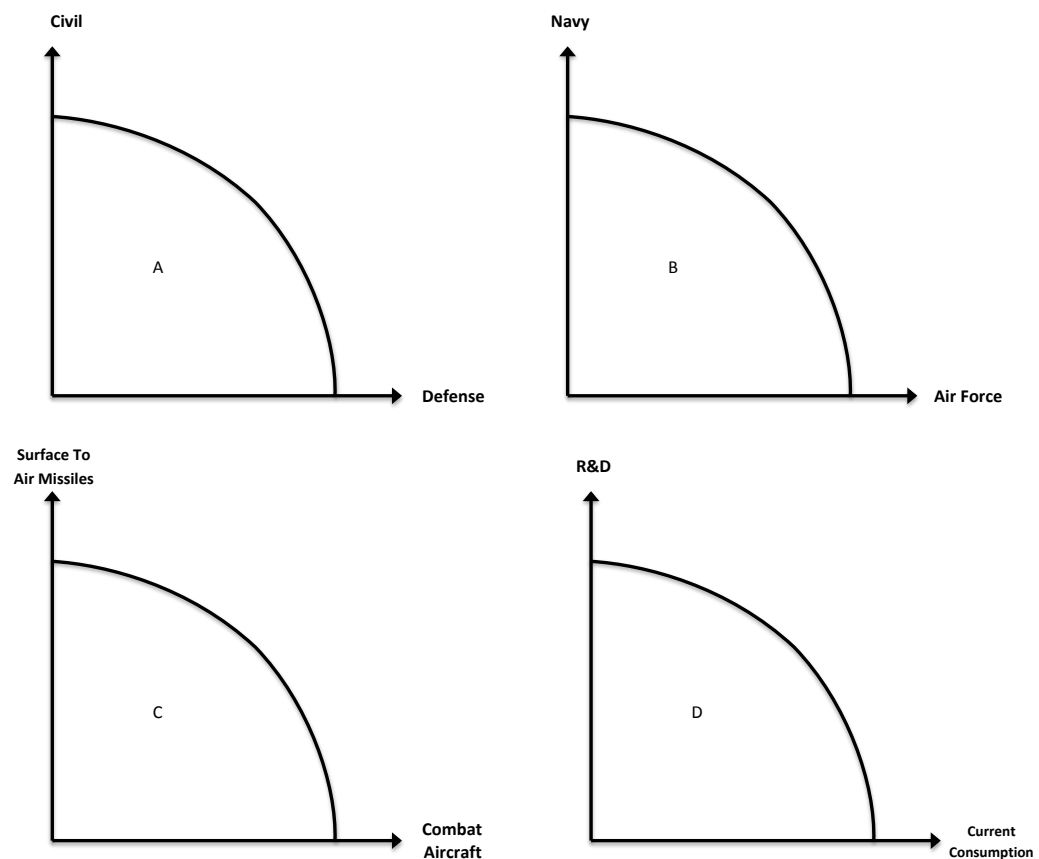
**Figure 2.1** Production Possibilities Frontier (PPF)



The graphics depicts tradeoffs as well as diminishing returns characteristics. To produce an additional unit of A, one must reduce

production of B (tradeoffs), and as additional units A is produced, more of B is sacrificed (diminishing returns). The only way to increase production of A without sacrificing production of B is to increase the total production facilities, which is represented by outward shift in the PPF, curve. For the defense sector, PPF can be applied from a macro level and down to the micro level.

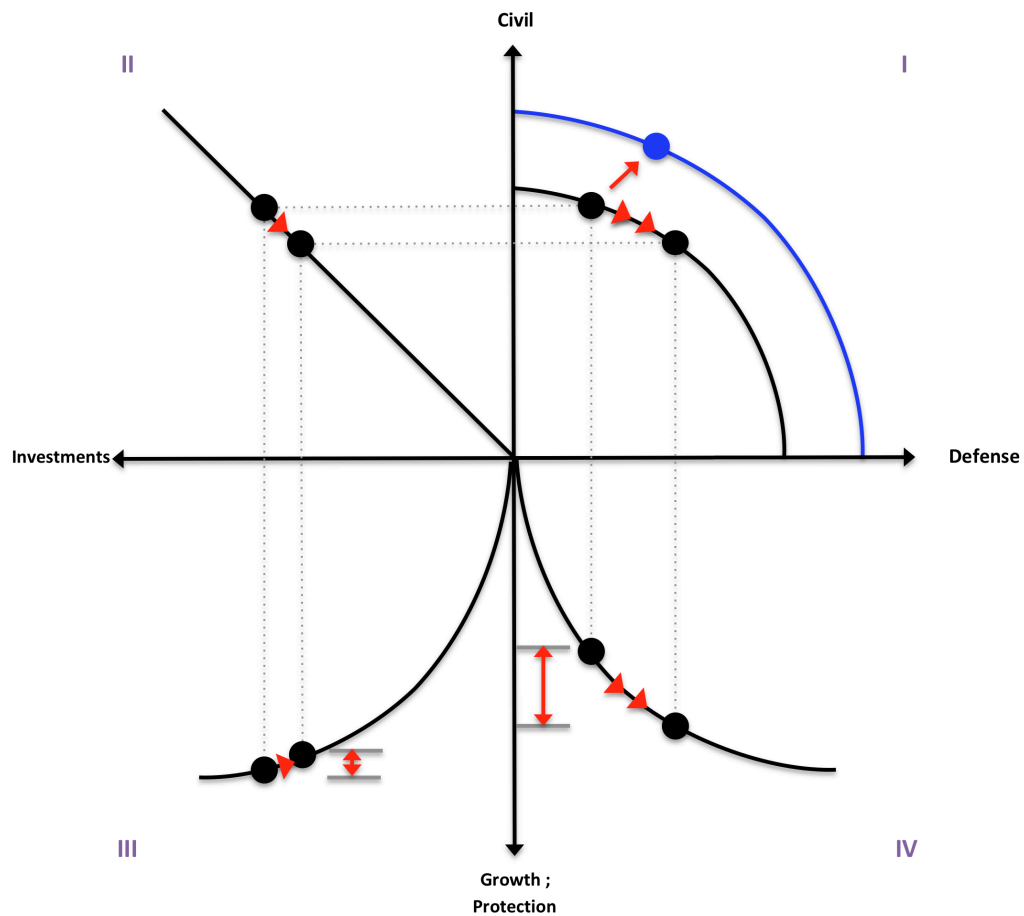
**Figure 2.2** PPF Comparisons



### 2.4.5 Guns Versus Butter

The diagram depicted in Figure 2.2 (a) is also commonly referred to as guns versus butter model, is variation of PPF. This model can be used to explain the impact of choices of budget allocation on the economy.

**Figure 2.3** Economic Analysis of Defense (Guns vs. Butter Model)



Source: (Hartley, 2011) and modified by the author.

Figure 2.3 shows that for a given shift in resource allocation from the non-defense sector (civil) to the defense sector as depicted in quadrant I will reduce investments as depicted in quadrant II. The reduction in investments will ultimately lower economic growth as shown in quadrant III. However, the increased defense spending will increase protection, i.e. the protection of the state, its citizens, assets, infrastructure, firms and national interests.

The diagram also shows more interesting facts. Here the diagram is drawn to reflect the fact that only a small portion of the nation's resources is devoted to the production of defense. Therefore, a small reduction in civil output will generate an even larger increase in defense output, which

means much greater protection compared to its costs. With so much resources allocated to civil output, its growth should also be nearing its peak level. Therefore, a small reduction in investments will not slow down growth significantly. The diagram also shows that even when we do not reallocate the resources to defense production and focus on the civil side to maximize growth, by maintaining the defense/civil allocation ratio, the available resources for defense will inevitably increase due to the increase in production possibilities.

#### **2.4.5.1 Defense Spending and Economic Growth**

Numerous literatures have also discussed the effects of military spending on economic growth (Sandler & Hartley, 1995), but the empirical results are ambiguous. The seminal paper in this area is by Benoit who revealed a positive relationship between military spending and economic growth for 44 developing countries for the period 1950-1965 (Benoit, Growth and Defense in Developing Countries, 1978) (Benoit, Defense and Economic Growth in Developing Countries, 1973). Thompson (1974) argues that military expenditure can be economically productive to the extent that it enhances the state's national security and improves the enforcement of property rights, thus encouraging private investment and growth.. Furthermore defense spending, particularly defense research and development, provides direct technology benefits and spin-offs to the civil sector that promotes growth.

On the other hand, Smith (1980) found a negative effect of military spending on investment, with a coefficient of -1 for 14 large OECD countries for the period 1954-1973. Deger (1986) reconfirmed Smith's findings about the overall negative effect of military spending on growth. Additionally, several authors defended the crowding-out hypothesis and

supported the idea of the "peace dividend that implied military spending reduces growth (Torres, 2011).

Barro (1981) studied military spending impact on economy, focusing on the business cycle implications of government expenditures. His study suggested that temporary defense purchases have a significant expansionary effect on output, while permanent defense purchases have a significantly weaker, but still positive effect (Barro R. J., 1981). Several scholars also tried to identify the impact of military spending on economic growth using various statistical models such as Vector Auto Regression (VAR) that provided empirical evidence that public spending crowd-in private consumption and Dynamic Stochastic General Equilibrium (DSGE) that showed a contradictory crowding-out effect to private consumption. Blanchard and Perrotti (2002) used VAR method and discovered that post-WWII military spending shocks reduce private investments but increase consumption while Baxter and King (1993) used the DSGE model to come to an opposite conclusion (Baxter & King, 1993).

Ramey and Shapiro (1998) employed yet another different method using narrative identification approach to construct "war dates" in the three episodes: the Korean War, the Vietnam War and the Carter-Reagan military buildup and discovered that while government spending raises output, it lowers consumption. When World War II is included, the multiplier is estimated to be around unity compared to the estimated is 0.6-0.8 when excluded (Ramey & Shapiro, 1998).

Barro and Redlick (2009) concluded that defense spending crowds-out other components of the GDP particularly investment, with a multiplier for changes in defense spending of considerably less than one. But this occurrence is not limited to defense spending but applicable to

government non-defense spending and net export (Barro & Redlick, 2009).

Brumm (1997) agreed with Thompson (1974) that the provision of national defense protects property rights and thereby fostering economic growth. However, to the extent that military expenditure diverts resources that could be more productive in other sectors of the economy, the long-term economic growth rate will be degraded, thus making the net effect of military spending on economic growth ambiguous. In his cross-country studies, he uses data from 88 countries and two models to examine a variety of determinants of long-term economic growth. The first model he used is the Barro Regression model as follows:

$$\text{GYP}^3 = \beta_0 + \beta_1\text{INV} + \beta_3\text{GPO} + \beta_4\text{RGDP74} + \beta_5\text{MES} + \beta_6\text{GOV} + \beta_7\text{GDC} + \beta_8\text{XSG} + \beta_9\text{DEVELOP} + \varepsilon$$

The results depicted in Figure 2.4 shows that military expenditure has a strong positive coefficient of 12.1991 to the growth rate of per capita GDP, in fact that second highest positive coefficient after investments. The estimated coefficient is statistically significant at the 0.05 level or 95% confidence level.

---

<sup>3</sup>GYP = Growth rate of real GDP per capita (1974 – 1989), INV = Average investment share of GDP (1974 – 1989), SEC = 1974 secondary school enrollment rate, GPO = Average annual population growth rate (1974 – 1989), RGDP74 = Level of real per capita GDP in 1974, MES = Average military expenditure share of GDP (1974 – 1989), GOV = Average government consumption share of GDP (1974 – 1989), a proxy for fiscal policy, GDC = Growth rate of domestic credit (1974 – 1989), a proxy for government policies directed at the financial sector of the economy, XSG = Growth rate of the export share of GDP (1974 – 1989), a proxy for trade policy, DEVELOP = A dummy variable set equal to 1 if the country was classified in 1983 as “developing” by the World Bank (1983), and set equal to 0 otherwise

**Figure 2.4** Results Using Barro Regression Model

---

$GYP = 0.3455 + 18.1495 \times INV + 2.0111 \times SEC - 0.7097 \times GPO$	
(0.3006) (5.5257) (1.1176) (-2.4430)	
$- 0.5595 \times RGDP74 + 12.1991 \times MES - 6.5406 \times GOV$	
(-3.3704) (1.6681) (-1.2352)	
$+ 0.0003 \times GDC + 0.0716 \times XSG - 0.8828 \times DEVELOP$	
(0.0353) (1.1621) (-1.0188)	

---

<b>Goodness of Fit Summary</b>	
<i>Adjusted R<sup>2</sup></i>	0.4172
<i>F-statistic</i>	7.9206
<i>p-value</i>	Less than 0.0001

---

NOTE: Estimated *t*-values are in parentheses.

Source: (Brumm, 1997)

The other model used is the LISRREL model that incorporate government disarray as follows:

$$GYP = \gamma_1 INV + \gamma_2 SEC + \gamma_3 GPO + \gamma_4 RGDP74 + \gamma_5 MES + \gamma_6 DISARRAY + \varepsilon$$

A government in disarray has an adverse impact on the nation's economic performance.

**Figure 2.5** Results Using LISREL Model

---

<b>Behavioral Equation</b>	
$GYP = 16.4246 \times INV + 2.8719 \times SEC - 0.7949 \times GPO$	
(6.1847) (2.3756) (-3.3143)	
$- 0.3872 \times RGDP74 + 22.4795 \times MES$	
(-2.4416) (4.2071)	
$- 0.6340 \times DISARRAY$	
(-3.1205)	

<b>Indicator Equations</b>	
$GOV = 0.0462 \times DISARRAY$	
(14.7012)	
$GDC = -4.6027 \times DISARRAY$	
(-1.9997)	
$XSG = -1.1018 \times DISARRAY$	
(-4.0751)	

---

Source : (Brumm, 1997)

The findings using LISREL model is even more astonishing. When a country experiences a government in disarray, military spending has an even greater positive impact on the per capita GDP growth rate of 22.4795. This is the highest positive coefficient while the investments only had a coefficient of 2.8719. This goes to explain that when a country is experiencing disarray, investments can do little to stimulate growth. It is imperative to restore order and safety first and hence increases in military expenditure have the highest positive impact in times of “instability”.

Notwithstanding the large existing literature, the results are ambiguous: some papers find a positive relationship between defense spending and growth, others find a negative relationship and there are also others who find that the effects are close to zero.

#### **2.4.5.2 Income Function and The Keynesian “Cross”**

Rather than arguing endlessly regarding the merits of defense spending on economic growth, Professor Kong Zaujun (2011) found a third explanation. He is convinced that defense spending is at best growth neutral. He explained that by allocating more resources to defense, which stimulates economic growth, the cut in non-defense spending will on the other hand negate that growth (Kong, 2011).

Another basic economic tool that can be used to support Kong’s arguments is the National Income Model:

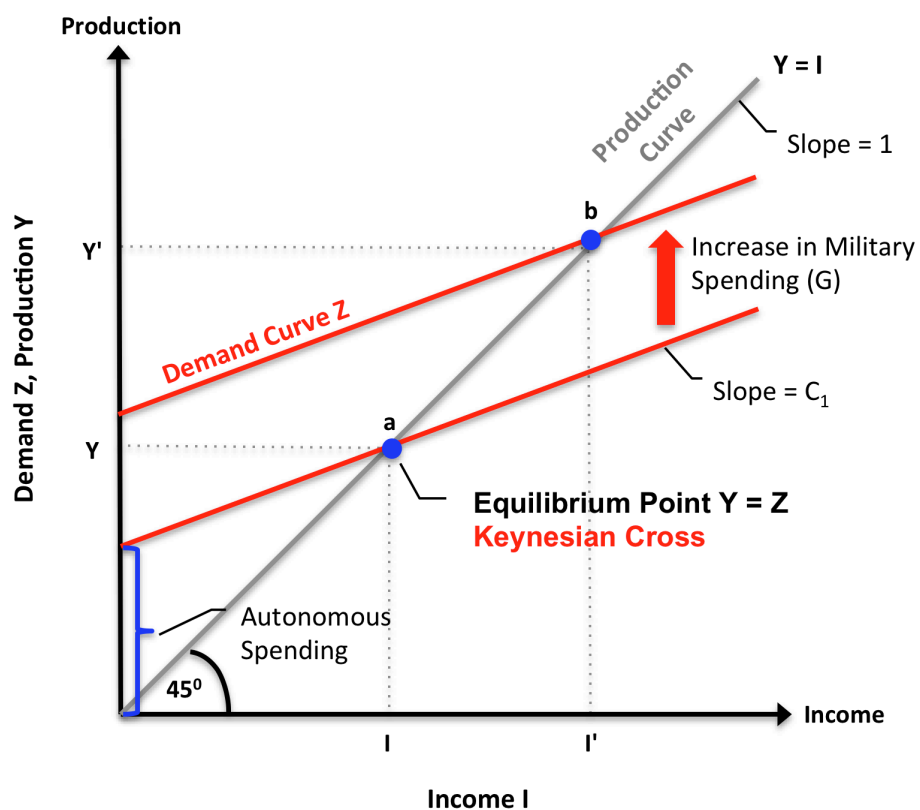
$$Y^4 = C + I + G + E - M$$

---

<sup>4</sup> Y = Income, C = Consumption, I = Investments, E = Export, M = Import

The income model shows that for any increase in government spending will increase national income regardless of where the budget is allocated. Using the Keynesian Cross model, we can show that the increase in output will be greater than the increase in government spending, also known as the multiplier effect as shown in Figure 2.6.

**Figure 2.4** Demand Function and Keynesian Cross



Source : (Blanchard & Perotti, 2002) and modified by the author

An autonomous increase (increase in government spending) as opposed to budget reallocation will trigger an even greater increase in income due to the multiplier effect. The reality is there is a minimum amount of consumption that is fixed regardless of income level and hence we shall call it autonomous consumption/spending denoted by  $C_0$ . People may not necessarily spend all additional income earned. In practice people tend to spend some and save some of every additional dollar earned. The amount of additional income spent is known as marginal propensity to

consume denoted by  $c_1$ . Moreover people cannot spend portions of income that are obligated for the government in the form of taxes. Hence they can only spend their disposable income ( $Y - T$ ). Therefore, if we exclude the exports and imports, the national income model can be further expanded as follows

$$Y = C_0 + c_1(Y - T) + I + G$$

Rearrangement

$$Y = C_0 + c_1Y - c_1T + I + G$$

$$Y - c_1Y = C_0 - c_1T + I + G$$

$$(1 - c_1)Y = C_0 - c_1T + I + G$$

$$Y = 1/(1 - c_1) (C_0 - c_1T + I + G)$$

Where  $(1 - c_1)$  is the marginal propensity to save and  $1/(1 - c_1)$  is the output multiplier that resulted in a more than 1 to 1 increase in output. The national income model also shows that for any autonomous increase in government spending, its positive effect on the national income will be offset by any portion of that increase that require importation of goods and services.

#### **2.4.6 Arms Race and Alliances**

Using game theory, we can actually “predict” that the Nash Equilibrium is for countries to engage in arms race. The reasons countries tend to break an arms treaty and enter into an arms race are distrust and self-interest.

Taking hypothetical nations A and B, who have previously signed an arms treaty where both nations will maintain similar military strength

(military force and weapons), they will each enjoy a security level of 80, hence total security surplus of 160.

**Figure 2.5** Arms Race Game Theory

		Nation A	
		Maintain	Arms Build-Up
Nation B	Maintain	80 / 80	100 / -30
	Arms Build-Up	100 / -30	40 / 40

Source: (Blanchard & Perotti, 2002) and modified by the author

From nation A's point of view, if nation B maintains its military strength, nation A will achieve a security level of 80 if it chooses to honor the treaty, or achieve a security level of 100 if it chooses to build-up its military strength. Therefore on conditions that nation B maintains its military strength, nation A will choose to "secretly" build-up its arms to enhance its national security. If nation B breach the treaty, and nation A

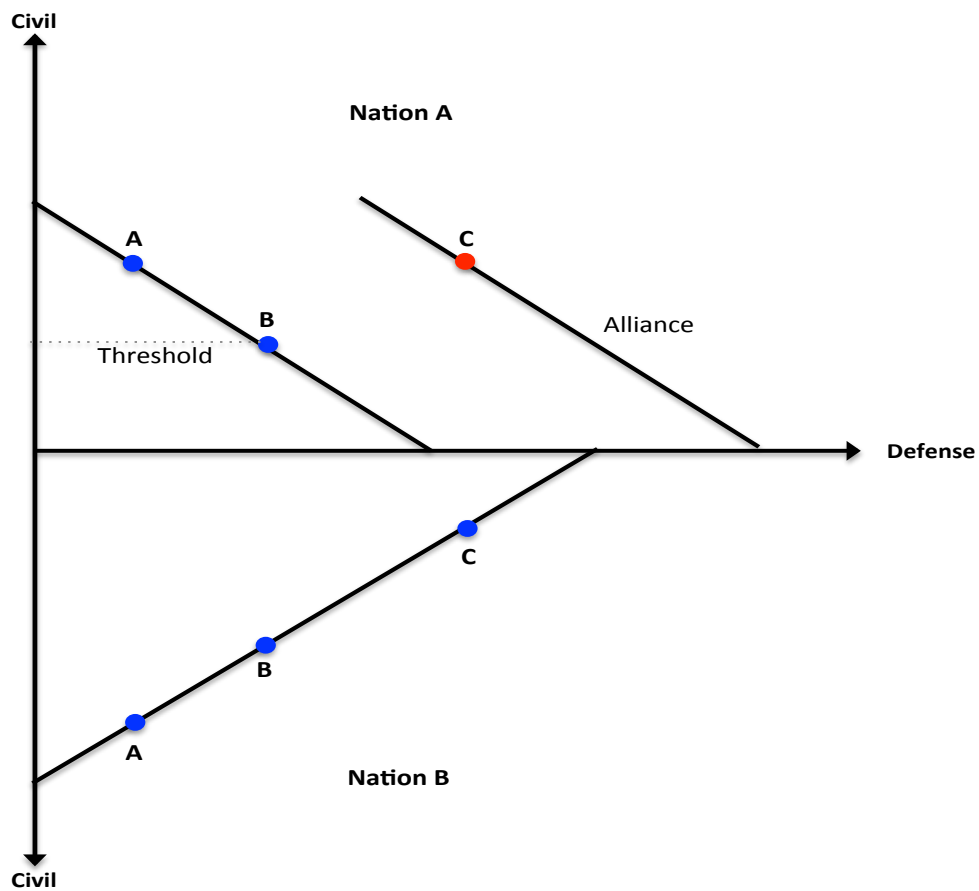
for whatever reasons chooses to maintain its military strength, then nation A's security will indefinitely suffer to level negative 30. On the other hand, if it chooses "a tit for that strategy" and follows suit, its security level will be 40. Again under the conditions that nation B breaches the arms treaty, nation A will be better off to build-up its military strength. Here we can conclude that in either case of whether nation B breaches the arms treaty or not, it is in the nation A's interest to build-up its military.

The same goes for nation B, who in either case is better off to ignore the arms treaty. Building trust and confidence that the other nation will honor the arms treaty is a daunting task. This coupled with the lack of reliable monitoring system to keep each other in check will ultimately lead to the Nash Equilibrium where both nations engage in an arms race.

However, not all nations have the same amount of resources. Some of the richer nations can afford to allocate more of its state budget for defense spending while other nations cannot. Therefore an arms race will continue until one nation reached its threshold level for defense spending or has exhausted all its resources for defense spending. In such a case, the nation will search for alternatives and may opt to form alliance or collective security rather to enhance its national security.

In Figure 2.6, both nations started with a defense spending level at A. When nation B increased its military expenditure to B, nation A follows suit. Being a richer country, nation B chooses to increase its military expenditure further to C to gain a security upper hand. Assuming that nation A has reached its threshold level for defense spending, nation A cannot spend more money on defense. Even if nation A spends all its resources on defense, it still cannot match the spending of nation B.

**Figure 2.6** Arms Race and Alliances Model



Source: (Hartley, 2011)

Nation's A best solution will be to form an alliance. With the combined military strength, it can now match that of nation B. In addition, it can reduce its military spending to where it initially started without feeling less secure.

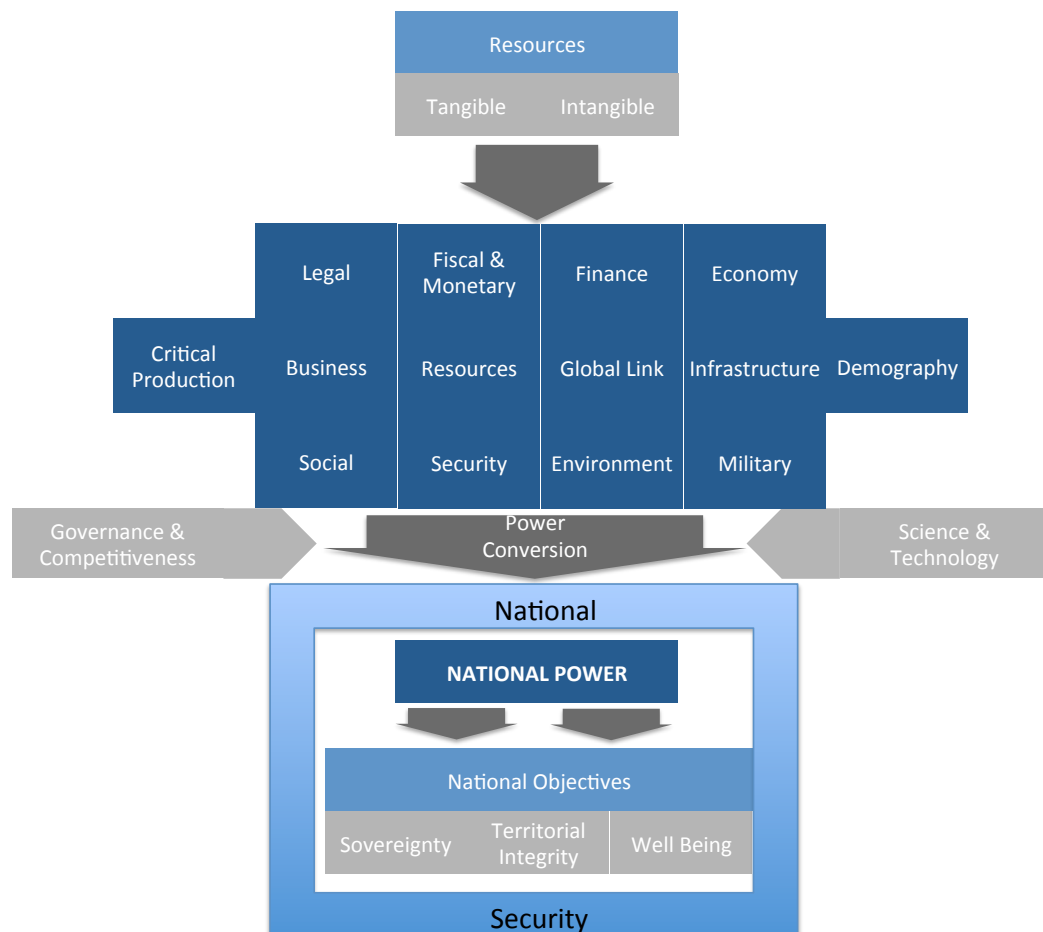
## 2.5 Theoretical Framework

Based on the literature review, we formulate the following theoretical framework. A state poses certain resources both tangible and intangible. These resources are potentials and must be converted into actual power.

The power conversion is influenced by the public governance and the available technology then.

When a state possesses sufficient national power to protect its national interests (objectives), it achieves national security. States will continually adopt policies aimed at maximizing their national power optimally to strengthen its power relative to other states and bolstering its national security

**Figure 2.7** Research Framework



## Chapter Summary

Realism is found to be most relevant considering the events that are happening around the world. In Eurasia, Moscow is retreating towards Cold war stance and increases its reliance on nuclear weapons as its security policy. In the Asia Pacific region, tensions continue in the Taiwan Straits and Korean peninsula. Besides Taiwan, China also has territorial disputes over Diaoyu islands with Japan, and in South China Sea with Vietnam and Korea. Over in the Middle East, the Arab Spring may spread further to countries like Bahrain. The “War Within” in Syria may destabilize the Arab region. Iran continues to be at loggerheads with Israel and US and may undermine the already volatile region. In South America region, Argentina is also reviving its dispute over Falkland Island with United Kingdom and asked its neighbor Chile to cease trading with the island.

Realism is also called power politics and focuses on state security and power as well as portrays the anarchic international system. Because of this continuous power seeking, a multipolar world is more prone to war than a bipolar world.

Mercantilism is the economic justification for the aggressive pursuit of national interest. It compels states to pursue wealth and power to enhance the nation’s independence and national security. Wealth is accumulated through trade surplus and promotion of domestic industries to augment the productive power. Wealth in turn enables military modernization that boosts military power and ultimately strengthens national security.

As the world becomes a hybrid between unipolarity and multipolarity, the Balance of Power (BoP) concept becomes more evident. Philippines and

Vietnam are realigning with United States to balance the increasing power of China.

The US will advance its national interests by strengthening their domestic foundation and integrating all elements of national power. The US has categorized national interest as vital, extremely important, important and less important or secondary. For vital and extremely important national interests, the US is still predisposed to a military response. The US can also invade and attack other countries when its vital interests are threatened.

Indonesia's national interests are covered in the preamble of the national defense policy contained in the Presidential Decree No. 41 2010 and it includes national sovereignty, territorial integrity and the protection and safety of its citizens. The third element is more than physical safety but also to protect the citizen's livelihood and economic well-being. Indonesia's national security will be reflected by the confidence held by the great majority of the citizens that the state has the military capability and effective policy to prevent its adversaries from effectively using force in preventing a nation's pursuit of its national interests.

At the primitive level national power can be measured by the military power and the economic capacity to mobilize war. But those measurements alone have been refuted by the Vietnam War. National power is largely determined by military power in the Cold War era but in today's world non-military elements are gaining significance. Even war requires the mobilization of various national resources and not just military resources.

Instruments of national power can be categorized either as natural (geography, resources and population) or social (MIDLIFE). Morgenthau identified nine elements of national power as (1) geography, (2) natural

resources, (3) industrial capacity, (4) military preparedness, (5) Population, (6) national characteristics, (7) national morale, (8) quality of diplomacy and (9) quality of government. The three most popular power index model is Composite Index of National Capability (CINC), Cline's Model and the Comprehensive National Power developed by the Chinese counterpart.

Lastly, this chapter also discusses the relevant theories in the field of defense economics. The ongoing discussion of whether defense spending actually boosts or hampers economic growth has yet to achieve unanimous conclusion. The Income model shows that defense spending is neutral, while the Gun versus Butter Model shows a slight negative impact on growth. One study shows that defense spending has a large positive coefficient for a country experiencing disarray. Using game theory, it has been shown that it is very difficult for states to honor any arms treaty. It is also shown that an alliance is an alternative option for less wealthy states in achieving national security that correlates to the balance of power theory.

## **Chapter 3**

### **RESEARCH METHODOLOGIES**

This chapter will discuss the research methodologies employed in this thesis. Research types can be differentiated by various criteria such as objectives, methods, explanation level, data types and characteristics. The last criterion is the most commonly used and it categorizes research into quantitative, qualitative and mixed research that combines quantitative and qualitative techniques. This chapter also outlines how data are collected, managed and processed.

#### **3.1 Unit Analysis and Data Collection**

##### **3.1.1 Unit Analysis**

This thesis will measure national power and compare the results for the various countries. Therefore the unit of analysis will be the states themselves. States that are included in the Military Balance 2010 will be included in this research. The reason for this is that the available data of a state's military will be the first criterion as it is an important element that will be used to measure national power. In total there are 170 states that will be included in this research.

##### **3.1.2 Data Sources**

Sources of data will be mainly secondary in nature. It will be collected from reputable institutions such as non-government organizations (think tanks), multilateral agencies such World Bank and official statistical database maintained by national governments. Data collected may be in print format and in digital format

Data will be compiled from diverse sources that are both publicly available and reliable (Appendix 13). This method of data collection is also known as documentation technique (Sangaji & M., 2010).

Electronic data will be downloaded or purchased online. Since the data collected are from publicly available data, no sensitive information is acquired and hence the result of this study may be disclosed or published without any risks related confidentiality and similar issue.

An interview with experts in the field of power theory will be ideal. However, since this is a new field in Indonesia and the experts are from overseas, this step will be scratched.

### **3.2 Research Design**

Based on some literature, the research of this thesis may be classified as exploratory research that uses literature survey (Sukandarrumindi & Haryanto, 2008). Other may also consider this research as inductive research that attempts to explore the facts (Sangaji & M., 2010).

### **3.3 Research Procedure**

Since data collected are from diverse sources, it is clear that data must be processed to ensure conformity such as in the naming of countries. Once that has been done, due to the different scales, scores and others, the data must first be converted into a common base. The most common method is to convert the numbers into common index or scale of 0 to 100. Again due to the different relationships, different formulas must be applied as explained below.

For data that is presented as percentage and having positive relationship, no adjustment is made and figures are used as it is.

For data that are presented either in nominal or in a scale rating and have positive relationships, the following formula is applied:

$$\text{Normalized Figure} = V_n / (V_{\max} - V_{\min}) \times 100$$

Where,

$V_n$  = Actual Data

$V_{\max}$  = Maximum score on the scale

$V_{\min}$  = Minimum score on the scale

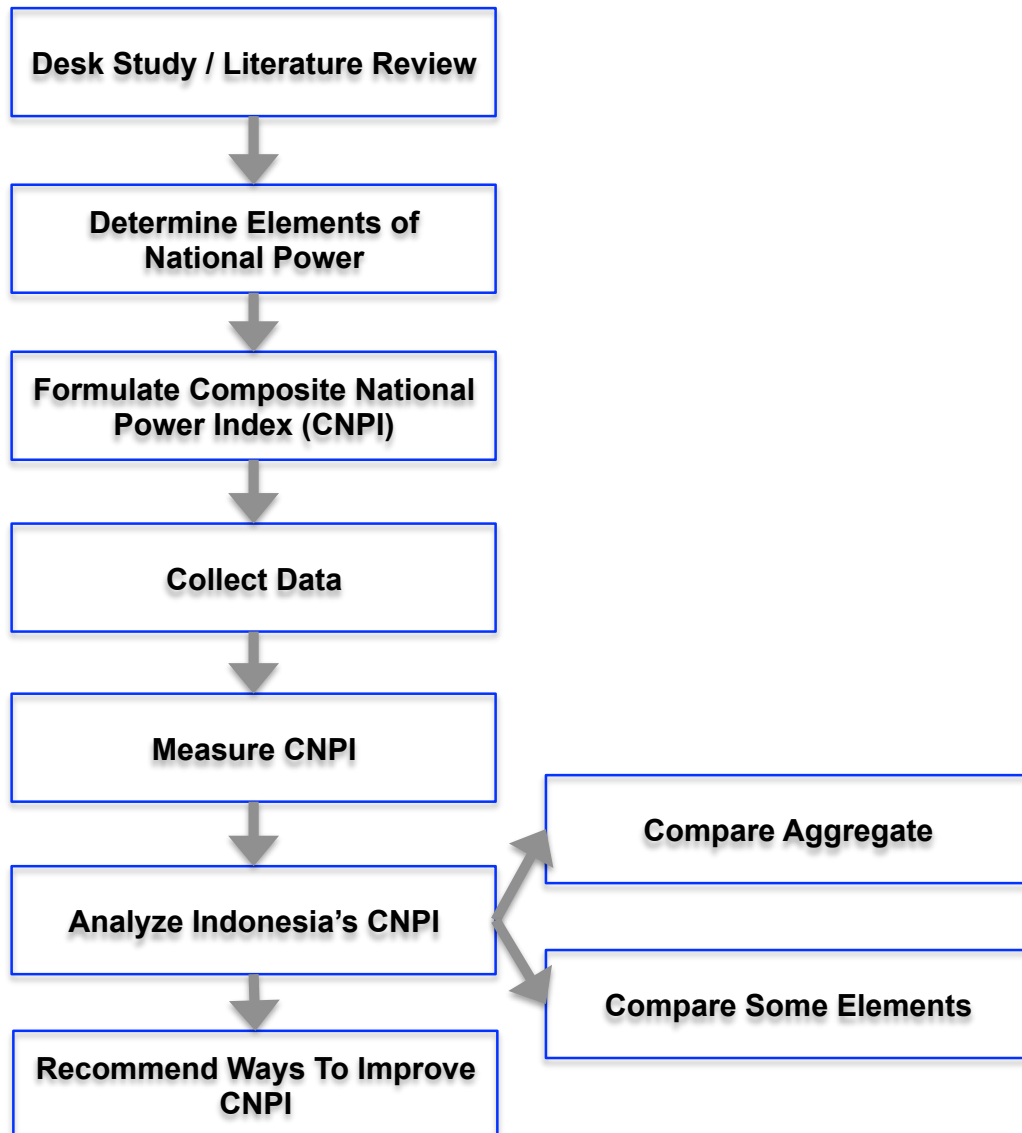
For data that are presented either in nominal or in a scale rating and have negative relationship, the following formula is applied:

$$\text{Normalized Figure} = (V_{\max} - V_n) / (V_{\max} - V_{\min}) \times 100$$

The next step once the data has been normalized is to provide the weightings of each variable to formulate the Composite National Power Index equation. Missing data are approximated using the global average unless the data involves a production value or a nominal. It is very normal that this step is highly exposed to the author's bias. In order to minimize that, an analytical hierarchical process may be adopted. However, this process is complicated and due to the time limitations of this research, a Delphi method involving ten individuals from various backgrounds including the armed forces, ministries and private sectors will be adopted instead.

The diagram below describes the process of the whole research.

**Figure 3.1** Research Procedures



### Chapter Summary

This chapter has presented the research methodologies that the readers may refer to have a better understanding of how the research is conducted and for other researchers to review prior to duplicating the research to verify its validity.

It is also explained in this chapter that data from the various sources are first converted into a common denominator. It also explained the procedure on how to deal with missing data as part of its data intervention. To formulate the Composite National Power Index (CNPI), a Delphi method is used to determine the weightings and the formulation of each variables.

Based on the literature review, the various power models have been harmonized and 16 sub-indexes have been identified:

1. Government
2. Legal
3. Fiscal and Monetary
4. Finance
5. Economy
6. Critical Production
7. Business
8. Resources
9. Global Link
10. Infrastructure
11. Demography
12. Social
13. Science and Technology
14. Security
15. Environment
16. Military

These sub-indexes contain 69 components and the components are composed of 351 variables. Government and Science and Technology are treated as power multiplier while the rest of the indexes are considered as additive power.

## Chapter 4

### INDONESIA'S COMPOSITE NATIONAL POWER INDEX AND ITS WORLD RANKING

In this chapter, we will be discussing the findings of the research. There are altogether 16 sub-indexes that are used in this research that are believed to affect national power. Based on the Delphi research, two of the sub-Index are agreed to serve as power multipliers and they are the Government and Science and Technology components. 69 components make up the 16 sub-indexes that in turn are composed of 351 variables. (Appendix 13)

The Composite National Power Index equation is:

$$\text{CNPI}^5 = 3 \sqrt{(LG + FM + FC + EC + CP + BZ + RC + GL + IF + DG + SL + SC + EV + ML) \times GO \times ST}$$

Since there two sub-index that function as power multiplier, in order to maintain the index at a scale of 100, the cube root is used in the equation. Next we will discuss the results in a logical order starting with the final CNPI result. The results of Indonesia's CNPI will also be compared with other countries based on certain grouping criteria such location, country size, national population and emerging markets to see

---

<sup>5</sup> LG = Legal  
 FM = Fiscal and Monetary  
 FC = Finance  
 EC = Economy  
 CP = Critical Production  
 BZ = Business  
 RC = Resource  
 GL = Global Link  
 IF = Infrastructure  
 DG = Demography  
 SL = Social  
 SC = Security  
 EV = Environment  
 ML = Military  
 GO = Government  
 ST = Science and Technology

how Indonesia fared within these sub-groups. We will then drill further into the details of each sub-index in a logical order starting with government.

Towards the end of this chapter, there will a more intensive discussion will be on the military sub-index. In that section, we will compare the military variables with the rest of the world. The comparison shall focus on the military preponderance, i.e. comparing the quantity of the military budget, personnel and equipment. This is done to determine whether there is a need to invest further in Indonesia's military power.

#### 4.1 Composite National Power Index

**Table 4.1** Indonesia's Composite National Power Index

No	Code	Sub-Index	Weights	Score	Rank
1	GO	Government		58.04	64
2	LG	Legal	3%	46.93	88
3	FM	Fiscal and Monetary	4%	76.00	45
4	FC	Finance	3%	51.84	70
5	EC	Economy	25%	45.71	54
6	CP	Critical Production	5%	10.32	7
7	BZ	Business	3%	51.34	98
8	RC	Resources	5%	21.46	9
9	GL	Global Link	5%	26.52	40
10	IF	Infrastructure	5%	39.07	108
11	DG	Demography	5%	14.11	8
12	SL	Social	5%	48.01	120
13	ST	Science and Technology		36.89	105
14	SC	Security	4%	54.42	87
15	EV	Environment	3%	53.19	94
16	ML	Military	25%	7.73	19
	<b>CNPI</b>			<b>41.42</b>	<b>60</b>

Based on the data, Indonesia's CNPI is ranked 60<sup>th</sup> in the world. With total countries of 170 that are compiled in this research, the median rank

will be 85. Based on that Indonesia did below the median in 7 sub-indexes and performed better than the median rank in 9 sub-indexes. Indonesia managed to perform very well in 3 sub-indexes where it managed to be ranked among the top 10. The Science and Technology sub-index dragged the total score down by a significant amount, as it is a power multiplier and Indonesia scores badly.

This is a startling discovery when considering that Indonesia's Population is ranked 4<sup>th</sup> and the GDP is ranked 18<sup>th</sup>. We would expect Indonesia to be ranked among the top 20 most powerful nations, worthy of being a G20 member. In fact if we are to use the Cline's model of  $(C + E + M) \times (S + W)$ , while ignoring  $(S + W)$ , we may very well be ranked among the top 20. The C = Critical Mass consists of both population and land area. Being ranked 60<sup>th</sup> meant that Indonesia is in the 35<sup>th</sup> percentile.

Next we shall attempt to look at Indonesia's position from a different perspective and compare its ranking among the ASEAN countries, large countries, large population countries and emerging markets. The results are as follows.

**Table. 4.2** ASEAN Countries

No	Countries	Score	Rank
1	Singapore	56.00	18
2	Malaysia	47.03	32
3	Indonesia	41.20	60
4	Brunei Darussalam	40.74	64
5	Thailand	39.83	73
6	Laos	37.19	102
7	Philippines	36.56	112
8	Myanmar	35.87	124
9	Cambodia	33.97	141
10	Vietnam	33.44	146

Indonesia being the largest among the ASEAN states only managed to rank 3<sup>rd</sup>. Singapore being the smallest among the ASEAN states, on the

other hand managed to surprisingly snatch the top position. Though it is a small country, it managed to performed very well in many areas including legal, economy, business, global link, infrastructure, social, science and technology, and security. Its military score was impressive too despite being a small country. In total Singapore performed well in 8 areas. The Science and Technology sub-index boosted its CNPI significantly as it ranked 5<sup>th</sup> in the world. Some may agree with the findings as they may have thought that Singapore and Malaysia are in fact more advanced than Indonesia.

The next table compares Indonesia's position among the 10 largest countries. Technically by looking at Indonesia's land area including the inland waters, Indonesia is ranked 16<sup>th</sup> in terms of size. However, since Indonesia is an archipelagic country, by adding its territorial waters, Indonesia becomes the 7<sup>th</sup> largest country in the world.

**Table. 4.3** 10 Largest Countries

No	Countries	Score	Rank
1	United States	70.62	1
2	Canada	61.98	4
3	Australia	60.49	8
4	China	46.45	36
5	Brazil	45.78	43
6	India	44.15	50
7	Indonesia	41.20	60
8	Argentina	40.73	65
9	Russia	39.91	71
10	Kazakhstan	34.27	135

Here among the 10 largest countries, Indonesia also ranked 7<sup>th</sup>, identical with the ranking in terms of size. However, we must make note that this is mere coincidence and we cannot use this to generalize that a country's national power can be judged solely by the country size. Here most people would strongly disagree with the results for Russia. Many would expect that Russia should a dominant power that is a close rival to the

US or at least be ranked among the top 5 most powerful nations. We will discuss about Russia further at later part of this section.

Next we will compare Indonesia among the hugely populated countries that have a minimal population of 100 million. 11 countries fall into this category and the result are as follows.

**Table 4.4** Large Population Countries

No	Countries	Score	Rank
1	United States	70.62	1
2	Japan	60.63	7
3	China	46.45	36
4	Brazil	45.78	43
5	India	44.15	50
6	Mexico	42.58	54
7	Indonesia	41.20	60
8	Russia	39.91	71
9	Pakistan	33.83	144
10	Bangladesh	32.69	152
11	Nigeria	32.50	154

Using population as a criteria, again Indonesia is again ranked 7<sup>th</sup>. The table also shows that many large population countries have very low rankings, indicating that population size have little significance in determining national power.

Finally we shall compare Indonesia's position among the emerging markets. There is no definitive definition on what constitutes an emerging market. With that we look into the category of emerging market that are offered by various sources including Next 11 by Gold Sachs, Financial Times Stock Exchange (FTSE), Morgan Stanley Composite Index (MSCI), Standard & Poor (S&P), Dow Jones, F10, Eagles / NEST, CIVETS. To be included as an emerging market, a country must be categorized as an emerging market by at 5 of the sources. With that only 10 countries are included in this analysis, of which two countries,

Indonesia and Turkey are included in all sources. These emerging markets will exclude BRIC countries that include Brazil, Russia, India and China.

**Table 4.5** Emerging Markets

No	Countries	Score	Rank
1	Chile	49.09	27
2	South Africa	45.92	41
3	Mexico	42.58	54
4	Indonesia	41.20	60
5	Colombia	40.83	62
6	Turkey	40.15	69
7	Thailand	39.83	73
8	Peru	39.58	76
9	Philippines	36.56	112
10	Egypt	34.02	139

Among the emerging markets, Indonesia's CNPI ranked the 4<sup>th</sup>. This is a rather positive result so far. The result that is interesting in this table is the ranking of Egypt. As the data were collected prior to the regime change in Egypt, it shows that Egypt ranks very low at 139<sup>th</sup> or at bottom 20%. If this finding is to be published earlier prior to the regime change, many may have disagreed too, with the results for Egypt. Again if one is to measure Egypt power based on Critical Mass that rank 21<sup>st</sup>, Economy that ranked 150<sup>th</sup> and Military that ranked 12<sup>th</sup>, once would come to a conclusion that is much higher than the present standing.

Now, as mentioned above we shall look at Russia into more in depth to explain for its low ranking. Based on the study, Russia is ranked 71<sup>st</sup>. Many may find the results bizarre as Russia has always been portrayed as America's challenger. It was slightly more than three decades ago during the Cold War that Russia was feared by many nations. It is the core state in the East bloc and many countries under Warsaw Pact become its periphery states and depended on Russia for "protection".

We shall now investigate this abnormality and hope to shed some light to this peculiar situation.

**Table 4.6** Russia Composite National Power Index

No	Code	Sub-Index	Weights	Score	Rank
1	GO	Government		47.66	126
2	LG	Legal	3%	37.06	152
3	FM	Fiscal and Monetary	4%	76.61	42
4	FC	Finance	3%	49.12	95
5	EC	Economy	25%	40.07	105
6	CP	Critical Production	5%	22.60	3
7	BZ	Business	3%	41.88	162
8	RC	Resources	5%	44.78	2
9	GL	Global Link	5%	36.24	8
10	IF	Infrastructure	5%	41.36	94
11	DG	Demography	5%	55.15	2
12	SL	Social	5%	55.89	64
13	ST	Science and Technology		31.44	139
14	SC	Security	4%	45.47	143
15	EV	Environment	3%	63.94	32
16	ML	Military	25%	35.65	3
	<b>CNPI</b>			<b>39.91</b>	<b>71</b>

To be able to comprehend the results, we must first erase any cold war mentality that lingers in our thinking of security paradigm. A state that scores high on the Composite National Power Index does not mean that it will have a higher chance of winning wars or ought to be feared by others. A high score on the CNPI simply indicate that the state is better positioned to cope with the multitude of security threats of the twenty-first century.

Russia is always thought to be a powerful state because of its military capabilities, which is true if we look at the military ranking of 3. It also ranks second in terms of resources and third in terms of critical production. So what contribute to its low scores or ranking? For one, its government and legal system is weak. There is not much political

freedom as show by the recent elections that is accused to be fraudulent. Vladimir Putin also remained in power for many years. Since Government Sub-Index is a force multiplier, a very low score in this area will pull its overall score significantly.

Russia also performed poorly in the Economy and Business Sub-Index. Although Russia's economy is strong in terms of its macroenvironment and market, the Economy Sub-Index is pulled back by the poor performance in attracting Foreign Direct Investments. Its economy also runs a high risks of being unsustainable as it has very little protected areas that may expose Russia to unsustainable resource exploitation that is not environmentally friendly either. It is also highly dependent on fossil fuel as its primary energy that is bound to pose a huge problem with the volatility in prices of fossil fuels and its increasing scarcity.

Russia also performed poorly in terms of Security Sub-Index. The country is constantly plagued with internal security issues that resulted in many internally displaced people. It is also politically unstable and runs a high risk of becoming a failed state much like Indonesia. Russia is also a country scores very low in in Global Peace variable. It may mean that Russia's relationships with many countries were not very close and other countries are still weary against Russia. It also ranks very low in terms of human rights.

The result for Russia's Science and Technology Sub-Index is also controversial. We are talking about a country that has put a man in space, one of a handful of countries with advanced space programs, lead in the development of nuclear technologies, developed advanced military technologies and weapons that are exported all over the world and yet it ranks 139<sup>th</sup> in the Science and Technology Sub-Index. One plausible explanation is that Russia is very advanced in military technology. However, this Sub-Index emphasized on the technology as a whole

including the private sector technology absorption in which Russia performed poorly. Companies in Russia are not investing much on research and development.

Technology transfer resulting from foreign direct investment is another reason for the low score in this area. This is consistent with the low level of FDI Russia manage to attract. One of the worst performing component of this sub-index is the Information Age component where Russia ranked 104<sup>th</sup>. The low levels of protection for Intellectual Property Rights also mean that it gives little incentives for the private sector to innovate. There is one exception to this, is that should Russia manage to spin off its advance military technologies into the commercial realm, its CNPI will shoot up drastically taking into account that Russia has great potential in this area and this is a power multiplier.

## 4.2 Government

**Table 4.7** Government Sub-Index of Indonesia's CNPI

No	Code	Variables	Score	Rank
1	GOA 01	Democracy Index	65.30	60
2	GOA 02	Democratic Institutions	44.66	125
3	GOA 03	Political Culture	56.30	51
4	GOA 04	Political Freedom	100.00	1
	<b>Political Structure</b>		<b>66.57</b>	<b>60</b>
5	GOB 01	Election Integrity	86.67	32
6	GOB 02	Electoral Process and Pluralism	69.20	93
7	GOB 03	Political Engagement	26.19	153
8	GOB 04	Political Participation	55.60	43
9	GOB 05	Voting and Party Formation	84.44	55
	<b>Political Participation</b>		<b>64.42</b>	<b>79</b>
10	GOC 01	Factionalized Elites	33.33	95
11	GOC 02	Legitimacy of The State	36.67	93
	<b>Legitimacy</b>		<b>35.00</b>	<b>92</b>
12	GOD 01	Functioning of Government	75.00	29
13	GOD 02	Government Effectiveness	45.77	91
14	GOD 03	Wastefulness of Government Spending	48.33	28
	<b>Capacity and Effectiveness</b>		<b>52.30</b>	<b>55</b>
15	GOE 01	Favoritism in Decisions of Government Officials	48.33	33
16	GOE 02	Governance	41.75	127
17	GOE 03	Government Procurement: Transparency, Fairness, and Conflicts of Interest Safeguards	82.50	36
18	GOE 04	Privatization of Public Administrative Functions: Transparency, Fairness, and Conflicts of Interest Safeguards	89.17	15
19	GOE 05	Public Trust of Politicians	33.33	86
20	GOE 06	Voice and Accountability	48.95	76
21	GOE 07	Whistle-Blowing Protections	81.25	9
	<b>Integrity</b>		<b>60.75</b>	<b>30</b>
22	GOF 01	Business Licensing and Regulation	75.00	38
23	GOF 02	Civil Service: Conflicts of Interest	65.63	20

		Safeguards and Political Independence		
24	GOF 03	Conflicts of Interest Safeguards & Checks and Balances: Executive Branch	67.71	31
25	GOF 04	Conflicts of Interest Safeguards & Checks and Balances: Judicial Branch	75.74	14
26	GOF 05	Conflicts of Interest Safeguards & Checks and Balances: Legislative Branch	71.73	14
27	GOF 06	National Ombudsman	91.67	16
28	GOF 07	Oversight of State-Owned Enterprises	80.00	27
29	GOF 08	Supreme Audit Institution	89.93	38
	<b>Oversight and Control</b>		<b>77.18</b>	<b>15</b>
31	GOG 01	Budget Process Oversight & Transparency	56.25	139
32	GOG 02	Political Financing Transparency	48.40	34
33	GOG 03	Public Request for Government Information	52.08	137
34	GOG 04	Transparency of Government Policymaking	50.00	108
	<b>Transparency</b>		<b>51.68</b>	<b>104</b>
35	GOH 01	Anti-Corruption Agency or Equivalent Mechanisms	86.11	13
36	GOH 02	Anti-Corruption Law	77.78	158
37	GOH 03	Anti-Corruption Non-Governmental Organizations	68.75	142
38	GOH 04	Control of Corruption	35.85	114
39	GOH 05	Corruption by Education System	49.24	138
40	GOH 06	Corruption by Judiciary	42.01	37
41	GOH 07	Corruption by Media	54.76	32
42	GOH 08	Corruption by Military	56.09	136
43	GOH 09	Corruption by NGOs	63.60	26
44	GOH 10	Corruption by Parliament / Legislature	34.26	128
45	GOH 11	Corruption by Police	36.73	125
46	GOH 12	Corruption by Political Parties	36.50	25
47	GOH 13	Corruption by Public Officials / Civil Servants	44.60	19

48	GOH 14	Corruption by Religious Bodies	61.42	44
49	GOH 15	Corruption Perception Index	28.00	118
50	GOH 16	Diversion of Public Funds	38.33	95
51	GOH 17	Freedom from Corruption	28.00	110
52	GOH 18	Global Corruption Barometer	48.47	29
53	GOH 19	Irregular Payment and Bribes	38.33	130
54	GOH 20	Media's Ability to Report on Corruption	58.39	155
	<b>Corruption</b>		<b>49.36</b>	<b>115</b>
55	GOI 01	Civil Liberties	70.60	77
56	GOI 02	Journalists Imprisoned	100.00	1
57	GOI 03	Personal Freedom	3.88	165
58	GOI 04	Press Freedom	75.32	93
59	GOI 05	Satisfaction With Freedom of Choice	75.00	41
60	GOI 06	World Press Freedom Index	65.88	11
	<b>Civil Liberty</b>		<b>65.11</b>	<b>114</b>
	<b>Government Sub-Index</b>		<b>58.04</b>	<b>64</b>

Government is an important factor of national power. It measures the government structure and national leadership. Its importance is analogous to the board of directors of a private company. The success of the company depends on the vision of the directors and their ability to plan strategically, set clear objectives, organize the resources and lead its staff. A strong nation needs a strong government.

Indonesia scores 58.04 for the Government Sub-Index and rank 64<sup>th</sup> in the world. It did only faintly better than the world average of 55.56. Indonesia did rather well on the Oversight and Control component with a score of 77.18 as compared to 62.82 of the world average and ranked 15<sup>th</sup> in the world. This showed that Indonesia effective safeguards against conflicts as well as has installed proper check and balances in all branches of the government: executive, legislative and judicative. The government also managed to adequately oversee the operations of state-owned enterprise and the State Supreme Audit provides effective control.

The government also scores well on the Integrity component with a score of 60.75 against the world average of 50.99 and ranked 30<sup>th</sup> in the world. However, the weak governance and public distrusts of the politicians are dragging down the score of this component. Public trusts is crucial as the government needs the support of the people in carrying out its decisions, which will be greatly impeded without that trusts.

The lowest rank is the Corruption component with a score of 49.36 versus 52.53 of the world average and ranked 115<sup>th</sup>. Although Indonesia has set up the Anti-Corruption Commission (KPK) that scores highly, its anti-corruption law is its weak link and hence corruption becomes rampant and uncontrollable. The worst case of corruption is shown to be within the education system. This is a precarious situation considering that 20% of the state budget must be allocated for education as mandated by law.

Corruption by the military is also rampant in Indonesia. This is contrary to the global trends. On the global scale the military is the third least corrupt institution, trailing behind religious bodies and non-government organizations. Corruption within the military weakens national power and national defense and hence weakens national security. Corruption can occur anywhere from budgeting all the way to diversion of funds through mark-ups.

The third highest corruption occurred within the parliament or legislature followed by the police. As it may come to a surprise for most people, corruption by the political parties and public officials or servants were much lower than expected.

Indonesia scored badly on the Civil Liberty component with a score of 65.11 against a world average of 69.80 and ranked 114<sup>th</sup>, mostly dragged down by the low score in personal freedom. This may seemed

contradictory to the fact that Indonesia is a democratic country that some consider as being to democratized. The next area that can be improved on is the Transparency component. Indonesia scores 51.68 while the world average is 52.19 and ranked 104<sup>th</sup> in the world.

On the overall, to improve the Government Sub-Index, it is imperative that national leadership is strengthened. This may be done by ascertaining political unity foremost of all. There are simply too many political parties as much as over thirty, fighting the finite seats in the parliament and government ministries. As such the incumbent president is “forced” to make political compromise and provide “concessions” to opposing political parties. It may be a good idea to introduce a minimum voters threshold to limit the number of political parties. Any political parties participating in either presidential or parliamentary campaign should place an initial deposit of a certain amount, for example Rp. 5 billion. The deposit is refundable when the party has conducted its campaign peacefully without creating any social disturbances and obtained a minimal 5% of the votes. Should the largest three parties each dominate 20% of the votes then the remaining 40% votes may theoretically be shared by a maximum of another eight smaller parties. Under this new proposed system, only the largest and strongest parties will survive over time.

Rampant corruption must be first brought under control by enacting tougher legislation to tackle corruption. If Indonesia can reduce the corruption level from the tax collection process to the budgeting and disbursement of funds, it would effectively increase the state budget and its effective spending power. Tougher punishments must be enforced for corrupt public officials. This law may be difficult to enact given that the members of parliament are themselves corrupt and thus will ensure that the law “protect” their illegal activities.

Transparency can also be improved by providing greater public access to information. The improved transparency will also directly improve public trusts and eventually government effectiveness. This can be easily done by exposing the non-critical information to the public domain that can be easily accessed through websites and other medium.

### 4.3 Legal

**Table 4.8** Legal Sub-Index of Indonesia's CNPI

No	Code	Variables	Score	Rank
1	LGA 01	Efficiency of Legal Framework in Challenging Regulations	46.67	53
2	LGA 02	Efficiency of Legal Framework in Settling Disputes	45.00	92
3	LGA 03	Legal Systems & Property Rights	43.99	136
4	LGA 04	Regulatory Quality	44.36	97
	<b>Regulatory Framework</b>		<b>45.00</b>	<b>89</b>
1	LGB 01	Judicial / Legal Effectiveness	39.91	123
2	LGB 02	Judicial Independence	43.33	104
3	LGB 03	Judicial Independence, Fairness, and Citizen Access to Justice	83.43	20
4	LGB 04	Law Enforcement: Conflicts of Interest Safeguards and Professionalism	60.42	47
5	LGB 05	Property Rights	30.00	97
6	LGB 06	Property Rights Protection	50.00	100
7	LGB 07	Reliability of Police Services	45.00	116
8	LGB 08	Rule of Law	38.80	102
	<b>Enforcement</b>		<b>48.86</b>	<b>88</b>
	<b>Legal Sub-Index</b>		<b>46.93</b>	<b>88</b>

On the Legal Sub-index, Indonesia scored slightly lower than the world average with a score of 46.93 compared to the world average and ranked 88<sup>th</sup> in the world. On the Regulatory Framework component, Indonesia's legal system did very badly with a score of 43.99 versus 55.96 of the world average and ranked 136<sup>th</sup>. The weak legal system will ultimately affect other components of national power such as putting off Foreign Direct Investments.

Indonesia is faced with a double jeopardy in this aspect. On top of the weak regulatory framework, law Enforcement is also weak with a score of 48.93 compared to the global average of 53.11 and ranked 88<sup>th</sup>.

Amongst its weaknesses, the Indonesian judiciary is deemed neither effective nor independent.

As such the weak judicial branch would likely affect the score of Rule of Law, which scores 38.80 versus 47.43 for the world average. It ranks 102<sup>nd</sup>. Without the Rule of Law, there will be less legal certainty. This may also contribute to the weak protection of property rights. The Property Rights Protection scores 50.00 while the world average is 54.53, and ranked 100<sup>th</sup> in the world. This is evidenced by the plethora of land disputes between individuals as well as between the government and the people.

However, what is worse than the Rule of Law is the Reliability of Police Services. The national police is the primary force that enforces the law. They provide the people with public safety. The image of the police has always been low among the Indonesians. The people see the police, particularly the traffic police as being corrupt and inefficient.

#### 4.4 Fiscal and Monetary

**Table 4.9** Fiscal and Monetary Sub-Index of Indonesia's CNPI

No	Code	Variables	Score	Rank
1	FMA 01	Corporate Tax Rate	50.00	64
2	FMA 02	Extent and Effect of Taxation	53.33	21
3	FMA 03	Fiscal Freedom	82.98	51
4	FMA 04	Government Debt	87.79	34
5	FMA 05	Government Expenditure % of GDP	89.49	20
6	FMA 06	Government Spending	88.94	20
7	FMA 07	Income Tax Rate	50.00	75
8	FMA 08	Size of Government	75.84	25
9	FMA 09	Tax Burden % of GDP	97.41	40
10	FMA 10	Total Tax Rate	87.30	59
	<b>Fiscal</b>		<b>76.31</b>	<b>21</b>
1	FMB 01	Monetary Freedom	74.32	91
2	FMB 02	Sound Money	77.07	120
	<b>Monetary</b>		<b>75.69</b>	<b>100</b>
	<b>Fiscal and Monetary Sub-Index</b>		<b>76.00</b>	<b>45</b>

In the Fiscal and Monetary Sub-Index, Indonesia scored 76.00 and ranked 45<sup>th</sup> in the world while the world average is 72.55. When it comes to Fiscal component, Indonesia did even better with a score of 76.31 versus the world average of 68.26 and ranked 21<sup>st</sup> in the world. Since the Asian financial crisis in 1998, Indonesia has been steadily reducing its government debt to less than 30% of the GDP at the time of writing. Compare this figure to some of the European countries that experienced the debt crisis, with their debt hovering around 100% or more of their GDP. The income tax rate, particularly the corporate tax rate, scores closely to the world average.

On the monetary side, even though Indonesia scores pretty high at 75.69, it only managed to rank 100<sup>th</sup> in the global position. The world average in this case is 76.83. In this sense, while Indonesia did well in its monetary component, many more countries did a better job.

## 4.5 Finance

**Table 4.10** Finance Sub-Index of Indonesia's CNPI

No	Code	Variables	Score	Rank
1	FCA 01	Affordability of Financial Services	56.67	52
2	FCA 02	Availability of Financial Services	63.33	53
3	FCA 03	Financial Freedom	40.00	111
4	FCA 04	Institutional Environment	46.50	122
5	FCA 05	Legal Rights Index	30.00	135
	<b>Financial Market</b>		<b>47.30</b>	<b>123</b>
1	FCB 01	Alternative Source of Capital	27.50	112
2	FCB 02	Bond Market Development	40.00	47
3	FCB 03	Capital Access Index	46.00	111
4	FCB 04	Equity Market Development	56.70	29
5	FCB 05	Financing Through Local Equity Market	56.67	24
6	FCB 06	International Funding	40.00	109
7	FCB 07	Regulation of Security Exchanges	56.67	55
8	FCB 08	Venture Capital Availability	45.00	16
	<b>Capital Market</b>		<b>46.07</b>	<b>45</b>
1	FCC 01	Country Credit Rating	55.60	58
2	FCC 02	Credit Market Regulation	80.70	112
3	FCC 03	Ease of Access to Loans	48.33	14
4	FCC 04	Financial and Banking Institution	46.00	52
5	FCC 05	Interest Rate Spread	83.90	80
6	FCC 06	Soundness of Banks	58.33	137
	<b>Credit</b>		<b>62.14</b>	<b>62</b>
	<b>Finance Sub-Index</b>		<b>51.84</b>	<b>70</b>

Indonesia ranked 70<sup>th</sup> on the Finance Sub-Index with a score of 51.84 as compared to 51.11 for the world average. In this Sub-Index the worse score is derived from the Financial Market component, which scores 47.30 compared to the world average of 54,45 and ranked 123<sup>rd</sup> in the world ranking.

Although Indonesia did fairly for the Availability and Affordability of Financial Services, it scores badly on the Legal Rights Index. This meant that the rights of lenders are adequately protected. This is evidenced by

the complexity and difficulty for lenders (bankers) to execute the collaterals in the event the loan goes bad. The more sophisticated borrowers often exploit this weakness as their trump card during restructuring or settlement negotiations with the lenders.

The Institutional Environment is also weak scoring 46.5 while the world average is 53.33 and ranked 122<sup>nd</sup> in the world. Institutional Environment reflects the extent to which institutions supports and enhances business financing activities that is derived from many factors such as the enforceability of property rights, the efficiency of the bankruptcy procedures and few others.

In the Capital Market, Indonesia fared better with a score of 46.07 compared to the world average of 39.04 and ranked 45<sup>th</sup>. Access to capital is difficult from the international lenders. This shown with the International Funding score of 40.00 and ranked 109<sup>th</sup>. This score signal that most of the funding required is raised domestically. Even when foreign loans are available, it is more likely in the form of supplier or export credit. Another possibility is the funds raised through the Government of Indonesia international bond issuance.

Indonesia scored 62.14 on the Credit Sub-Index and ranked 62<sup>nd</sup>, while the world average for this sub-index is 59.86. What is alarming is the component related to the soundness of bank. If we refer back to Asian financial crisis, we can that the banking industry was heavily impacted and that crisis resulted in the foreclosure of hundreds of banks.

The situation is not only experienced in Indonesia or Asia but by the more advanced countries such as the United States and much of Europe. A decade after Asia is devastated by the financial crisis, the world is rocked again, but this time the epicenter of the crisis is in the world's biggest powerhouse itself, the United States, triggered by subprime mortgage crisis as explained earlier. The crisis resulted in the

foreclosure of the biggest financial brokerage and investment banks that have had long history such as Bear Sterns and Lehman Brothers.

Though Indonesian banks were fortunate to escape the aftermath brought by the subprime crisis, that does not mean that Indonesian banks are financially sounder than the US or European counterparts. In fact the results from the studies showed that our banks are not financially solid. One evidence to prove this case is that only a handful of banks amongst the hundreds in Indonesia have capital exceeding USD 1 billion. Several banks in the South East Asian region have capital in excess of USD 100 billion, while the largest bank in Indonesia, Bank Mandiri, only has about USD 41.5 billion of capital by the end of 2010. Moreover the people still harbor fear that incidence like Bank Global and Bank Century may occur to other banks.

The Indonesian Banking Architecture is long over due and need to be renewed at the earliest possible time to strengthen the domestic banking industry. The government through the Central Bank must place tougher regulations to “force” smaller banks to merge to strengthen their capital base. The stronger banks can also act as anchor banks and acquire the smaller banks.

## 4.6 Economy

**Table 4.11** Economy Sub-Index of Indonesia's CNPI

No	Code	Variables	Score	Rank
1	ECA 01	Economic Freedom Ratings	65.00	113
2	ECA 02	Economic Fundamentals	34.95	135
3	ECA 03	GDP per Capita	2.77	122
4	ECA 04	Gross Domestic Product (Constant)	4.82	18
5	ECA 05	Inflation	82.27	85
6	ECA 06	Macroeconomic Environment	53.30	120
7	ECA 07	National Savings Rate	12.10	20
8	ECA 08	Unemployment Rate	92.86	46
<b>Macroeconomic Environment</b>			<b>43.51</b>	<b>107</b>
1	ECB 01	Buyer Sophistication	45.00	45
2	ECB 02	Domestic Market Size	68.33	15
<b>Market</b>			<b>56.67</b>	<b>23</b>
1	ECC 01	Business Impact of Rules on FDI	60.00	101
2	ECC 02	Prevalence of Foreign Ownership	60.00	101
<b>Foreign Direct Investment (FDI)</b>			<b>60.00</b>	<b>101</b>
1	ECD 01	Protected Area	14.11	58
2	ECD 02	Share of Fossil Fuels to Primary Energy Supply	31.20	48
<b>Sustainability</b>			<b>22.66</b>	<b>56</b>
<b>Economy Sub-Index</b>			<b>45.71</b>	<b>54</b>

In the Economy Sub-Index, Indonesia scores 45.71 and the world averaged 42.11 and ranked 54<sup>th</sup> globally. The economic component is often mentioned in the various power index model. Many of these models just used one variable, the Gross Domestic Product, as a measurement of the economy as part of national power. This is, however, an oversimplification of the measurements. If this is the case, then probably only big countries, which is likely to have a large economy, will be able to enter the league of powerful nations.

Take China for example that chooses to measure its economic power not only on an aggregate level but also on a per capita basis. At the

aggregate level, China's Gross Domestic Product is USD 5,878.30 billion and ranked second in the world. Yet on a per capita basis its GDP per Capita is only USD 4,382 and its global ranking fell drastically to 83<sup>rd</sup>.

Indonesia scored 43.51 on the Macroeconomic Environment component and ranked 107<sup>th</sup>. The global average for this component is 46.02. The Economic Fundamentals variable attempts to measure how well countries produce elements necessary and critical for economies to grow, prosper and enjoy stability. It also takes into account factors such as overreliance on natural resource exports as potential threats to productivity and stability. Indonesia scores 34.95 against the world average of 49.62 and ranked well behind at 135<sup>th</sup>.

One possible reason for the weak score is the high inflationary pressures in Indonesia. Fuel price is one of the major contributors of inflation. But it is not just actual fuel price hike that causes inflation but also the announcement of possible price hikes, known as the "announcement effect". The inflationary repercussions of fuel price hikes are often more than warranted. For example, a 10% increase in fuel price may cause a greater price hike in certain goods and services, even though fuel costs represents only a certain portion of the costs of goods sold (COGS).

The other possible reason contributing to low score is the overreliance on commodities export as its export growth driver. China's rapid economic growth has increased demand for commodities. Indonesia not only enjoyed increased growth in exports of coal, tin, iron, nickel and other minerals as well as enjoyed much higher prices for these exports. Nonetheless the continued global crisis may ease demands for natural commodities and Indonesia may face a perilous condition when both volume and price for exports starts pulling back to the pre-boom era. That may mean a significant reduction in export volume and a price adjustments of around anywhere between 30% - 70%.

When it comes to the Gross Domestic Product measurements, Indonesia faces similar situation with China. It scores 4.82 while the world average is only at 3.07 and ranked 18<sup>th</sup>. Its GDP per Capita however scores merely 2.77 against the world average of 13.35 and ranked 122<sup>nd</sup>.

The strength of the economy also depends on the size and sophistication of the domestic market. A nation that places too much emphasis on foreign markets will be greatly exposed to global crisis such as Singapore and export oriented countries. The export must be balanced with the purchasing power of the domestic market. In this area, Indonesia scores 56.67, significantly better than the world average of 41.42 and ranked 23<sup>rd</sup> in the world. With such strong domestic market, Indonesia will be a highly sought market by export-oriented countries. It will greatly benefit the country if the Indonesian government can introduce policies that are effective and boosting the domestic market to be better able to face the intense competition from overseas.

Indonesia did not do so well either in attracting Foreign Direct Investments. It scores 60.00, close to the world average of 60.43 but ranked only 101<sup>st</sup>. FDI is both a source of capital investments that can be used to leverage Indonesia's economic growth and a source for advanced technologies as well. Sustainability is also important as a measurement of economic power. A country that has no protected area increased its exposure against climate change while countries that are heavily reliant on fossil fuels are also highly exposed to oil price volatility. Indonesia scores 22.66 for its Sustainability component and ranked 56<sup>th</sup>.

## 4.7 Critical Production

**Table 4.12** Critical Production Sub-Index of Indonesia's CNPI

No	Code	Variables	Score	Rank
1	CPA 01	Crude Steel Production	0.58	37
2	CPA 02	Iron and Steel Production	0.81	37
<b>Industrial Production</b>			<b>0.70</b>	<b>36</b>
1	CPB 01	Electricity Production	3.14	26
2	CPB 02	Natural Gas Production	14.44	7
3	CPB 03	Oil Production	10.11	21
<b>Energy Production</b>			<b>9.23</b>	<b>17</b>
1	CPC 01	Cereals Production	16.96	5
2	CPC 02	Cocoa Beans Production	65.40	2
3	CPC 03	Coffee Production	28.77	4
4	CPC 04	Fertilizer Production	6.91	7
5	CPC 05	Fruits Production	14.94	6
6	CPC 06	Oil Crops Production	100.00	1
7	CPC 07	Pulses Production	2.41	28
8	CPC 08	Rubber Production	-	8
9	CPC 09	Starchy Roots and Tubers Production	16.38	7
10	CPC 10	Sugar Crops Production	3.87	12
11	CPC 11	Tea Production	12.15	5
12	CPC 12	Tobacco Production	-	45
13	CPC 13	Vegetables Production	1.98	15
<b>Agricultural Production</b>			<b>20.75</b>	<b>5</b>
1	CPD 01	Cattle Meat Production	3.43	19
2	CPD 02	Chicken Meat Production	8.62	8
3	CPD 03	Pig Meat Production	1.28	19
4	CPD 04	Sheep and Goat Meat Production	3.32	23
<b>Livestock Production</b>			<b>4.16</b>	<b>18</b>
1	CPE 01	Cephalopods Production	7.69	10
2	CPE 02	Crustaceans Production	15.34	2
3	CPE 03	Demersal Fish Production	25.78	6
4	CPE 04	Freshwater & Diad. Fish Production	8.06	5
5	CPE 05	Marine Fish Nes	20.68	6
6	CPE 06	Miscellaneous Aquatic Animals Production	1.56	5
7	CPE 07	Mollucas Production	0.79	15

8	CPE 08	Pelagic Marine Fish Production	37.72	4
	<b>Marine Production</b>		<b>14.70</b>	<b>3</b>
1	CPF 01	Industrial Roundwood Production	11.68	10
2	CPF 02	Log: Saw and Veneer Production	13.53	9
3	CPF 03	Paper and Paperboard Production	9.29	12
4	CPF 04	Puplwood, Round and Split Production	7.84	12
5	CPF 05	Roundwood Production	29.17	8
6	CPF 06	Sawnwood Production	6.98	22
7	CPF 07	Wood Charcoal Production	8.14	20
8	CPF 08	Wood Pulp Production	10.85	9
9	CPF 09	Wood-based Panels Production	5.42	12
10	CPF 10	Woodfuel Production	21.13	6
	<b>Forestry Production</b>		<b>12.40</b>	<b>9</b>
	<b>Critical Production Sub-index</b>		<b>10.32</b>	<b>7</b>

Indonesia performed extremely well on the Critical Production Sub-Index with a score of 10.32 while the world average is 2.33 and ranked 7<sup>th</sup> in the world. This is one Indonesia's strength.

Indonesia scores 20.75, 14.70 and 12.40 for Agricultural Production, Marine Production and Forestry Production respectively and ranked highly in each of these components with world rankings of 5<sup>th</sup>, 3<sup>rd</sup> and 9<sup>th</sup> respectively. The world averages for these three components are 2.01, 1.82 and 3.05 respectively.

These bountiful productions, on the other hand, attracts lots of criminal activities particularly illegal logging and fishing that brought hundreds of millions if not billions of dollars of losses to Indonesia. The security force, both the military and national police, must be capable of arresting these illegal activities to minimize state losses.

To do that the military and national police needs to have the right equipment and properly trained. Based on the vast land and sea area, this meant a sizeable investment in manpower and equipment.

We must note here that the exploitation of these resources must take into consideration its sustainability. Fishing quotas must consider the reproduction rate. Forestry exploitation must be balanced with the need to protect the environment.

## 4.8 Business

**Table 4.13** Business Sub-Index of Indonesia's CNPI

No	Code	Variables	Score	Rank
1	BZA 01	Business Environment	56.30	158
2	BZA 02	Business Regulations	53.24	131
3	BZA 03	Ethical Behavior of Firms	40.00	127
4	BZA 04	Investment Freedom	35.00	122
<b>Business Environment</b>			<b>46.14</b>	<b>142</b>
1	BZB 01	Burden of Government Regulations	43.33	34
2	BZB 02	Business Cost of Crime and Violence	55.00	123
3	BZB 03	Business Cost of Terrorism	61.67	142
4	BZB 04	Business Freedom	54.90	126
5	BZB 05	Degree of Customer Orientation	58.33	101
6	BZB 06	Effectiveness of Anti-Monopoly Policy	55.00	43
7	BZB 07	Entrepreneurship & Innovation	39.81	129
8	BZB 08	Extent of Market Dominance	48.33	48
9	BZB 09	Intensity of Local Competition	60.00	11
10	BZB 10	Organized Crime	53.33	137
<b>Competitiveness</b>			<b>52.97</b>	<b>109</b>
1	BZC 01	Control of international Distribution	55.00	39
2	BZC 02	Extent of Marketing	53.33	56
3	BZC 03	Local Supplier Quality	58.33	65
4	BZC 04	Local Supplier Quantity	65.00	51
5	BZC 05	Nature of Competitive Advantage	48.33	36
6	BZC 06	Production Process Sophistication	48.33	51
7	BZC 07	State of Cluster Development	53.33	30
8	BZC 08	Value Chain Breadth	56.67	24
9	BZC 09	Willingness to Delegate Authority	46.67	51
<b>Sophistication</b>			<b>53.89</b>	<b>43</b>
1	BZD 01	Cooperation in Labor-Employer Relations	55.00	93
2	BZD 02	Flexibility of Wage Determination	55.00	137
3	BZD 03	Hiring and Firing Practices	53.33	46
4	BZD 04	Labor Freedom	51.76	117

5	BZD 05	Labor Market Regulations	48.09	152
6	BZD 06	Pay and Productivity	58.33	22
7	BZD 07	Redundancy Costs	75.78	163
8	BZD 08	Rigidity of Employment	60.00	134
	<b>Labor</b>		<b>57.16</b>	<b>131</b>
1	BZE 01	Corporate Governance Index	44.75	119
2	BZE 02	Efficacy of Corporate Boards	55.00	64
3	BZE 03	Protection of Minority Shareholders' Interest	55.00	64
4	BZE 04	Reliance on Professional Management	55.00	91
5	BZE 05	Strength of Auditing and Reporting Standards	55.00	116
6	BZE 06	Strength of Investor Protection	60.00	34
	<b>Good Corporate Governance</b>		<b>54.12</b>	<b>87</b>
1	BZF 01	Corporate Ethics Index	40.34	114
2	BZF 02	Corporate Illegal Corruption Index	38.23	130
3	BZF 03	Corporate Legal Corruption Index	42.45	31
4	BZF 04	Corruption by Business / Private Sector	53.92	14
	<b>Ethics</b>		<b>43.73</b>	<b>50</b>
	<b>Business Sub-Index</b>		<b>51.34</b>	<b>98</b>

The Business Sub-Index is close related to the Economy Sub-Index. The Business Sub-Index, however, focus more the business environment that affects the private sectors and the business competitiveness.

Indonesia scores 51.34 in the Business Sub-Index, slightly lower than the world average of 53.81 and ranked 98<sup>th</sup> in the global ranking. All four components in this sub-index faired badly. The Business Environment has the worst scores of all with only 46.14 while the world average is 56.73 and ranked very low at 142<sup>nd</sup>. This is most likely caused by the regulations imposed on businesses as shown by the Business Regulation component score of 53.24 that puts Indonesia in the position of 131<sup>st</sup>. Firms were also viewed as unethical in conducting their businesses with a score for 40.00 against the world average of 50.87 and ranked 127<sup>th</sup>. Indonesia has had bad reputation for corruption, collusion

and nepotism. Businesses are known to bribe their way into getting what they want. Climbing the corporate ladder is difficult especially in family owned businesses who favors promoting their relatives and friends.

The Labor component also scores badly with 57.16 while the world average is 62.86, and ranked 131<sup>st</sup>. Various factors contribute to the low score in this area. The Redundancy Costs for example scored 75.78 but ranked among the worst in the world at 163<sup>rd</sup>. Labor Market Regulations scored only 48.09 while the world average is at 64.86, placing Indonesia at the 152<sup>nd</sup> position. Business in Indonesia do not enjoy the flexibility to determine wages as shown by the Flexibility of Wage Determination score of 55.00 versus the world average of 64.72 and ranked 137<sup>th</sup>. Rigidity of employment scored 60.00 and ranked 134<sup>th</sup> while the world average is 71.69. Labor Freedom score is 51.75 and ranked 117<sup>th</sup>. Labor Freedom measures the ability of businesses to contract freely and hire labor as needed and dismiss redundant workers when they are no longer needed. This mechanism is critical for enhancing firm's productivity and sustaining business and ultimately economic growth. Government intervention in the form of regulations including wage regulations, hiring and firing controls and other restrictions lowers the Labor Freedom. In Indonesia, the governments sets the minimum wage level and restricts the ability of firms to layoff redundant workers. Unions too, restrict the labor freedom in Indonesia. Labor unrest and demonstrations are becoming more frequent and this may not only dissuade domestic investors but foreign investors as well. To resolve this issue a comprehensive labor law reform must be undertaken that takes a balanced perspective of the employers and the employees. Businesses must be able given enough flexibility to determine wages so as to allow for full employment and maximize productivity.

Despite being having one of the largest economies as shown by the size and rank of its Gross Domestic Product, Indonesia is not a competitive

country. The Competitiveness component scored 52.97 versus the world average of 57.22 and ranked only 109<sup>th</sup> in the world. The major factor contributing to its weak competitiveness is the business costs arising out of crimes, violence, terrorism and organized crimes. These factors mostly affect the public security or safety, which is largely the domain of the national police. With so much “homework” to do, the national police cannot be expected to handle to resolve all issues, particularly terrorism. President George W. Bush called it the global war on terror and many nations accepted this term and with that the military should take the lead in countering terrorism issues.

The other factor contributing to the weakness in this component is the Entrepreneurship and Innovation, and the Degree of Customer Orientation, which scores 39.81 and 58.33, and ranks 129<sup>th</sup> and 101<sup>st</sup> respectively. The government can attempt to improve this area by providing more assistance and support to entrepreneurs especially small to medium enterprises that facilitate their business growth. Business must also be constantly reminded to treat customers as kings.

## 4.9 Resources

**Table 4.14** Resource Sub-Index of Indonesia's CNPI

No	Code	Variables	Score	Rank
1	RCA 01	Adult Literacy Rate	91.00	65
2	RCA 02	Brain Drain	53.33	35
3	RCA 03	Extent of Staff Training	50.00	49
4	RCA 04	Human Flight	34.44	125
5	RCA 05	Labor Force	14.76	4
6	RCA 06	Local Availability of Specialized Research and Training Services	53.33	58
7	RCA 07	Population With At Least Secondary Education (25 Years or Older)	26.80	125
<b>Manpower</b>			<b>46.24</b>	<b>86</b>
1	RCB 01	Coal Reserves	3.52	10
2	RCB 02	Natural Gas Reserves	7.09	10
3	RCB 03	Oil and Natural Gas Liquid Reserves	1.42	28
<b>Energy</b>			<b>4.01</b>	<b>21</b>
1	RCC 01	Internal Renewable Freshwater Resources per Capita	7.21	43
2	RCC 02	Rainfall Index	86.56	5
3	RCC 03	Water Resources	5.64	44
<b>Water</b>			<b>33.13</b>	<b>21</b>
1	RCD 01	Agricultural Policy Costs	53.33	33
2	RCD 02	Arable Land	12.90	13
3	RCD 03	Cereals Harvest Area	17.06	8
4	RCD 04	Irrigated Land	10.48	6
5	RCD 05	Oil Crops Harvest Area	23.91	6
6	RCD 06	Pastures	2.75	49
7	RCD 07	Permanent Crop	100.00	1
8	RCD 08	Pulses Harvest Area	1.58	31
9	RCD 09	Starchy Roots and Tubers Harvest Area	16.68	8
10	RCD 10	Sugar Crops Harvest Area	5.76	9
11	RCD 11	Vegetables Harvest Area	3.90	6
<b>Agriculture</b>			<b>22.58</b>	<b>7</b>
1	RCE 01	Cattles and Buffaloes	5.30	15
2	RCE 02	Chickens	28.53	2

3	RCE 03	Pigs	1.53	19
4	RCE 04	Sheeps and Goats	9.24	13
	<b>Livestock</b>		<b>11.15</b>	<b>7</b>
1	RCF 01	Forest Area	11.67	8
	<b>Forestry</b>		<b>11.67</b>	<b>8</b>
	<b>Resources Sub-Index</b>		<b>21.46</b>	<b>9</b>

Just like the Critical Production Sub-index, Indonesia scores well in the Resources Sub-Index. On the overall, Indonesia scored 21.46, almost twice better than the world average of 12.86 and ranked 9<sup>th</sup> in the world. The findings echoed many of the statements and commentaries by both public officials and businessmen that Indonesia is rich in resources and could potentially be one of the richest nations in the world.

The Agricultural, Livestock and Forestry components generate scores of 22.58, 11.15 and 11.67 respectively and this puts Indonesia on the global rank of 7<sup>th</sup>, 7<sup>th</sup> and 8<sup>th</sup> respectively. Again these are resources that must be protected by Indonesia's security forces. The exploitation of these resources too must be done in a sustainable manner to ensure its continuity.

Indonesia also performed well in the Energy component with a score of 4.01 and ranked 21<sup>st</sup> in the world. The world average for this component is 2.32. If we drill further into this component, it shows that Indonesia has the 10<sup>th</sup> largest reserves of coal and natural gas in the world with scores of 3.52 and 7.09 respectively. As such these two energy sources should be Indonesia's primary energy supply that can last many more decades into the future. The government of Indonesia has taken appropriate actions to exploit these energy sources. One of them being the construction of 10,000 megawatts coal-fired power plants to replace the diesel-fired power plants. As such it will reduce oil imports and electricity subsidies.

The program is faced with many obstacles and thus not fully implemented. One of the main reasons cited besides technicalities, is the difficulty of financing particularly for the independent power producers (IPP). It is very common for IPPs to establish special purpose vehicles to operate the business. Creditors that provide the project financing requires recourse of repayment should the IPPs defaulted. Moreover, since the market is monopsony with the state electric company (PLN), who has low credit ratings, being the sole buyer, creditors demanded sovereign guarantee.

The government of Indonesia rejected the demands and insisted that IPPS should be evaluated on the project viability or feasibility itself. The problem prolonged over the years and the government continued to subsidize the electricity tariff heavily. The government once commented that the subsidies amounted to around Rp. 40 trillion per annum, with oil price at around USD 50. With oil price hovering close to USD 100, the subsidies shoot up to around Rp. 80 trillion or USD 8.89 billion per annum.

This sounds ludicrous knowing that the investment costs for the 10,000 megawatts power plants using the rule of thumb of USD 1 million per megawatt comes to only USD 10 billion. And hence the subsidy takes up close to 90% of investment costs.

With the assumption that it takes two years to complete the 10,000 megawatts power plant project, with simultaneous construction, the government would need to subsidize the electricity for another 2 years only. By the third year when the 10,000 megawatts completed its construction and are commissioned to operate commercially, the government could use Year 3 subsidies as sovereign guarantee or simply pay off the Engineering Procurement Contractors (EPC) and

provide the power plants as grants or investments by the government to PLN knowing that PLN will no longer be subsidized.

If the government does provide sovereign guarantee for the IPPs instead of for PLN, and in the worst case scenario where all IPPs that obtained the sovereign guarantee defaulted, the government need to fork out around USD 10 billion, less the 20% - 30% equity component contributed by the IPPs and any repayment made prior to default, plus accrued interest. The amount could be taken from the year three and four electricity subsidies, that is no longer needed, since the electricity produced by coal-fired power plants would be produced at much lower cost than diesel-fired power plants, which costs as much as three to six times more. The government then would take over the power plant assets of the IPPs and hand them over to PLN as grants or investments.

Since coal and natural gas will be Indonesia's primary energy sources, the government must take a balanced approach in setting its policies to encourage exports versus preservation for domestic consumption. Some may argue that the export price is much more attractive than the domestic price. But we must not forget that Indonesia's natural resources are meant to improve the welfare of the Indonesian citizens as a whole and not to enrich individuals. Many of the energy resources are also located near Indonesia's borders such as Kutai and Ambalat, this area may present future battlegrounds in the competition for scarce resources.

Notwithstanding the abundance of resources enjoyed by Indonesia, we must not overlook the Manpower component as a resource. All resources need to be properly managed by a highly capable manpower. Indonesia scores 46.24 and ranked 86<sup>th</sup> in the Manpower component while the world average score is 47.35. This component demonstrated that it is not the population figure that contributes to Manpower but the education level as well as the extent of training provided by firms that create this

manpower or human resources. It is virtually “useless” if the people only obtained primary school education.

The government must review its policy of providing free primary school education for all Indonesians. The dilemma proposed here is, which is more beneficial for the nation: to support 30 million people till primary education or 3 million till secondary or education. Or should government provide free education for all the children of a poor family or just the smartest and brightest one till he or she completes at least secondary education. Upon graduation he or she will be able to obtain better jobs with better pay and help support the remainder of the family. This is only one of the way to help the family break form he vicious cycle of poverty.

#### 4.10 Global Link

**Table 4.15** Global Link Sub-Index of Indonesia's CNPI

No	Code	Variables	Score	Rank
1	GLA 01	Burden of Custom Procedures	48.33	111
2	GLA 02	Exports as A Percentage of GDP	10.92	137
3	GLA 03	Foreign Market Size Index	75.00	22
4	GLA 04	Freedom to Trade Internationally	67.24	63
5	GLA 05	Imports as A Percentage of GDP	94.59	13
6	GLA 06	Prevalence of Trade Barriers	55.00	106
7	GLA 07	Tariff Rate	89.05	59
8	GLA 08	Taxes and Customs: Fairness and Capacity	83.33	29
9	GLA 09	Trade Freedom	73.80	105
10	GLA 10	Trade Tariffs	79.40	61
<b>International Trade</b>			<b>67.67</b>	<b>50</b>
1	GLB 01	Tourist Arrival	8.23	34
<b>Travel</b>			<b>8.23</b>	<b>34</b>
1	GLC 01	Reserves of Foreign Exchange and Gold	3.67	16
<b>Reserves</b>			<b>3.67</b>	<b>16</b>
<b>Global Link Sub-Index</b>			<b>26.52</b>	<b>40</b>

The Global Link Sub-Index is associated with globalization. Indonesia scores 26.52 in this sub-index while the world average is 24.10 and ranked 40<sup>th</sup> in the world. In the International Trade component, Indonesia scores 67.67 versus the world average of 63.30 and ranked 50<sup>th</sup>. One of the main factor impeding international trade is the prevalence of trade barriers in the form of burdensome custom procedures, with each scoring 55.00 and 48.33, and ranks 106<sup>th</sup> and 111<sup>th</sup> respectively.

Indonesia's export is not very strong evidenced by the score in the Exports as a Percentage of GDP of only 10.92 and ranked 137<sup>th</sup> in the world. This on the other hand makes Indonesia less susceptible to global economic slow down. To increase exports, businesses must first improve

its competitiveness. They must be able to make better products and offer better services at value prices.

Travel scored 8.23 while the world average is 7.12 and ranked 34<sup>th</sup> globally. Inbound tourists not only brings in foreign currencies and boosts domestic tourism and hospitality industry, they can be used as a proxy of “soft power”. Many scholars argued that there are no definitive measurements of soft power. Some referred to proxies such as the number of movies produced and shown globally, books published globally etc. The basic foundation of soft power is “attractiveness”, hence it can be argued that soft power can also be measured by how many international tourists a country can attract as a proxy. The logic is that nobody would want to visit a country that they hated. All tourists choose to travel to countries that they loved or admired.

Indonesia’s Reserves component also scored quite impressive at 3.67, almost twice the world average of 1.89 and ranked 16<sup>th</sup> in the world. However, we must take cautious note in this case taking into account the fact that there are plenty of money, commonly termed as “hot money” that flowed to Indonesia during the last few years. The disappointing economy and equity market in the developed countries, and the undervalued shares in the emerging markets attracted large amount of hot money into emerging markets including Indonesia. Some estimated that the hot money amounted close to half of Indonesia’s total foreign reserves. Should these investors begin to take profits and repatriate back their investment funds, Indonesia’s exchange rate and economy will come under enormous pressure. The central bank and the stock exchange commission must make tougher restrictions on these hot money and speculators that does not contribute to any benefits for Indonesia in the long run.

#### 4.11 Infrastructure

**Table 4.16** Infrastructure Sub-Index of Indonesia's CNPI

No	Code	Variables	Score	Rank
1	IFA 01	Quality of Overall Infrastructure	50.00	103
	<b>General</b>		<b>50.00</b>	<b>103</b>
1	IFB 01	Available Airline Seat Kilometers	1.09	48
2	IFB 02	Merchant Marine Line	1.16	48
3	IFB 03	Quality of Railroad Infrastructure	36.67	46
4	IFB 04	Quality of Roads	46.67	102
5	IFB 05	Railways	3.73	27
6	IFB 06	Roadways	2.66	29
	<b>Transportation</b>		<b>15.33</b>	<b>64</b>
1	IFC 01	Airport	0.69	55
2	IFC 02	Quality of Air Transport Infrastructure	31.67	165
3	IFC 03	Quality of Port Infrastructure	48.33	108
	<b>Port</b>		<b>26.90</b>	<b>140</b>
1	IFD 01	Quality of Electricity Supply	61.67	69
	<b>Electricity</b>		<b>61.67</b>	<b>69</b>
1	IFE 01	Connectivity and Technology Infrastructure	35.00	155
2	IFE 02	Fixed Telephone Lines	36.30	30
3	IFE 03	Government Policy and Vision	26.50	169
4	IFE 04	Internet Bandwidth	0.08	130
5	IFE 05	Legal Environment	30.00	170
6	IFE 06	Mobile Telephone Subscriptions	47.95	114
7	IFE 07	Networked Readiness Index	60.89	134
8	IFE 08	Population Covered By Mobile Phone Networks	95.00	75
	<b>ICT</b>		<b>41.47</b>	<b>147</b>
	<b>Infrastructure Sub-Index</b>		<b>39.07</b>	<b>108</b>

Infrastructure supports the business and economy as well. Many business players have complaint that Indonesia's infrastructure creates bottlenecks that slows economic growth. The score for Indonesia on the Infrastructure Sub-index is 29.07 and ranked 108<sup>th</sup>, reverberating the complaints mentioned.

In this modern digital information age, Indonesia scores 41.47 against the world average of 51.95 and ranked 147<sup>th</sup> globally. The Legal Environment and the Government Policy and Vision components are not conducive to the development of the ICT infrastructure with scores of 30.00 and 26.50 and ranked 170 and 169 respectively. The world averages for these two components are 66.13 and 62.00 respectively.

Connectivity is another issue that only scores 35.00, 0.08 and 60.89 for Connectivity and Technology Infrastructure, Internet Bandwidth and Network Readiness respectively and ranks 155<sup>th</sup>, 130<sup>th</sup> and 134<sup>th</sup>. Improving this score requires huge investments in ICT infrastructure such as fiber optics as well as the latest technology in wireless networking to improve connectivity for voice and data as well.

Port infrastructure also performed badly with a score of 26.90 versus the world average 37.02 and ranked 140<sup>th</sup> in the world. Indonesia is strategically located at the crossroad between the Indian and Pacific Ocean, and between North Asia and Oceania. There is great opportunity for Indonesia to function as a shipping hub once it improves its port infrastructure. The government itself need not necessarily carry out the improvement. In recent years, Indonesia has heavily promoted the concept of Public Private Partnership (PPP) in the infrastructure sector. As long as non-payers can be excluded from using the goods or service and the project is financially feasible, then infrastructure development can be delegated to the private sector. Government just needs to enact favorable laws and policies to support the PPP.

## 4.12 Demography

**Table 4.17** Demography Sub-Index of Indonesia's CNPI

1	DGA 01	Total Land Area	11.14	15
	<b>Land</b>		<b>11.14</b>	<b>15</b>
2	DGB 02	Total Population	17.07	4
	<b>Population</b>		<b>17.07</b>	<b>4</b>
	<b>Demography Sub-Index</b>		<b>14.11</b>	<b>8</b>

Morgenthau mentioned land and population as components of national power. This Demography Sub-index is also termed as the critical mass in the Cline's Power Index model. Indonesia performed well naturally in this aspect with an aggregate score of 14.11, more than three times the world average of 3.78 and ranked 8<sup>th</sup> in the world.

In the Total Land Area component, Indonesia scores 11.14, more than twice the world average of 4.57 and ranked 15<sup>th</sup> in the world. This measurement excludes the vast sea area of Indonesia in which being the largest archipelago in the world, is almost three times the size of the land area.

Indonesia also performed well on the Total Population component scoring 17.07, almost six times the world average of 2.99 and ranked 8<sup>th</sup>. However, population can serve as a double-edged sword. It can contribute to national power if the population are productive and become a burden if they are not productive, ageing, lowly educated and/or unhealthy. It is critical than the government develop the population so that they will become resources and contribute to Indonesia's national power.

### 4.13 Social

**Table 4.18** Social Sub-Index of Indonesia's CNPI

No	Code	Variables	Score	Rank
1	SLA 01	Gini Coefficient for Income	63.83	58
2	SLA 02	Uneven Development	25.00	112
<b>Development</b>			<b>44.41</b>	<b>93</b>
1	SLB 01	Global Hunger Index	76.57	120
2	SLB 02	Legatum Prosperity Index	36.75	128
3	SLB 03	Public Services	34.75	106
4	SLB 04	Quality of Life Index	58.14	131
5	SLB 05	Satisfaction With Affordable Housing	40.00	122
6	SLB 06	Social Capital	87.38	14
7	SLB 07	Social Support Network	78.00	124
<b>Welfare</b>			<b>58.80</b>	<b>79</b>
1	SLC 01	Expenditure on Health per Capita (PPP)	1.11	136
2	SLC 02	Health	25.24	144
3	SLC 03	Hospital Beds	4.32	151
4	SLC 04	Infant Mortality (Children Aged 0 - 12 months)	75.97	130
5	SLC 05	Life Expectancy	71.20	89
6	SLC 06	Nurses and Midwives per 1,000 Inhabitants	12.50	111
7	SLC 07	Physicians	1.56	137
8	SLC 08	Public Expenditure on Health	7.36	160
<b>Health</b>			<b>24.91</b>	<b>141</b>
1	SLD 01	Education	28.16	142
2	SLD 02	Expected Years of Schooling	62.03	79
3	SLD 03	Internet Access in Schools	61.67	47
4	SLD 04	Mean Years of Schooling	44.80	125
5	SLD 05	Primary Education Enrollment	95.30	45
6	SLD 06	Public Expenditure on Education	28.49	129
7	SLD 07	Quality of Management Schools	53.33	60
8	SLD 08	Quality of Math and Science	55.00	49
9	SLD 09	Quality of Primary Education	50.00	52
10	SLD 10	Quality of The Educational System	53.33	43
11	SLD 11	Secondary Education Enrollment	53.25	87

12	SLD 12	Tertiary Education Enrollment	23.50	119
	<b>Education</b>		<b>50.74</b>	<b>90</b>
1	SLE 01	Social and Cultural Environment	30.33	168
	<b>Cultural</b>		<b>30.33</b>	<b>168</b>
2	SLF 01	Poverty and Decline	36.00	115
	<b>Poverty</b>		<b>36.00</b>	<b>115</b>
1	SLG 01	Deaths Due to Air and Water Pollution	91.02	110
2	SLG 02	Population Affected by Natural Disasters	96.84	89
3	SLG 03	Population Living on Degraded Land	95.79	57
4	SLG 04	Population Without Access to Water	80.00	125
	<b>Vulnerability</b>		<b>90.91</b>	<b>78</b>
	<b>Social Sub-Index</b>		<b>48.01</b>	<b>120</b>

On the Social Sub-Index, Indonesia only managed to score 48.01 against a world average of 54.80 and ranked 120<sup>th</sup> in the world. On the Development component, Indonesia scores 44.41 and ranked 93 versus the world average of 46.65. The Uneven Development of Indonesia which only scores 25.00 and ranked 112<sup>th</sup> may be the culprit in this case. Close to 80% of Indonesia's economic activities are conducted on the two most populous islands, Java and Sumatera, leaving the other major islands like Sulawesi, Kalimantan and Papua left behind in development.

Indonesia fared on average on the Welfare component with a score of 58.80 and ranked 79<sup>th</sup> in this instance. The Social Capital and Social Support Network shows contradictory results from two different sources. In spite of this, we cannot deny the fact that most Indonesians cannot rely on the government to extend a helping hand in times of crisis and rely heavily on families and friends and communities for help. The peoples' lives are lacking prosperity and enjoyed low quality of life as evidenced by the relatively low scores of 36.75 and 58.14 on the Prosperity Index and Quality of Life Index respectively and ranked of 128<sup>th</sup> and 131<sup>st</sup>.

Public housing is also another big concern for many Indonesians as shown by the Satisfaction With Affordable Housing that scores 40.00 against a world average of 46.20 and ranked 122<sup>nd</sup>. Housing prices have been continually rising fast year on year making housing less and less affordable for most people. Housing is one of the basic necessities that the people need in the course of their lives. Continued increase in housing price may threaten national resilience and hence national security.

Indonesia also did not do so well in the Health Sub-Index with a score of 24.91 and ranked at 141<sup>st</sup>. Basically Public Expenditure on Health component and the Health Expenditure per Capita component were shown to be insufficient with scores of 7.36 and 1.11 with global rankings of 160<sup>th</sup> and 136<sup>th</sup> respectively. Besides that we have inadequate numbers of Hospital Beds, Physicians, Nurses and Midwives with scores of 4.32, 1.56 and 12.50 and ranked 151<sup>st</sup>, 137<sup>th</sup> and 111<sup>th</sup> respectively.

On the Education Sub-Index, Indonesia managed to perform slightly better than the Health Sub-Index. It scores 50.74 compared to the world average of 52.62 and ranked 90<sup>th</sup>. Again the culprit here is the low Public Spending on Education that only managed to score 28.49 against an average of 36.24 and ranked 129<sup>th</sup>. This result is achieved despite the fact that the Government must allocate 20% of the state budget for education as mandated by the law. It is already the highest allocation compared to the budget of other departments. The other factors dragging the score is the Mean Years of Schooling and Tertiary Education Enrollment components that scores 44.80 and 23.50, and ranked 125<sup>th</sup> and 119<sup>th</sup> respectively.

The Social and Cultural Environment and Poverty components also scored low of 30.33 and 36.00 and ranked 168<sup>th</sup> and 115<sup>th</sup> respectively.

#### 4.14 Science and Technology

**Table 4.19** Science and Technology Sub-Index of Indonesia's CNPI

No	Code	Variables	Score	Rank
1	STA 01	Availability of Latest Technologies	65.00	101
2	STA 02	Availability of Scientists and Engineers	56.67	41
3	STA 03	Capacity for Innovation	46.67	29
4	STA 04	Company Spending on R&D	45.00	31
5	STA 05	FDI and Technology Transfer	61.67	62
6	STA 06	Firm-Level Technology Absorption	66.67	49
7	STA 07	Government Procurement of Advanced Technology Products	51.67	30
8	STA 08	Quality of Scientific Research Institutions	48.33	53
9	STA 09	University-Industrial Collaboration in R&D	51.67	39
10	STA 10	Utility Patents per Million Population	-	111
<b>Technology</b>			<b>49.33</b>	<b>41</b>
1	STB 01	Broadband Internet Subscriptions	0.80	131
2	STB 02	Consumer and Business Adoption	17.22	163
3	STB 03	E-Government Index	40.26	105
4	STB 04	E-Participation	12.86	97
5	STB 05	E-Readiness	27.89	165
6	STB 06	ICT Opportunity Index	17.92	114
7	STB 07	Internet Users	9.10	146
<b>Information Age</b>			<b>18.01</b>	<b>168</b>
1	STC 01	Intellectual Property Rights	43.33	92
<b>Intellectual Property Rights</b>			<b>43.33</b>	<b>92</b>
<b>Science and Technology Sub-Index</b>			<b>36.89</b>	<b>105</b>

In the Science and Technology Sub-Index, Indonesia scores 36.89 compared to a world average of 42.30 and ranked 105<sup>th</sup> on the world. The scores for the Information Age component resonates the scores in for the ICT infrastructure. Indonesia scores 18.01 in this component while

the world average is 36.77 and ranked near the bottom at 168<sup>th</sup>. All seven variables in this component performed poorly especially the E-Readiness and Consumer and Business Adoption that scores 27.89 and 17.22, and ranks 165<sup>th</sup> and 163<sup>rd</sup> respectively.

On the Technology component, Indonesia did much better with a score of 49.33, slightly better than the world average of 45.69 and ranked 41<sup>st</sup> globally. However, Indonesia scored badly on the Availability of Latest Technologies with a score of 65.00 and ranked 111<sup>th</sup>. This may be caused by the lack of Research and Development in Indonesia that can be shown by the number of Utility Patents per Million Population that comes to nil.

#### 4.15 Security

**Table 4.20** Security Sub-Index of Indonesia's CNPI

No	Code	Variables	Score	Rank
1	SCA 01	Global Peace index	62.75	66
<b>General Security</b>			<b>62.75</b>	<b>66</b>
1	SCB 01	External Intervention	38.89	99
<b>External Security</b>			<b>38.89</b>	<b>99</b>
1	SCC 01	Demography Pressures	28.46	114
2	SCC 02	Failed State Index	33.96	114
3	SCC 03	Group Grievance	37.78	105
4	SCC 04	Political Stability and Absence of Violence / Terrorism	37.16	123
5	SCC 05	Refugees and IDPs	37.78	128
6	SCC 06	Security Apparatus	31.74	118
<b>Internal Security</b>			<b>34.48</b>	<b>125</b>
1	SCD 01	Assault Victims	92.11	21
2	SCD 02	Homicide Rate	98.85	15
3	SCD 03	Perceptions of Safety	83.00	8
4	SCD 04	Robbery Rate	93.85	76
5	SCD 05	Safety & Security	39.81	130
<b>Public Safety</b>			<b>81.52</b>	<b>42</b>
1	SCE 01	Human Rights and Rule of Law	58.89	77
2	SCE 02	Human Rights Violation	50.00	96
<b>Human Rights</b>			<b>54.44</b>	<b>100</b>
<b>Security Sub-Index</b>			<b>54.42</b>	<b>87</b>

The national power of a state is affected by the level of security the state enjoys. A country that is constantly bombarded with security issues, will divert its resources towards resolving those security issues and thus suffers the opportunity lost should those resources be channeled elsewhere that is more productive. In this area, Indonesia performed fairly and scores 54.42 while the world average is 56.62 and ranked 87<sup>th</sup> in the world.

The table shows that Indonesia performed much better on the Public Safety component compared to the other components with a score of

81.52 and ranks 42<sup>nd</sup>. On the other hand the Internal Security performed badly with a score of 34.48 and ranked 125<sup>th</sup>.

One of the major contributing factors to internal insecurity is the lack of political stability and prevalence of violence or terrorism as shown by the Political Stability and Absence of Violence / Terrorism component score of 37.16 and ranked 123<sup>rd</sup> in the world. Group Grievances is also prevalent with a score of 37.78 and ranks 105<sup>th</sup>. The condition is evidenced by the existence of separatists groups such as OPM and others as well as the frequent communal conflicts that disrupts social stability.

#### 4.16 Environment

**Table 4.21** Environment Sub-Index of Indonesia's CNPI

No	Code	Variables	Score	Rank
1	EVA 01	Climate Risk Index	58.98	36
2	EVA 02	Environmental Performance Index	44.60	140
3	EVA 03	Sustainable Society Index	56.00	121
	<b>Environment</b>		<b>53.19</b>	<b>94</b>
	<b>Environment Sub-Index</b>		<b>53.19</b>	<b>94</b>

The Environment Sub-index becomes relevant especially in recent times when issues of climate change becomes a hot topic that requires international coordination and effort to tackle the worsening condition. Degrading environmental conditions may worsen the risks from the consequences of climate change including natural disasters such as flooding, and threatens the physical aspects of Indonesia's many islands that may be subject to full submersion should water level rises.

In this aspect, Indonesia scores 53.19 and the world average is 54.60 and ranked 94<sup>th</sup> in the world. Indonesia, having one of the largest rainforests will be expected more by the international community to play a more significant role in protecting the environment to slow the rate of climate change.

#### 4.17 Military

**Table 4.22** Military Sub-Index of Indonesia's CNPI

No	Code	Variables	Score	Rank
1	MLA 01	Budget	0.51	44
	<b>Budget</b>		<b>0.51</b>	<b>44</b>
1	MLB 01	Active	13.82	15
2	MLB 02	Reserves	8.85	10
3	MLB 03	Paramilitary	6.35	12
	<b>Personnel</b>		<b>9.67</b>	<b>14</b>
1	MLC 01	Tanks	1.65	37
2	MLC 02	Armored Combat Vehicle	2.10	59
3	MLC 03	Artillery	4.06	38
4	MLC 04	Anti Tank	3.09	34
	<b>Land Based Weapons</b>		<b>2.73</b>	<b>49</b>
1	MLD 01	Submarine	2.82	31
2	MLD 02	Principal Surface Combatants	20.13	8
3	MLD 03	Patrol and Coastal Combatants	74.08	5
4	MLD 04	Amphibious Ships / Crafts	19.12	8
5	MLD 05	Logistic and Support	8.82	19
6	MLD 06	Miscellaneous Ships	15.94	20
	<b>Sea Based Weapons</b>		<b>23.49</b>	<b>8</b>
1	MLE 01	Combat Aircraft	2.32	41
2	MLE 02	Support Aircraft	5.70	16
3	MLE 03	Combat Helicopters	0.95	55
4	MLE 04	Support Helicopters	3.97	26
5	MLE 05	SAM	0.51	56
6	MLE 06	UAV	-	36
7	MLE 07	AA Guns	2.38	18
	<b>Air Based Weapons</b>		<b>2.26</b>	<b>32</b>
	<b>Military Sub-Index</b>		<b>7.73</b>	<b>19</b>

Indonesia scores well in the Military Sub-index with a score of 7.73 against the world average of 3.21 and ranked 19<sup>th</sup> in the global ranking. The military Budget component only scores 0.51 and ranked 44<sup>th</sup>. Compare this with the number of Active personnel that scores 13,82 and ranked 14<sup>th</sup> in the world. Obviously this number showed certain

imbalance between the budget and the number of personnel and it can be concluded that military spending per personnel is very low. This can only mean two things. One is that the budget is too low or second the number of personnel is too large.

Contrary to the common knowledge, Indonesia's Sea Based Weapons ranks the highest with a score of 23.49 and ranks 8<sup>th</sup> in the world. The Air Based Weapons comes second with a score of 2.26 and ranks 32<sup>nd</sup> in the world. And lastly the land based weapons scores 2.73 and ranks 49<sup>th</sup>.

#### **4.17.1 Military Budget**

In this section we attempt to analyze further Indonesia's military budget to determine whether its size is appropriate. A common measure is to compare the military expenditure as a percentage of the budget. Some scholars argue that the ideal military budget range between 2 – 3%. Countries like Saudi Arabia spends about 9.29% of its GDP on military expenditure therefore 2 – 3% seems reasonable. Other observers, however, may refer to Singapore's military budget of 3.7% as reference being Indonesia's neighbor.

To remove any bias or subjectivity, we shall use the average of the world's military expenditure to gross domestic product ratio. The result shows that the average military expenditure as a percentage of GDP is 1.92%.

Indonesia's military expenditure as percentage of GDP is merely 0.5%, which ranks among the bottom 10<sup>th</sup> percentile. This is clear evidence that the Indonesia's military is under budgeted. Using this average military expenditure as a percentage of GDP figure, we can compute that the

military budget should ideally be USD 13.57 billion, an increment of around four fold. (Appendix 15)

The increased military budget will allocated not just for weapons procurement, it will be used to improve weapons maintenance hence improving the weapons lifecycle. Part of the increased budget will also be used to improve the personnel's welfare and training program to increase their professionalism. Some of the budget will also be allocated for the procurement of ammunition and R&D to develop domestic capabilities.

#### **4.17.2 Military Personnel**

There is no definitive formulation on the right size of the military personnel. It is not incorrect to size the armed forces based on the country's net assessment of the strategic environment. Taiwan and Korea that are faced with military threats from China and North Korea will maintain a larger military personnel, both active and reserves). Using this method, the required military size will be highly subject to the assessors' assessment and the size may fluctuates as the new strategic environment unfolds. Changing strategic environments is common but it should affect the country's alert and combat readiness instead of changing the size requirements

Another way we can compute the appropriate size is to look at the world average ratio of military personnel to the country size. The number of military personnel should logically be positively correlated to the size of the country; a bigger country should in theory need a larger standing military to protect the larger area. Though this sounds logical, a country may have vast empty lands that are require minimum protect such as Australia that has vast area in central Australia that is sparsely population and has no valuable object that requires military protection.

Another variation is to use a country's coastline to determine the military size instead. The argument for it is that a country's coastline is the entry point for the enemy that must be protected. For a fixed coastal length, the more soldiers guarding the line will make it harder for the enemy to breach the line. However, this method will fall short for the fact that several countries are landlocked and by using this method, it would mean that landlocked countries will not need to have a single soldier.

The third method that is deemed appropriate is to look at the ratio of citizens where each soldier is expected to protect. The argument for this method is self-explanatory. The military is mandated to protect its citizens foremost of all and hence the more people each soldier is expected to protect, the more ineffective it will be. Hence this thesis will adopt the third method in computing the appropriate number of military personnel.

The result shows that the number of citizens protected by each soldier range from 4.7 to 11,060 with an average of 691. Based on that we figure the appropriate number of military personnel is computed to be 336,622. Indonesia's current military personnel totals 302,000 with a shortfall of 34,622. This also means that the current number is at 90% of the computed number

Another way to strengthen the number of personnel is to maintain large reserves of military personnel, who in peacetime are engaged in more productive activities. (Appendix 15)

### **4.17.3 Land Based Weapons**

We next attempt to evaluate the adequacy of the land based weapons of the Indonesia's Armed Forces. Land based forces need not necessarily mean that the weapons are maintained by the Army. Again we do this by comparing with other states.

#### **4.17.3.1 Tanks**

To calculate the appropriate number of tanks, we use the ratio between tanks and number of active personnel computed earlier in 4.17.2. Based on the data, the average ratio of active personnel per tank is 427. Indonesia has a ratio of 746 active personnel per tank, which is almost double the average ratio. Using the computed appropriate military personnel and the average ratio of active personnel per tank, we compute the suitable number of tanks to be 788.

With the current inventory of 405, Indonesia is still short of 383 tanks. The number only represents 51% of the computed number. The planned addition of 100 Main Battle Tanks (MBT Leopard 2A6) from Netherlands will be a welcoming news, if approved by the Parliament. Indonesia currently does not own any main battle tanks. The decision will greatly narrow the gap by close to 25% and boosts the strength of our land based weapons. (Appendix 15)

#### **4.17.3.2 Armored Combat Vehicles**

Using the same approach to determine the appropriate number of tanks, we can also determine the appropriate number of Armored Combat Vehicles (ACV). Armored Combat Vehicles or ACV includes armored

personnel carrier (APC) and infantry fighting vehicles (IFV) and reconnaissance vehicle commonly termed Recce. The average ratio of active personnel to armored combat vehicle is 234 active personnel per armored combat vehicle. Indonesia currently has a ratio of 440 active personnel per armored combat vehicle.

By using the computed number of active personnel in 4.17.2 above and the average active personnel to ACV ratio, the computed number of ACVs comes to 1,438 units. Indonesia's current holding of armored combat vehicles is at 687. This meant that the shortage is by as much as 751 ACVs. The current level represented 48% of the computed number. (Appendix 15)

#### **4.17.3.3 Artillery**

Artillery can come in various calibers such as 75mm, 105mm, 120mm and others. It can also be towed or self-propelled. The world's average ratio of active personnel to the artillery possession, using the same approach as above, is 502 active personnel per artillery. Indonesia has a ratio of 282 active personnel per artillery, outperforming the world average.

By using the computed number of active personnel in 4.17.2 above and the average active personnel to artillery ratio, the computed number of artillery comes to 670 units. With Indonesia's current holding of 1,072 artillery units of various calibers, Indonesia is has excess 402 units of artillery. This is around 160% of the computed number. (Appendix 15) Perhaps one of the reasons why Indonesia maintains such a large holding of artillery is because of the lack in the number of tanks or artillery are relatively much cheaper to procure.

Indonesia can divest some of its artillery particularly the smaller caliber artilleries or the older ones that has past its useful life. Excess artillery may also be sold to third countries and the proceeds used to finance new weapons procurement. An alternative is to deploy the access artillery near conflict zones or borders to increase the deterrence.

#### **4.17.3.4 Anti Tanks**

The final major component of land based weapon systems is the anti tanks weapons. Using the same methods used for computing the number of other land based weapons needed, we computed that the world average ratio of active personnel to anti tank weapons is 759. The ratio for Indonesia in this case is 362 active personnel per anti tank weapons, which is less than half the world average ratio.

By using the computed number of active personnel in 4.17.2 above and the average active personnel to anti tank weapons ratio, the computed number of anti tank weapons comes to 443 units. Indonesia has a current inventory of 835 units, representing an excess of 392 units of anti tank weapons. The current holding represents 188% of the computed results.

#### **4.17.4 Sea Based Weapons**

We shall now move on to sea based weapons and use similar methods employed for calculating land based weapons. The difference is that the number of land based weapons are sued to support the active military personnel and hence its ideal numbers are based on the calculated ratio thought to be ideal to provide enough coverage for the active personnel. When it comes to sea based weapons, the number of weapon systems is

not linked to the number of active or navy personnel. In fact, it is the other way around. Once the number of weapon systems have been determined, the manpower required to operate the weapons system will be then be determined.

#### **4.17.4.1 Submarines**

Only 43 countries possess submarines according to the data provided by the Military Balance. Further more only a handful of these countries possess more 50 submarines such as United States, Russia, China and North Korea. To calculate the number of submarines required, we shall use the coastline and the submarine's range or endurance.

Indonesia currently owns 2 type 209/1400 submarines. It has signed a deal with Daewoo, South Korea to purchase an additional 3 submarines of similar class. This class of submarine has the following technical specification:

Speed (Surface)	: 11.5 Knots or 21 km/h
Speed (Submerged)	: 22.5 Knots or 42 km/h
Speed (Cruising)	: 5 – 10 Knots or 9 – 18 km/h
Speed (Normal Ops.)	: 2 – 12 Knots or 4 – 22km/h
Range (Surface)	: 11,000 nmi or 20,000 km at 10 Knots
Range (Snorkel)	: 8,000 nmi or 15,000 km at 10 Knots
Range (Submerged)	: 400 nmi or 500 km at 4 Knots

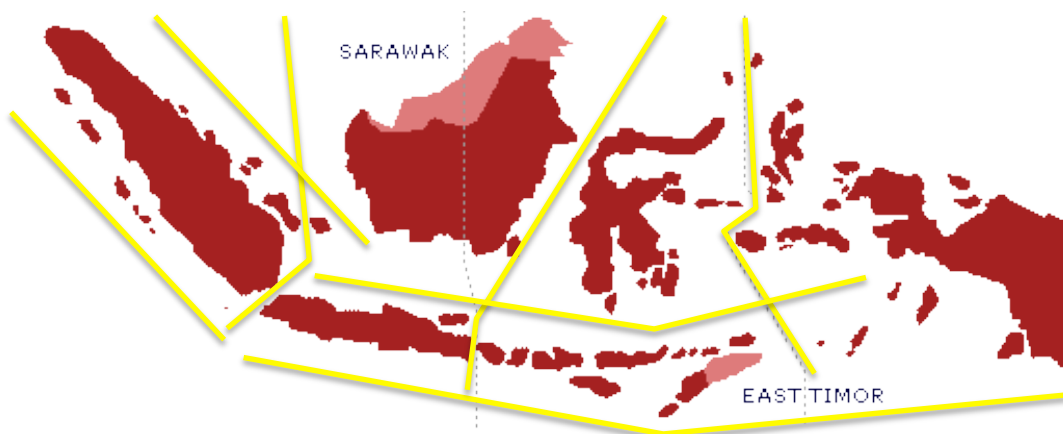
In this case, we make the assumption that the submarine will not be cruising on the surface, for it will defeat its purpose. Therefore the submarine is expected to travel either at fully submerged during half of the journey and half of the time at snorkel to replenish the oxygen. As

such it can be assumed that the average range will come to 4,400 nautical miles or 7,920 km.

Submarines are critical component of any defense strategy that focuses on protecting coastlines, international shipping lifelines, and our sovereignty. Therefore we will divide the length of our coastline with the range that the submarine can reach on average to determine the number of submarines that is adequate to protect our shorelines.

With a total coastline of 54,716 km, the world's second longest trailing just behind Canada that has a 202,080 km of coastline, and assumed average range per submarine of 7,920 km, the computed number of submarines is 7 (rounded). Indonesia's current submarine possession represents 28% of the computed number

**Figure 4.1** Possible Submarine Patrol Routes



The above diagram is just an illustration of the possible patrol routes of the proposed submarines. Four submarines will be assigned to patrolling the main Sea Lanes of Communications: Malacca Straits, Sunda Straits, Lombok Straits and Wetar Straits (the last three are also known as ALKI I, II, III). Logically, not all submarines will be at sea at anyone time, some

will stand ready at the port, hence Indonesia may need acquire two to three more units if deemed necessary.

#### **4.17.4.2 Principal Surface Combatants**

Principal Surface Combatants are the main navy warships that are designed for blue water navy. They include frigates, corvettes, destroyers, battleships, cruisers and even aircraft carriers. To calculate the appropriate number of principal surface combatants or PSC, we will use the distance of the coastline as one of the parameters.

The average coastal line covered per PSC is 1,552 km. Indonesia comes close to this average and the ratio of coastal line covered by each PSC is 1,824 km. With the average coastal length coverage, the ideal number of vessels will be 35. With its current holding of 30 principal surface combatants, a small gap still exists between the existing condition and the ideal target with a shortfall of 5 vessels. The existing number of PSCs represents 85% of the computed number.

#### **4.17.4.3 Patrol and Coastal Combatants**

The same method is used to calculate the appropriate number of Patrol and Coastal Combatants as for Principal Surface Combatants. Patrol and Coastal Combatants includes patrol boats of various sizes. Due to its smaller size, it has shorter endurance or range and is not designed for blue water navy or forward presence. It is designed to protect the coastal region and inland waters.

The average length of coastline covered by a PCC is 168 km of coastline per PCC. Indonesia performed slightly worse than the world average and

managed to cover 208 km of coastline per PCC. With the average coastline coverage, Indonesia should ideally possess 326 patrol and coastal combatants. With the current inventory of 263, there is still a shortfall of 63 patrol and coastal combatants. At the moment, Indonesia's current PCC vessels represents 80% of the computed number

Large numbers of patrol and coastal combatants are required to patrol Indonesia's vast sea to minimize the threats of illegal fishing and other transnational crimes.

#### **4.17.4.4 Amphibious Crafts**

Amphibious crafts are usually vessels designed to land troops and vehicles such as landing ship tank (LST). For the amphibious vessels or crafts the world average is 481 km of coastline covered per amphibious vessel. Indonesia's current holding of amphibious vessels can only manage to cover an average of 659 km of coastline per amphibious vessel.

Based on the calculated average ratio of coastline to amphibious crafts, Indonesia would need a total of 114 amphibious vessels. Currently it owns 83 amphibious vessels, hence still have a shortfall of 31 amphibious vessels. The current holding represents 73% of the computed number of amphibious vessels.

#### **4.17.4.5 Logistic and Support**

Logistic and Supply vessels can include anything from tankers to transporters as well as ammunition resupply vessels. The number of logistic and supply vessels are not determined by the coastline length but

more by the ratio of PSCs and PCCs to logistic and supply vessels. These vessels support the operation of the PSCs and PCCs therefore there must exist a desired ratio between the types of vessels.

The average ratio of PSCs and PCCs to Logistic and Support vessels is 10.2 even though the US maintains a ratio of 1.1 to indicate how much importance it places on supporting vessels. Based on the computed number of PSCs (35) and PCCs (32) that is appropriate for Indonesia, it would need 36 logistic and support vessels at the very least. At present Indonesia's possession of logistic and support vessel is 27 and there is still a shortage of 9. The current inventory represents 75% of the computed number of logistic and support vessels. Logistic and support vessels add the strength of strategic sea lift that enhances mobility and deployment.

#### **4.17.4.6 Miscellaneous Vessels**

Miscellaneous vessels may include research and oceanography vessels as well as mine hunters / sweepers. Determining the right number of vessels used the same calculation method used for calculating the appropriate number of logistic and support vessels.

The world average ratio of PSCs and PCCs to Miscellaneous vessels is 13:1. With that, based on the computed number of PSCs (35) and PCCs (32) that is appropriate for Indonesia, it should have 28 miscellaneous vessels to support its targeted number of PSCs and PCCs. Currently, there are only 11 miscellaneous vessels. The shortfall in the number of miscellaneous vessels is 17. The current holding represents 39% of the computed number.

#### **4.17.5 Air Based Weapons**

The calculation of air based weapons will be based on the adequate coverage of the airspace. Airspace includes all space that is above Indonesia's land area, inland water and territorial sea. This size of Indonesia airspace excluding exclusive economic zone is 7,112,690 km<sup>2</sup>.

##### **4.17.5.1 Combat Aircrafts**

Combat aircrafts include long-range bombers, fighters, fighter ground attack and training aircraft that can be converted for combat use. The world average airspace coverage by one combat aircraft is 21,779 km<sup>2</sup>. Indonesia's existing fleet of combat aircraft is capable of covering 19,844 km<sup>2</sup> of airspace on average. Using the calculated airspace average coverage, Indonesia should ideally have 327 combat aircrafts. With the current holding of only 96 combat aircrafts, Indonesia faces a huge shortfall at a staggering 231 combat aircrafts. The existing fleet of combat aircrafts only represent 29% of the computed number.

Even a small country like Singapore possesses 104 combat aircrafts, it is no surprising that Indonesia needs 327 combat aircrafts to enforce protect Indonesia's vast airspace. With 16 aircrafts making one squadron, Indonesia will need to form around 20 squadrons that will be based throughout Indonesia.

##### **4.17.5.2 Support Aircrafts**

Support aircraft includes refueling tankers and transport as well as electronic surveillance and warfare aircrafts. To determine the appropriate number of support aircrafts, we will again use the ratio

between the combat aircrafts and support aircrafts. The world average ratio between combat and non-combat aircraft is 1.9. Using that ratio in suitable number of support aircraft based on the target 327 combat aircraft is 175 units. Indonesia's current inventory exceeds the computed number at 242. Based on the calculations, Indonesia should reduce the number of supporting aircrafts by 67 units. This number represents 138% of the computed number.

Indonesia should prioritize retiring or decommissioning the older aircrafts. Any aircraft that are still in good condition may also be considered for sale to third countries. The older aircraft may also be sold to the domestic airline or cargo handling company. The sale of the supporting aircraft may be used to finance the purchase of combat aircrafts or other weapons.

#### **4.17.5.3 Combat Helicopters**

Combat helicopters are also known as attack helicopters. They are usually used to provide air support to tanks and ground troops. Some are designed for anti submarine warfare (ASW). The average land coverage per combat helicopter is 77,224 km<sup>2</sup>. Indonesia's current holding of combat helicopters only allows it to cover 127,000 km<sup>2</sup> of land per combat helicopter. The current inventory of 15 must be supplemented by an additional 77 units of combat helicopters, bring the total to 92 units. The current fleet of gunships represents 16% of the computed number.

#### **4.17.5.4 Support Helicopters**

Support helicopters include transport helicopters, search and rescue helicopters among others. The ratio between combat and non-combat

helicopters will be used to determine the appropriate number of support helicopters. The world average ratio between combat and non-combat helicopters is calculated to be 0.67. With that calculated ratio, the number of support helicopters needed by Indonesia is 138. Indonesia's current holding is slightly above the computed number at 153 units. The current fleet represents 110% of the computed number.

#### **4.17.5.5 Surface to Air Missiles**

The average airspace coverage per Surface to Air Missiles (SAM) is 21,779 km<sup>2</sup> per SAM. Currently, the Indonesia's present holding of SAMs only managed to cover an average of 104,598 km<sup>2</sup> of airspace. Indonesia will need to possess 329 surface to air missiles to protect its vast airspace. That means with the current holdings of 68 SAMs, there is still a huge shortfall of 291 SAMs. The current holding also represents 20% of the computed figure.

#### **4.17.5.6 Anti Aircraft Guns**

Similar to SAMs, the average airspace covered by Anti Aircraft (AA) Guns is 11,125 km<sup>2</sup> per AA guns. Indonesia managed to cover only 12,633 km<sup>2</sup> per AA gun. Based on the calculated average airspace coverage, Indonesia should maintain as much as 639 AA guns. Since Indonesia currently only possess 563, it is still short of 76 units of AA Guns. This represents 88% of the computed number.

AA Guns will lose its significance in the future as it is not effective against supersonic jet planes. Its role will gradually be substituted by SAMs.

Before we proceed lets recap on how Indonesia's existing inventory of weapons system meets the computed numbers.

**Table 4.23** Existing Versus Computed Quantities

<b>Weapons</b>	<b>Existing</b>	<b>Computed</b>	<b>Ratio</b>
Tanks	405	788	51%
ACVs	687	1,438	48%
Artillery	1,072	670	160%
Anti Tank	835	443	188%
Submarines	2	7	28%
PSCs	30	35	85%
PCCs	263	326	80%
Amphibious	83	114	72%
Logistic and Support	27	35	77%
Miscellaneous	11	27	40%
Combat Aircraft	96	327	29%
Support Aircraft	242	175	138%
Combat Helicopter	15	92	16%
Support Helicopters	153	138	110%
SAMs	68	329	20%
AA Guns	563	639	88%
			77%

#### **4.18 Recommendations**

It has shown that Indonesia still has weaknesses in several areas. It seems logical to attempt to improve the Economic sub-index and Military sub-index for they have the heaviest weightage of 25% each as well as Government sub-index and Science and Technology sub-index since they have a multiplier impact.

We cannot directly take actions to improve scores in the Economy sub-index. Instead, to improve the Economy sub-index, improvements must be made in other areas, such as the legal system to attract FDI, improvements in Infrastructure sub-index to remove bottlenecks and

boosts economic performance. The Government sub-index can be improved by the presence of strong national leadership that can effectively suppress the rampant corruption and increase government transparency while assuring improved civil liberty. Improving scores in the Science and Technology sub-index may be undertaken in the medium to long term. Time may be shortened by technology procurement or technology transfer. The quickest and direct method to improve CNPI is through military modernization. Weapons procurement can also directly improve the Science and Technology sub-index by implementing offset strategies that require technology transfer as part of defense acquisition program. These technologies must be roadmapped and spun off to the commercial sector as well.

As we can see from Table 4.23 that Indonesia still has a short fall of around 23% in its weapons system, and these must be procured to bring Indonesia's military power at par with the international practices. By doing so, it will also increase Indonesia's military power. This in turn, will not trigger an arms race particularly in the ASEAN region as predicted by the game theory in Figure 2.6 in section 2.4.6. This is so because Indonesia is only "catching" up with the rest of the region due to the many years of neglect since the Asian financial crisis. The arms race or modernization has long been carried out by Indonesia's neighbors, particularly Singapore, Malaysia and Thailand whose defense budgets is close or exceeds Indonesia despite having a smaller country, population and standing military force. In fact if we look at the Global militarization Index as shown in Table 4.24, Indonesia ranks 89<sup>th</sup> in the world, lower all its ASEAN counter parts except for Philippines. Hence any military modernization will not be viewed as an aggressive policy by its neighbor that will intensify the arms race

**Table. 4.24** Global Militarization Index

No	Country	GMI	No	Country	GMI	No	Country	GMI
1	Israel	865.13	51	Malaysia	584.40	101	Czech Republic	456.23
2	Singapore	843.31	52	Lithuania	575.75	102	Uganda	454.35
3	Syria	796.45	53	Slovenia	574.95	103	Fiji	451.15
4	Jordan	779.01	54	Peru	572.98	104	Belgium	450.03
5	Russia	777.13	55	Denmark	572.27	105	Togo	449.07
6	Korea, South	747.93	56	France	571.58	106	New Zealand	448.12
7	Cyprus	738.39	57	Chad	570.69	107	South Africa	438.83
8	Greece	736.03	58	Montenegro	570.07	108	Ireland	437.71
9	Kuwait	735.98	59	Namibia	570.01	109	Philippines	434.73
10	Belarus	730.63	60	United Kingdom	568.29	110	Mali	424.46
11	Brunei Darussalam	726.34	61	Cambodia	565.48	111	Tanzania	424.10
12	Libya	715.82	62	Kyrgyzstan	559.63	112	Congo	423.65
13	Oman	711.90	63	Pakistan	556.42	113	Senegal	422.47
14	Bahrain	708.84	64	Italy	549.56	114	Guatemala	421.59
15	Saudi Arabia	703.28	65	Burundi	548.12	115	Nicaragua	420.38
16	United Arab Emirates	697.17	66	Spain	544.58	116	Central African Republic	413.55
17	Iraq	685.30	67	Austria	542.59	117	Japan	410.59
18	Algeria	682.34	68	Hungary	538.28	118	Ivory Coast	404.39
19	Bulgaria	680.97	69	Sudan	537.85	119	Cameroon	403.37
20	Mongolia	679.06	70	Kazakhstan	534.21	120	Argentina	402.67
21	Lebanon	667.93	71	Sweden	532.21	121	Dominican Republic	399.33
22	Armenia	666.51	72	Paraguay	524.74	122	Sierra Leone	396.03
23	Azerbaijan	665.67	73	Australia	523.13	123	Belize	393.73
24	Turkey	665.47	74	Congo DR	522.45	124	Mexico	392.39
25	Ukraine	661.15	75	Bolivia	521.93	125	Kenya	390.77
26	Morocco	656.36	76	Brazil	518.04	126	Timor Leste	387.32
27	Vietnam	651.84	77	Uruguay	515.83	127	Lesotho	385.33
28	Egypt	640.61	78	Latvia	515.61	128	Bangladesh	379.24
29	Iran	640.27	79	India	513.80	129	Swaziland	370.66
30	Finland	637.55	80	Bosnia and Herzegovina	512.39	130	Mozambique	368.47
31	Angola	634.00	81	Germany	510.45	131	Benin	367.85
32	Chile	626.58	82	Laos	508.56	132	Switzerland	366.89
33	Portugal	625.95	83	Gabon	508.05	133	Madagascar	366.27
34	United States	622.18	84	Poland	501.10	134	Seychelles	361.86
35	Yemen	618.37	85	Tunisia	494.01	135	Nigeria	355.36
36	Mauritania	614.68	86	Slovak Rep.	490.18	136	Burkina Faso	345.32
37	Estonia	613.47	87	Rwanda	485.20	137	Malta	324.57
38	Sri Lanka	609.38	88	China	481.83	138	Ghana	317.36
39	Macedonia	607.69	89	Indonesia	478.33	139	Jamaica	314.32
40	Djibouti	605.41	90	Albania	477.29	140	Mauritius	290.34
41	Qatar	603.80	91	Canada	476.05	141	Luxembourg	288.14
42	Thailand	602.28	92	El Salvador	475.61	142	Cape Verde	276.63
43	Colombia	598.89	93	Moldova	472.28	143	Malawi	274.06
44	Croatia	596.24	94	Honduras	464.43	144	Gambia	262.41
45	Serbia	595.66	95	Zambia	462.57	145	Liberia	253.13
46	Ecuador	593.33	96	Netherlands	462.38	146	Papua New Guinea	219.14
47	Georgia	592.41	97	Venezuela	460.94	147	Iceland	46.01
48	Romania	589.24	98	Ethiopia	460.62			
49	Botswana	586.75	99	Nepal	458.17			
50	Norway	585.16	100	Afghanistan	457.90			

Source : (Grebe, 2011)

Calls for Indonesians military modernization are often met with setbacks by the limited defense budget. It is dangerous for defense to rely entirely on the state budget when the economy is still exposed to cyclical vulnerability. The military are not permitted by law to conduct any business activities to augment their budget to ensure they become more professionals. By increasing allocations to the defense budget, economic growth may be impeded by a small margin if we view it from the Guns versus Butter model as shown in Figure 2.3 in section 2.45

while the income Model (Keynesian Cross) in the same section that defense spending will have the same impact as any other government spending with the same multiplier impact. With economic growth, the production possibility curve will shift outward and the military can have larger military budget even without any budget reallocation. The projected growth in military budget can be discounted to start modernizing the Indonesia's Armed Forces without delay. We must, however, think out of the box and find innovative solutions to augment our defense budget and mitigate its exposure to the economic cycles. Below are two recommendations made to address the problems of limited budget and one to ensure the viability of domestic defense industries.

#### **4.18.1 Strategic Defense Fund**

Under the present conditions, it may seem appropriate to set up a Strategic Defense Fund (SDF) to ensure the continued effectiveness of Indonesia defenses. The fund is a special purpose fund created and managed like any other investment portfolios.

Using a simple future value formula of  $FV = (1 + r) PV$ , we can simulate the fund size in the future. However, we first need to establish the basic assumptions as follows:

Government Investments into the Fund:

Rp. 5 trillion for Year 1 to Year 5

Rp. 10 trillion for Year 6 to Year 10

Rp. 15 trillion for Year 11 to Year 15

Rp. 20 trillion for Year 16 to Year 20

Target Rate of Return : 15% p.a

Expected Disbursement : 5% p.a

Government in the Strategic Defense Fund will be implemented using a step-up model. The argument for such model is inflation. This model also makes the investments more affordable due to the time value of money effects.

The investment objective of the fund is to maximize return while diversifying risks. To do that, it must given the flexibility in many forms investments such as equity, currency, bonds, commodities, and property. The fund may also invest in strategic industries locally and internationally. The fund must also be allowed to invest directly into new start-ups that are strategic to Indonesia's defense. With that the target return under the assumptions is also deemed conservative considering that the equity market, currency, commodities and property market are shown to have huge returns exceeding 30% at times. The fund needs to be managed by professionals and access the global markets as well as take short positions in bearish markets.

The disbursements are made to augment the current fiscal year's defense budget for weapons procurement and modernization. It can also be used to provides research grants to defense industries, universities and other research centers for defense related projects thereby improving Indonesia's technological capacity. Disbursements may also be used as a working capital to mobilize forces forces in times of emergencies such as natural disasters, to be reimbursed later by the government. The disbursement is capped at 5% of the fund size so that the fund can grow in size over time. The disbursement or dividend payout may be reviewed once the fund size reached the critical size of USD 100 billion. Under these assumptions, we can obtain the simulation of the SDF as depicted in the following Table 4.24 (Figures are in USD millions)

**Table 4.25** Forecasted Returns of Strategic Defense Fund

Year	Annual Top-Up	Beginning Balance	Return	Disbursement	Ending Balance
	Step UP		15%	5%	
1	5,000	5,000	750	250	5,500
2	5,000	10,500	1,575	525	11,550
3	5,000	16,550	2,483	828	18,205
4	5,000	23,205	3,481	1,160	25,526
5	5,000	30,526	4,579	1,526	33,578
6	10,000	43,578	6,537	2,179	47,936
7	10,000	57,936	8,690	2,897	63,729
8	10,000	73,729	11,059	3,686	81,102
9	10,000	91,102	13,665	4,555	100,213
10	10,000	110,213	16,532	5,511	121,234
11	15,000	136,234	20,435	6,812	149,857
12	15,000	164,857	24,729	8,243	181,343
13	15,000	196,343	29,451	9,817	215,977
14	15,000	230,977	34,647	11,549	254,075
15	15,000	269,075	40,361	13,454	295,983
16	20,000	315,983	47,397	15,799	347,581
17	20,000	367,581	55,137	18,379	404,339
18	20,000	424,339	63,651	21,217	466,773
19	20,000	486,773	73,016	24,339	535,450
20	20,000	555,450	83,318	27,773	610,995
21	-	610,995	91,649	30,550	672,095
22	-	672,095	100,814	33,605	739,304
23	-	739,304	110,896	36,965	813,234
24	-	813,234	121,985	40,662	894,558
25	-	894,558	134,184	44,728	984,014
26	-	984,014	147,602	49,201	1,082,415
27	-	1,082,415	162,362	54,121	1,190,656
28	-	1,190,656	178,598	59,533	1,309,722
29	-	1,309,722	196,458	65,486	1,440,694
30	-	1,440,694	216,104	72,035	1,584,764

A total of Rp. 250 trillion will be invested by the government over the 20 years period in a step up scheme. By the end of year 20 the fund is expected to have an ending balance of Rp. 611 trillion. From Year 21 onwards the fund is also expected to continue to grow significantly from year to year while contributing to large disbursement payouts annually at the same time. By Year 30, it is expected to have an ending balance of around Rp. 1,585 trillion.

An alternative is to provide interest free loan to the Strategic Defense fund to be repaid once the SDF reached certain size, Rp, 1,000 trillion for

example or after year 20 in 10 yearly installments. The results for the two alternatives are shown below.

**Table 4.26** Forecasted Returns of Strategic Defense Fund With Repayment After Reaching Rp. 1,000 Trillion in Size

Year	Annual Top-Up	Beginning Balance	Return	Disbursement	Repayment	Ending Balance
	Step UP		15%	5%		
1	5,000	5,000	750	250		5,500
2	5,000	10,500	1,575	525		11,550
3	5,000	16,550	2,483	828		18,205
4	5,000	23,205	3,481	1,160		25,526
5	5,000	30,526	4,579	1,526		33,578
6	10,000	43,578	6,537	2,179		47,936
7	10,000	57,936	8,690	2,897		63,729
8	10,000	73,729	11,059	3,686		81,102
9	10,000	91,102	13,665	4,555		100,213
10	10,000	110,213	16,532	5,511		121,234
11	15,000	136,234	20,435	6,812		149,857
12	15,000	164,857	24,729	8,243		181,343
13	15,000	196,343	29,451	9,817		215,977
14	15,000	230,977	34,647	11,549		254,075
15	15,000	269,075	40,361	13,454		295,983
16	20,000	315,983	47,397	15,799		347,581
17	20,000	367,581	55,137	18,379		404,339
18	20,000	424,339	63,651	21,217		466,773
19	20,000	486,773	73,016	24,339		535,450
20	20,000	555,450	83,318	27,773		610,995
21	-	610,995	91,649	30,550		672,095
22	-	672,095	100,814	33,605		739,304
23	-	739,304	110,896	36,965		813,234
24	-	813,234	121,985	40,662		894,558
25	-	894,558	134,184	44,728		984,014
26	-	984,014	147,602	49,201	50,000	1,032,415
27	-	1,032,415	154,862	51,621	50,000	1,085,656
28	-	1,085,656	162,848	54,283	50,000	1,144,222
29	-	1,144,222	171,633	57,211	50,000	1,208,644
30	-	1,208,644	181,297	60,432	50,000	1,279,509

With this alternative, repayment of the loan will be made from Year 26 to Year 30 of Rp. 50 trillion annually. The fund is projected to exceed Rp. 1,000 trillion in year 26 and it will continue to grow and its ending balance by end of year 30 will be Rp. 1,279 trillion

**Table 4.27** Forecasted Returns of Strategic Defense Fund With Repayment After Year 20 in 10 Annual Installments

Year	Annual Top-Up	Beginning Balance	Return	Disbursement	Repayment	Ending Balance
	Step UP		15%	5%		
1	5,000	5,000	750	250		5,500
2	5,000	10,500	1,575	525		11,550
3	5,000	16,550	2,483	828		18,205
4	5,000	23,205	3,481	1,160		25,526
5	5,000	30,526	4,579	1,526		33,578
6	10,000	43,578	6,537	2,179		47,936
7	10,000	57,936	8,690	2,897		63,729
8	10,000	73,729	11,059	3,686		81,102
9	10,000	91,102	13,665	4,555		100,213
10	10,000	110,213	16,532	5,511		121,234
11	15,000	136,234	20,435	6,812		149,857
12	15,000	164,857	24,729	8,243		181,343
13	15,000	196,343	29,451	9,817		215,977
14	15,000	230,977	34,647	11,549		254,075
15	15,000	269,075	40,361	13,454		295,983
16	20,000	315,983	47,397	15,799		347,581
17	20,000	367,581	55,137	18,379		404,339
18	20,000	424,339	63,651	21,217		466,773
19	20,000	486,773	73,016	24,339		535,450
20	20,000	555,450	83,318	27,773		610,995
21	-	610,995	91,649	30,550	25,000	647,095
22	-	647,095	97,064	32,355	25,000	686,804
23	-	686,804	103,021	34,340	25,000	730,484
24	-	730,484	109,573	36,524	25,000	778,533
25	-	778,533	116,780	38,927	25,000	831,386
26	-	831,386	124,708	41,569	25,000	889,525
27	-	889,525	133,429	44,476	25,000	953,477
28	-	953,477	143,022	47,674	25,000	1,023,825
29	-	1,023,825	153,574	51,191	25,000	1,101,207
30	-	1,101,207	165,181	55,060	25,000	1,186,328

Under the second alternative, the repayment is made from year 20 onwards with 10 annual installments. The resulting ending balance will be slightly lower by end of year 30 at Rp 1,186 trillion. Even when the loan is not interest free and the government charged an interest rate of 5% the fund is forecasted to reach a size of Rp. 613 trillion by end of year 30.

The fund may also be utilized in times of crisis such as war so as to minimize the negative impact on the economy. Even without the events of war, the fund may be drawn down when there is a major economic

crisis as such the tax revenue cannot no longer support the defense need at that time.

So now the question is where does the source of funds come for the Government annual top-up. As discussed earlier, the funds can come from the cost savings if the government can effectively implement the 10,000 megawatt coal-fired power plant project that generates savings from electricity subsidies amounting to Rp. 80 trillion per annum.

The next source of funding is for the government to engage in an even tougher crack down on corruption. The Corruption component in the Government sub-index showed that Indonesia performed poorly in dealing with corruption. Better control of corruption will increase tax revenue / collection. We have experienced in recent times of the Gayus incident to remind us just how much more we can collect from tax revenues.

#### **4.18.2 Rice Farms**

The Strategic Defense Fund is strongly encouraged to invest in hybrid rice farming. The main reasons behind this are that increased rice output will enhance our food security and the returns are attractive. Again to simulate the returns, we first need to make the basic assumptions.

Farm Land Size	: 300,000 hectares
Investment per Ha	: Rp. 5 million
Yield per Ha	: 8 tons
Paddy Price	: Rp. 2,500 per kilogram
Shrinkage	: 55%
Rice Production	: Rp. 750 per kilo gram
Planting Season p.a	: 2

Farm Land per Farmer : 5 hectares  
 No. of Framers : 60,000

With these assumptions the return of its investments can be calculated as follows in Table 4.2.

Total Investments	1,500,000,000,000
Total Yield per Season	2,400,000,000
Total Revenue Season	6,000,000,000,000
Total Annual Revenue	12,000,000,000,000
Total Profit	10,500,000,000,000
Less Profit Sharing	7,350,000,000,000
Return on Investments	490%

To the farmers they enjoy a profit sharing of 30% that comes to Rp. 3.15 trillion. If we divide that number by the number of farmers of 60,000, then each farmer will get Rp. 52,500,000 per annum or Rp. 4,375,000 per month, a decent return compared to the minimum wage level.

Another benefit of this program is that these farmers are not ordinary farmers. In between the planting seasons, these farmers will be provided basic military training and hence they are be trained to be the reserves of the TNI. When they are neither attending to their farm nor in training, they can also be involved in community development projects such as improving and maintaining village infrastructures.

The paddy produced can also be processed into rice amounting to 2.64 million tons (55% shrinkage) and produced at a cost of Rp. 5,295 per kilogram. The increased rice production will improve Indonesia's food security. When self-sufficiency has been achieved, the rice can be exported to "friendly" countries as part of Indonesia's "rice diplomacy". Investment in rice farms has the following benefits:

- Labor intensive hence create employment
- Creates additional pool of reserves
- Attractive margins to quickly grow the fund size
- Increase food security
- Improve foreign reserves by reducing imports and increasing exports
- Improve relationships with other countries through “rice diplomacy”
- Alleviate poverty through better control of food prices
- Improve Indonesia’s score in the Critical Production sub-index and therefore improves Indonesia’s Composite National Power Index

#### **4.18.3 Offset Regulations**

It will benefit Indonesia greatly, if during the course of modernizing its military, the government enforce an offset policy to ensure technology transfers. As such domestic defense industry must be directly involved in weapons and technology procurements.

The government must highly prioritize procurement from the domestic defense industries for weapons, equipment and supplies that can be produced locally. Where the domestic failed to manufacture the needed weapons, equipment and supplies, the government must give preference to suppliers who are willing to transfer the technology as well as assist the domestic defense industries in setting up the manufacturing capabilities.

### **Chapter Summary**

The results in this chapter that based on the Composite National Power Index, Indonesia is ranked 60<sup>th</sup> in the world. The results challenged the

current believed that Indonesia ranks among the top 20 most powerful countries in the world. Some of the factors contributing to that belief are:

- Indonesia is the 7<sup>th</sup> largest country
- Indonesia has the 4<sup>th</sup> largest population
- Indonesia is the largest nation in South East Asia
- Indonesia's GDP ranked 18<sup>th</sup> in the world
- Indonesia is a member of the G20

This thesis also showed that we must remove our Cold War mentality in judging a state's power that put too much emphasis on military power. China and Russia for example, ranked 36<sup>th</sup> and 71<sup>st</sup> respectively. This result may come as a surprise to most people. Again people would expect China to be ranked second given its economic power and military power. We must continue to be reminded that CNPI measures the state's readiness in meeting future security threats that are beyond those two domains. For example, cyber warfare will be determined more by a state's ICT capacity rather than economic or military power while neutralizing a biological threat or pandemic will depend on the state's health system and capability. Though it seemed difficult to accept that Russia' CNPI is lower than Indonesia, we must again be reminded not to focus solely on Russia's military capabilities. A high CNPI score does not translate to higher war capabilities. For example, Singapore ranked 18<sup>th</sup> but that does not mean Singapore will have a higher chance of achieving victory should it choose to go into war with Indonesia. It simply shows that Singapore is less vulnerable or better positioned to tackle the security threats of the twenty-first century.

Though Indonesia's military ranked 19<sup>th</sup>, further analysis shows that it is under equipped. In average its weapons or equipment is only at 77% of the computed numbers that would represent a fair or ideal number based

on the global averages and ratios. Efforts to modernize the Indonesian military are hampered by the limited defense budget.

It is recommended that the government set up a Strategic Defense Fund (SDF) to strengthen Indonesia's defense in the long term. Moreover it is recommended that the fund invest in rice farms, as such investments brings multiple benefits to Indonesia such as employment, reserves pool, enhanced food security and others.

## **Chapter 5**

### **CONCLUSION**

In this final chapter, we shall summarize the discussions made in this thesis starting from chapter 1 to chapter 4.

This thesis has shown that the world has gone through various polarity starting from multilateralism to bipolarism to unipolarism and in the twenty-first century, the world is shifting into a hybrid between unipolarism and multipolarism. Some scholars argued that a multipolar world is less stable and there will be more potential for conflicts.

In the twenty first century, the world is also faced with multi-faceted security threats that have spread across from the military domain to the non-military domain. The international security environment are faced with diverse issues including:

- Rise of New Powers
- Revival of Old Power
- Increasing Influence of Non-State Actors
- Rogue States Continues to Undermine Global Security
- Proliferation of Weapons of Mass Destruction (WMD)
- Asymmetric Warfare
- Proliferation of Digital Technology
- Regional Unstable States of Peace
- Fragile Global Economy

Globalization continues the international security. On one side of the coin it has the great potential to create wealth on a global scale. On the flip side, it means that the risks are more interconnected and make it harder to contain any risks within national borders. It also makes the pace of the spread of risks faster and thus harder to intercept. With rapid

globalization, security threats can easily switch from domestic issues to become international issues. For some security threats such as transnational crime, terrorism and climate change, it requires the cooperation of many states to act in a concerted manner to resolve the issue.

Indonesia faces its own set of security environment namely:

- Border Conflicts / Territorial Disputes
- Resource Conflicts
- Internal Conflicts
- Terrorism
- Natural Disaster
- Transnational Crime
- Food
- Defense Industry
- Shifting International and Regional Power Structure

As the threats become multi dimensional, we must also reevaluate our thinking of security paradigm. As threats continue to spread from military domain to the non-military it compels us to review our existing security paradigm. All elements of national power will need to be deployed to tackle these security threats. Achieving national security in the twenty-first century will rely more and more on non-military power. No one can predict the future war; where and how the wars will be fought. Therefore in measuring national power of a state, we must include all elements that are non-military that may threaten the state's national security.

Defining national security can be dilemmatic and has great risks of being over-secritized in today's complex environment. A study has also showed that national security depends military expenditure. States should prepare ahead of time in the 21<sup>st</sup> century and maintain adequately sized and well equipped forces capable of responding in timely manner

to deter and defeat adversaries. National security will increasingly depend on natural security (natural resources). In an open economy, security threats can also come from the economic realm.

Realists have always supported states pursuit of national interest and sanctify states to engage in war to protect its interest. Realism is also called power politics and focuses on state security and power as well as portrays the anarchic international system. Because of this continuous power seeking, a multipolar world is more prone to war than a bipolar world.

Realism is found to be most relevant considering the events that are happening around the world. Potential flashpoints are intensifying with Russia in Eurasia, Taiwan Straits, Korean Peninsula and South China Sea in the Asia Pacific region, Arab states in the Middle East, Argentina in South America region

Mercantilism compels states to pursue wealth and power to enhance the nation's independence and national security. Wealth is accumulated through trade surplus and promotion of domestic industries to augment the productive power. Wealth in turn enables military modernization that boosts military power and ultimately strengthens national security.

As the world becomes a hybrid between unipolarity and multipolarity, the Balance of Power (BoP) concept becomes more evident. Philippines and Vietnam, for example are realigning with United States to balance the increasing power of China.

The US will advance its national interests by strengthening their domestic foundation and integrating all elements of national power. The US has categorized national interest as vital, extremely important, important and less important or secondary. For vital and extremely important national

interests, the US is still predisposed to a military response. The US can also invade and attack other countries when its vital interests are threatened.

Indonesia's national interests includes national sovereignty, territorial integrity and the protection and safety of its citizens. The third element is more than physical safety but also to protect the citizen's livelihood and economic well-being. Indonesia's national security is reflected by the confidence held by the great majority of the citizens that the state has the military capability and effective policy to prevent its adversaries from effectively using force in preventing a nation's pursuit of its national interests.

States must possess national power to pursue its national interest. International politics is a struggle for power. National power connects national interests to feasibility. A country must be strong both in economic and military power.

At the primitive level national power can be measured by the military power and the economic capacity to mobilize war. But those measurements alone have been refuted by the Vietnam War. National power is largely determined by military power in the Cold War era but in today's world, non-military elements are gaining significance.

Instruments of national power can be categorized either as natural (geography, resources and population) or social (MIDLIFE). Morgenthau identified nine elements of national power as (1) geography, (2) natural resources, (3) industrial capacity, (4) military preparedness, (5) Population, (6) national characteristics, (7) national morale, (8) quality of diplomacy and (9) quality of government. The three most popular power index model is Composite Index of National Capability (CINC),

Cline's Model and the Comprehensive National Power developed by the Chinese counterpart.

National security refers to how a state employs all elements of national power to ensure survival and maintain its place in the international arena. It is a blend of political resilience and maturity, human resources, economic structure and capacity, technological competence, industrial base and availability of natural resources and finally the military might. It required the national leaders to ensure the survival and sovereignty of their nation by employing all instruments of national power. National security concept is applicable in both wartime and peacetime as it increasingly employs non-military elements as well.

The results of the research showed that Indonesia ranked 60<sup>th</sup> in terms of its Composite National Power Index out of the 170 countries included in the studies. This is a mediocre performance. Within the sub- groupings the result are also disappointing. Indonesia is ranked 3<sup>rd</sup> in ASEAN, 7<sup>th</sup> among the top 10 largest nations, 7<sup>th</sup> among the top 11 large population countries with population exceeding 100 million and 4<sup>th</sup> among the ten emerging markets.

Based on that Indonesia did below the median in 7 sub-indexes and performed better than the median rank in 9 sub-indexes. Indonesia managed to perform very well in 3 sub-indexes where it managed to be ranked among the top 10. The Science and Technology sub-index dragged the total score down by a significant amount, as it is a power multiplier and Indonesia scores badly.

This results may come as a surprise to many who thought that Indonesia should be ranked among the top 20. However, there are voices that complaint about how weak Indonesia's global position may agree with the findings. Probably this provides the answer over Malaysia insolence

towards Indonesia with the Ambalat incident and other border disputes. Malaysia is ranked 32<sup>nd</sup> in the world and 2<sup>nd</sup> in the ASEAN sub-grouping. Indonesia's military is also under equipped despite ranked 19<sup>th</sup> in the Military sub-index.

The lesson learnt from this objective is that we cannot use a single variable to measure national power. No one can predict the future war and hence must be prepared for anything. Therefore it is important to develop every component of the CNPI to prepare against future uncertainties.

This thesis also proposes two recommendations to overcome the limited defense budget and one to revitalize the domestic defense industry. The recommendations include the setting up of a Strategic Defense Fund that will be managed as an investment portfolio. The fund will over the long run and the returns from the investment portfolio can help boost Indonesia's defense budget in the future. The fund can also be used to fund research of advanced military technologies, invest in companies that are strategic to national defense. Secondly the thesis proposes that the fund invests in rice farms that has shown to have multiple benefits as follows:

- Labor intensive hence create employment
- Creates additional pool of reserves
- Attractive margins to quickly grow the fund size
- Increase food security
- Improve foreign reserves by reducing imports and increasing exports
- Improve relationships with other countries through "rice diplomacy"
- Alleviate poverty through better control of food prices
- Improve Indonesia's score in the Critical Production sub-index and therefore improves Indonesia's Composite National Power Index

Of course, this research cannot cover all aspects and recommend all solutions to improve Indonesia's CNPI. The power discussed in this thesis is best used to describe national power as a container of potential power. Actual power is subject to power conversion that may be conducted by further research to complement this thesis.

## Reference List

- Aheon, W. (2010). *Kehancuran Indonesia Pasca SBY*. Yogyakarta: Pustaka Solomon.
- Antara. (2010, 11 29). *TNI AL Jadikan Wilayah Perbatasan Sebagai Prioritas*. Retrieved 11 20, 2011, from Antara News: <http://www.antara.co.id/berita/1262068522/tni-al-jadikan-wilayah-perbatasan-sebagai-prioritas>
- Anwar, D. F. (1998). Indonesia: Domestic Priorities Define National Security. In Alagappa M. (ed), *Aisan Security Practice: Material and Ideational Influences* (pp. 477-512). California: Stanford University.
- Baker, N. V. (2002). The Impact of Antiterrorism Policies on Separation of Powers. *Presidential Studies Quarterly* (32), pp. 765-778.
- Balaam, D. N., & Veseth, M. (1996). *Introduction to International Political Economy*. New Jersey: Prentice Hall.
- Barnett, T. (2004). *The Pentagon's New Map*. New York: G. P. Putnam's Sons.
- Barro, R. J. (1981). Output Effects of Government Purchases. *Journal of Political Economy* , 89 (6), 1086-1121.
- Barro, R. J., & Redlick, C. J. (2009). *Macroeconomic Effects From Government Purchases and Taxes*. NBER.
- Baru, S. (2009). *Year of The Power Shift?* Retrieved from India Seminar: [http://www.indiaseminar.com/2009/593/593\\_sanjaya\\_baru.htm](http://www.indiaseminar.com/2009/593/593_sanjaya_baru.htm)
- Basu, K. (2008). the Enigma of India's Arrival: A Review of Arvind Virmani's Propelling India: Frpm Socialist Stagnation To Global Power. *Journal of Economic Literature* , 46.
- Baxter, M., & King, R. (1993). Fiscal Policy in General Equilibrium. *American Economic Review* (83), 315-334.
- BBC. (2010, 10 23). *North Korean Artillery Hits South Korean*. Retrieved 11 25, 2011, from BBC News Asia Pacific: <http://www.bbc.co.uk/news/world-asia-pacific-11818005>

- Benoit, E. (1973). *Defense and Economic Growth in Developing Countries*. Boston: Lexington Books.
- Benoit, E. (1978). Growth and Defense in Developing Countries. *Economic Development and Cultural Change* (26), 271-280.
- Bergen, P., & Garrett, L. (2006). *Report of the Working Group on State Security and Transnational Threats*. New Jersey: Princeton University Press.
- Blanchard, O., & Perotti, R. (2002). An Empirical Characterization of The Dynamic Effect of Changes in Government Spending and Taxes on Output. *Quarterly Journal of Economics* (117), 1329-1368.
- Bradford, J. F. (2005). The Growing Prospects for Maritime Security Cooperation in Southeast Asia. *Naval War College Review* , 58 (3), 73.
- Brinkerhoff, J. R. (2001, October). *The Emergency Preparedness Mobilization Board*. Retrieved from Homeland Security Institute: [http://www.homelanddefense.org/journal/articles/Brinkerhoff\\_Oct01.htm](http://www.homelanddefense.org/journal/articles/Brinkerhoff_Oct01.htm)
- Brinkerhoff, J. R. (1994). *The Strategic Implications of Industrial Preparedness*. Retrieved from <http://www.carlisle.army.mil/USAWC/parameters/1994/brinker.htm>
- Brumm, H. J. (1997). Military Spending, Government Disaray, and Economic Growth; A Cross-Country Empirical Analysis. *Journal of Macroeconomics* , 19 (4), 827-838.
- Burke, S. (2009). *National Security*. Center for a New American Security, Pennsylvania.
- Business Monitor International. (2010). *Indonesia Security Defence and Security Report Q3 2010*. Busines Monitor International.
- Butler, R. (2006). *Indonesia: National Security*. Retrieved 7 20, 2011, from Mongabay.Com: [http://www.mongabay.com/reference/new\\_profiles/311.html](http://www.mongabay.com/reference/new_profiles/311.html)
- Campbell, K., & O'Hnalon, M. (2006). *Hard Power: The New Politics of National Security*. New York: Basic Books.
- Center for Naval Analysis. (2007). *National Security and the Threat of Climate Change*. Retrieved from

<http://securityandclimate.cna.org/report/National%20Security%20and%20the%20Threat%20of%20Climate%20Change.pdf>

Cerami, J. R., & Holcomb Jr., J. F. (Eds.). (2001). *U.S. Army War College Guide to Strategy*. Carlisle, PA: U.S. Army War College Strategic Study Institute.

Chang, C.-L. (2004). A Measure of National Power. *Building on Our Past and Investing in Our Future: An International Seminar on Multidisciplinary Discourse*. Bangi: Fo Guang University and The National University of Malaysia.

Clausewitz, C. V. (1997). *On War*. (J. Graham, Trans.) Hertfordshire: Wordsworth Edition.

Cline, R. S. (1994). *The Power of Nations in 1990s: A Strategic Assessment*. Lanham: University Press of America.

Cline, R. S. (1975). *World Power Assessment: A Calculus of Strategic Drift*. Washington D.C.: The Center for Strategic and International Studies.

Deger, S. (1986). Economic Development and Defense Expenditure. *Economic Development and Cultural Change*, 35 (1), 179-196.

DoD. (2008). *National Defense Strategy*. Department of Defense. Department of Defense.

DoD. (2010). *Quadrennial Defense Review*. Department of Defense. Department of Defense.

DoE, & DoD. (2008). *National Security and Nuclear Weapons in The 21st Century*. Department of Energy and Department of Defense. Department of Energy and Department of Defense.

Eberstadt, N. (1991, Summer). *Population Change and National Security*. Retrieved from Foreign Affairs:

<http://www.foreignaffairs.org/9910601faessay6092/nicholas-eberstadt/population-change-and-national-security.html>

Edwards, C. (2007). *National Security for the Twenty-First Century*. London: DEMOS.

- Evans, G., & Newnham, J. (1998). *The Penguin Dictionary of Internationalism*. London: Penguin Books.
- Febri, A. D. (2008). strategi Penanganan Pulau Terluar Dalam Rangka Menjaga Keutuhan NKRI. *Satria: Studi Pertahanan* , 4 (2).
- Feulner, E. (1996, February 6). *What Are America's Vital Interests?* Retrieved November 22, 2011, from The Heritage Foundation: <http://www.heritage.org/research/lecture/what-are-americas-vital-interests>
- Fingar, C. (2008). *Global Trends 2025: A Transformed World*. National Intelligence Council.
- Freeman Jr., C. W. (2007). *Arts of Power: Statecraft and Diplomacy*. Wahington D.C: United States Institute of Peace Press.
- German, F. (1960). A tentative Evaluation of World Power. *The Journal of Conflict Resolution (pre-1986)* , 138.
- Gershman, J. (2002, 10 26). *Indonesia: Islands of Conflict*. Retrieved 3 22, 2011, from Asia Times Online: [http://www.atimes.com/atimes/Southeast\\_Asia/DJ26Ae05.html](http://www.atimes.com/atimes/Southeast_Asia/DJ26Ae05.html)
- Giplin, R. (2001). *Global Political Economy - Understanding The International Economic Disorders*. New Jersey: Princeton University Press.
- Grebe, J. (2011). *The Global Militarization Index (GMI)*. Research Report, Bonn International Center for Conversion (BICC) GmbH, Bonn.
- Harries, O. (2002, 11 27). *Facing Reality in Indonesia*. Retrieved 7 20, 2011, from The National Interest: <http://nationalinterest.org/article/facing-reality-in-indonesia-2181>
- Hart, J. (1976). Three Approaches to The Measurement of Power in International Relations. *International* , 289-305.
- Hartley, K. (2011). *The Economics of Defense Policy: A New Perspectives*. Abingdon: Routledge.
- Huntington, S. P. (1999). The Lonely Superpower. *Foreign Affairs* , 78 (2).

- Hwang, K. (2010). *Measuring Geopolitical Power in India: A Review of The National Security Index (NSI)*. German Institute of Global and Area Studies. Hamburg: German Institute of Global and Area Studies.
- Jackson, M. (2008, March 7). Liberty and National Security in Adam Smith's Possible World. *Constit Polit Econ* .
- Joint Chief of Staffs. (2006). *Joint Publication 3-13: Information Operations*. Washington D.C.: U.S. Government Printing Office.
- Joint Working Group of AAAS, APS and CSIS. (2008). *Nuclear Weapons in 21st Century U.S. National Security*. Joint Working Group of AAAS, the American Physical Society and the Center for Strategic and International Studies. Joint Working Group of AAAS, the American Physical Society and the Center for Strategic and International Studies.
- Joyner, J. (2007, August 21). *War, Vital Interests and International Law*. Retrieved November 22, 2011, from Outside The Belt: [http://www.outsidethebeltway.com/war\\_vital\\_interests\\_and\\_international\\_law/](http://www.outsidethebeltway.com/war_vital_interests_and_international_law/)
- Juwana, H. (2009, 6 5). Isu Pokok Ambalat. Jakarta, Indonesia: Kompas.
- Kepres. (2010). Keputusan Presiden No. 41 Tahun 2010 tentang Kebijakan Umum Pertahanan Negara 2010- 2014.
- Kong, Z. (2011, May). Introduction to Defence Economics. *Class Lecture Notes* . Beijing.
- Kumar, S. (2002). *India's National Security: Annual Review 2001*. New Delhi: Vikas Publishing House.
- Lawson, R. C., & Ferraro, V. (2008). *Theory of Hegemonic Stability*. South Hadley.
- Le Monde. (2000, April). *The States We Are In*. Retrieved November 15, 2011, from Le Monde: <http://mondediplo.com/2000/04/07golub>
- MacFarlane, C. S., & Khong, Y. (2006). *Human Security and The UN: A Critical History*. Indiana University Press.
- Marg, T. J. (1996). *A Maritime Strategy for India*. New Delhi: National Defence College.

- Mastapeter, C. W. (2008, December). *The Instruments of National Power: Achieving The Strategic Advantage In A Changing World*. *diss.* Monterey, USA: Naval Postgraduate School.
- Mearsheimer, J. J. (2001). *The Tragedy of the Great Power Politics*. New York: Norton .
- Measuring A Nation's Vital Interest. (n.d.). *Measuring A Nation's Vital Interest: Establishing Benchmarks to Gauge the Level of Crisis Importance*. Retrieved November 3, 2011, from Air & Space Power Jurnal - Chronicle Online Journal:  
<http://www.airpower.au.af.mil/airchronicles/cc/caraccilo.html>
- Measuring A Nation's Vital Interest: Establishing Benchmarks to Gauge the Level of Crisis Importance*. (n.d.). Retrieved November 3, 2011, from Air & Space Power Jurnal - Chronicle Online Journal:  
<http://www.airpower.au.af.mil/airchronicles/cc/caraccilo.html>
- Moegenthau, H. J. (1962). *The Impasse of American Foreign Policy*. Chicago: Chicago.
- Morgenthau, H. J. (2006). *Politics Among Nations*. 7th. (K. W. Thompson, & W. D. Clinton, Compilers) New York: McGraw Hill.
- Nayar, B. R., & T., V. (2003). *India in The World Order: Searching for Major Power Status*. Cambridge: Cambridge University Press.
- Nye, J. S. (2004). *Soft Power: The Means to Success in World Politics*. New York: PublicAffairs.
- Obama, B. (2010). *Natioal Security Strategy*. Office of the President of the United States. The White House.
- O'Hanlon, M. E. (2010, February 2). *U.S. Strategy Juggling Two Wars - And Threats of More*. Retrieved November 21, 2011, from The Brookings Institution:  
[http://www.brookings.edu/opinions/2010/0202\\_defense\\_review\\_ohanlon.aspx](http://www.brookings.edu/opinions/2010/0202_defense_review_ohanlon.aspx)
- Owens, T. M. (1997). *The Political Economy of National Defense*. In S. a. Faculty (Ed.), *Starategy and Force Planning* (p. 222). Newport, Rhode Island: Naval War College.

- Papp, D. S. (1984). *Contemporary International Relations: Framework for Understandings*. New York: Macmillan.
- Parthemore, C., & Rogers, W. (2010). *Sustaining Security - How Natural Resources Influence National Security*. Center for a New American Security.
- Pertahanan, D. (2008). *Buku Putih Perthananan*. Jakarta: Departemen Pertahanan.
- Pillsbury, M. (2000). *China Debates the Future Security Environment*. Washington: National Defense University Press.
- Ramey, V. A., & Shapiro, M. D. (1998). Costly Capital Allocation and The Effects of Government Spending. *Carnegie-Rochester Conference Series on Public Policy*, 48, pp. 145-194.
- Ramey, V. (2011). Identifying Government Spending Shocks: It's All in The Timing. *Quarterly Journal of Economics* .
- Reuters. (2011, June 17). *China's 'Vital' Interests at Stake Over Greek Crisis*. Retrieved November 22, 2011, from The Guardian: <http://www.guardian.co.uk/business/2011/jun/17/china-vital-interests-greek-crisis>
- Romm, J. (1993). *Defining National Security: The Nonmilitary Aspects*. Council on Foreign Relations.
- Rosati, J. A. (2004). At Odds with One Another: The Tension between Civil Liberties and National Security in Twentieth-Century America. In D. B. Cohen, & J. W. Wells (Eds.), *American National Security and Civil Liberties in an Era of Terrorism*. New York: Palgrave Macmillan.
- Roskin, M. G. (1994). *National Interest: From Abstraction To Strategy*. US Army War College, Strategic Studies Institute. Pennsylvania: Parameters.
- Sachs, S. E. (2003). *The Changing Definition of Security*. Retrieved June 13, 2011, from [http://www.stevesachs.com/papers/paper\\_security.html](http://www.stevesachs.com/papers/paper_security.html)
- Sandler, T., & Hartley, K. (Eds.). (1995). *The Economics of Defense*. Cambridge: Cambridge Univeristy Press.

- Sangaji, D. M., & M., D. M. (2010). *Metodologi Penelitian*. Yogyakarta: C.V Andi Offset.
- Sarkesian, S. C. (1989). *U.S. National Security: Policy Makers, Processes, and Politics*. Boulder, Colorado: Lynne Rienner.
- Satriastanti, F. E. (2011, 7 20). *Environmental Degradation Could Threaten Indonesia's National Defense and Security: Expert*. Retrieved 10 31, 2011, from Jakarta Glome: <http://www.thejakartaglobe.com/home/environmental-degradation-could-threaten-indonesias-national-defense-and-security-expert/335673>
- Shah, A. (2001, July 14). *Foreign Policy - National Interests*. Retrieved November 15, 2011, from Global Issues: <http://www.globalissues.org/article/101/foreign-policy-national-interests>
- Sheehan, M. (1996). *Balance of Power: History and Theory*. London: Routledge.
- Smith, R. P. (1980). Military Expenditure and Investment in OECD Countries 1954-1973. *Journal of Comparative Economics* (4), 18-3.
- Spanier, J., & Wendzel, R. L. (1996). *Games Nation Play 9th ed*. Washington D.C.: CQ Press.
- Suharto, E. (2007, 3 24). ASEAN 2009: Time To Deal With Illegal Fishing. Jakarta, Indonesia: The Jakarta Post.
- Sukandarrumindi, M., & Haryanto. (2008). *Dasar-Dasar Penulisan Proposal Penelitian*. Yogyakarta: Gajah Mada University Press.
- Sukma, R. (2011). *Indonesia's Security Outlook, Defence Policy and Regional Cooperation*. Japan: NIDS.
- Suyanto, B. (2003). Perdagangan dan Eksploitasi Seksual Komersial Anak Perempuan. *Jurnal Perempuan* (29), 54.
- The Commision On America's National Interests. (2000). *America's National Interest*. Harvard Univeristy, Belfer Center for Science and International Affairs.
- The Commision On America's National Interests. (2000). *America's National Interest*. Harvard Univeristy, Belfer Center for Science and International Affairs.

- Thompson, E. A. (1974). Taxation and National Defense. *Journal of Political Economy* , 12, 755-782.
- Timmers, C. P. (2004). *Food Security in Indonesia: Current Challenges and the Long-Run Outlook* . Center for Global Development. Center for Global Development.
- Torres, J. L. (2011). *National Security and Military Spending: Measuring The Hostile External Threat*. Univeristy of Malaga, Department of Economics, Malaga.
- U.S. Air War College. (n.d.). *Gateway to the Internet, "Military Theory, Theorists, and Strategy*. Retrieved from <http://www.au.af.mil/au/awc-thry.htm#atmahan>
- UNDP. (1994). *Human Development Report 1994: New Dimensions of Human Security*. United Nations Development Programme. New York: Oxford University Press.
- Verona, R. (2008, 2 25). Conquering Human Trafficking in ASEAN, RI. Jakarta, Indonesia: The Jakarta Post.
- Walt, S. M. (1985). Alliance Formation and the Balance of World Power. *International Security* , 9 (4).
- Walt, S. M. (1998). International Relations: One World, Many Theories. *Foreign Policy* 110 (Spring).
- Waltz, K. N. (2001). *Man, the State and War*. New York: Columbia Univeristy Press.
- Waltz, K. N. (2004). *The Use of Force: Military Power and International Politics 6th ed*. Lanham: Rowman & Littlefield.
- Waltz, K. N. (2001). *Theory of International Politics*. New York: Columbia University Press.
- Weimer, C. M. (2009). Foreign Direct Investment and National Security Post-FINSA 2007. *Texas Law review* , 87 (3), 663-684.
- Wikipedia. (2011, October 12). *National Interest*. Retrieved November 21, 2011, from Wikipedia: [http://en.wikipedia.org/wiki/National\\_interest](http://en.wikipedia.org/wiki/National_interest)
- Wikipedia. (2011, October 27). *National Security*. Retrieved November 3, 2011, from Wikipedia: [http://en.wikipedia.org/wiki/National\\_security](http://en.wikipedia.org/wiki/National_security)

Winter, D. C. (2011, September 15). *Adapting To The Threat Dynamics of The 21st Century*. Retrieved November 21, 2011, from The Heritage Foundation: <http://www.heritage.org/research/reports/2011/09/adapting-to-the-threat-dynamics-of-the-21st-century>

Witular, R. A. (2005, 10 3). Military To Up Spneding To Modernize Equipment. Jakarta, Indonesia: The Jakarta Post.

Wu, C. (1995). *Guangyi Dazhanlue (Grand Strategy)*. Beijing: Shishi Chubanshe.

Xinhua. (2010, 8 25). *Indonesia Must Prioritize National Interest Related To Dispute With Malaysia*. (张茜, Ed.) Retrieved 11 21, 2011, from People's Daily Online:

<http://english.peopledaily.com.cn/90001/90777/90851/7117468.html>

Zhu, L., & Meng, R. (1995). Deng Xiaoping zonghe guoLi sixiang yanjiu (A Study on Deng Xiaoping's Comprehensive National Power Thought). (L. Li, & Q. Zhao , Eds.) *Xin shiqi junshi jingli lilun yanjiu (Studies of New Period Military Economic Theory)* , 43 - 44.

## Appendix 1 Rule Sets and The Globalization Phase

	Rule Sets	
Globalization Phase	Economic	Security
I (1870 – 1914)	<ul style="list-style-type: none"> <li>• Improved international connectivity</li> <li>• Rising income levels</li> </ul>	<ul style="list-style-type: none"> <li>• Failed to prevent World Wars I and II that wiped the gains from economic integration</li> </ul>
II (1945 – 1980)	<ul style="list-style-type: none"> <li>• Resurrect globalization on the three pillars of the United States, Western Europe and Japan, embodied in the General Agreement on Tariffs and Trade, World trade Organizations and other multilateral agreements</li> </ul>	<ul style="list-style-type: none"> <li>• Brought together the United States, Germany, Japan, and the remainder of Western Europe in a new security structure</li> <li>• Focus on deterrence and gave birth to the concept of Mutually Assured Destruction (MAD)</li> </ul>
III (1990 – Present)	<ul style="list-style-type: none"> <li>• Similar to its predecessors</li> </ul>	<ul style="list-style-type: none"> <li>• Spread of dangerous military technologies</li> <li>• Chaos in many parts of the world</li> <li>• China viewed as a potential future national security threat</li> </ul>

Source: Barnett 2004

## **Appendix 2** Weinberger Doctrine

The Weinberger Doctrine asked the following questions :

1. Are vital interests involved?
2. Is there a commitment to victory?
3. Are there clearly defined political and military objectives?
4. Is there a continuous plan to reassess the troop and objective ratio?
5. Does the President intend to mobilize public opinion in support of the operation?
6. Are we using intervention or war as a last resort?

Source: (Measuring A Nation's Vital Interest: Establishing Benchmarks to Gauge the Level of Crisis Importance)

### **Appendix 3** United States Vital Interest

#### 6. Safeguard U.S. National Security

Protecting America's territory, borders, and airspace especially from its biggest threat, long-range missiles armed with nuclear weapons, by reinforcing an anti-missile defense and a broad nonproliferation policy. If diplomacy fails to discourage hostile powers from acquiring nuclear weapons, it will then be in the US vital interest to warrant the use of force – unilaterally if necessary – to stop renegade nations from becoming nuclear powers. This also means sustaining large standing conventional forces necessary to protect our homeland.

#### 7. Prevent a Major Power Threat to Europe, East Asia, or the Persian Gulf

Expansionist activities by Russia against her neighbors, Iran, or a nuclear-armed North Korea are threats to US vital interest. Regarding Europe, it is a false economy to withdraw troops just because Russia is not an immediate danger. It will be far wiser to keep 100,000 troops in Europe to maintain the peace than to send a million later to fight a war started by US absence. It is also far better to enter into strategic alliances – like NATO and mutual defense treaties with Japan and South Korea – than to try to go it alone.

It is also in the national interest of US to stay a permanent Pacific power and that meant the US will not tolerate any forcible activity by China against Taiwan. Taiwan is much more than just US 7<sup>th</sup> largest trading partner but also represent the model for a vigorous, democratic, free-market society in Asia. Invasion, blockade, or aggressive activity by mainland China against Taiwan must not be tolerated.

8. Maintain Access to Foreign Trade

In this matter, the greatest threat comes from within the US instead of from outside US borders, with protectionists fearing the loss of jobs due to its inability to compete. These protectionists ignore the regenerative power of the free market.

9. Protect Americans Against Threats to Their Lives and Well-Being

The United States has an obligation to protect its citizens from threats arising out of terrorist activities and other international criminal activities.

10. Maintain Access to Resources

A threat to US oil supply in which more than half of US oil consumption relied on imported oil, is a threat to our national interest. The US Department of Defense is vulnerable to oil supply shocks as it is the world's single largest consumer, surpassing any other public and private organizations as well as more than 100 countries. Disruptions in the energy supply or price could hamper US military operations and effectiveness and ultimately threaten national security.

Source: (Feulner, 1996)

#### **Appendix 4** Redefining US National Interest in The 21<sup>st</sup> Century

- Which region(s) should America care about?
  - Russia;
  - Middle East (Persian Gulf);
  - Asia Pacific;
  - Africa; or
  - Elsewhere
  
- Which issue(s) matters most to America?
  - Debt crisis;
  - International trade and economic integration;
  - Russia's comeback;
  - China's rising power;
  - Taiwan;
  - Korean Peninsula tension;
  - South China Sea dispute;
  - Proliferation of weapons of mass destruction (WMD);
  - Human rights;
  - Transnational crimes:
  - Environmental degradation and climate change;
  - Or other issues

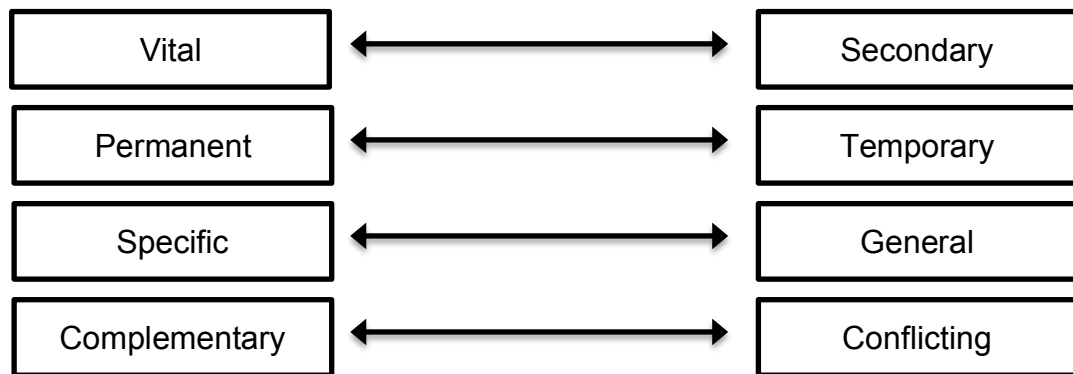
Source : (The Commission On America's National Interests, 2000)

## **Appendix 5** Foreign Direct Investments and National Security

- Shut down and sabotage of critical facility;
- Impeding a law-enforcement or national-security investigation;
- Access to sensitive data, or knowledge of investigation methods used by state intelligence and law enforcement agencies;
- Limiting government access to information needed for surveillance or law-enforcement purposes;
- Denying critical technology or products to the government or domestic industry;
- Transferring critical technology or products that are crucial for national defense, intelligence operations, or domestic security overseas;
- Illegal transfer of technology abroad that is subject to export laws;
- Undermine technological leadership in a sector with important defense, intelligence, or domestic security applications;
- Compromising the security of government and private sector information-technology networks;
- Facilitating state or economic espionage through acquisition of a domestic company; and
- Aiding the military or intelligence capabilities of a foreign country with interests adverse to those of the host nation.

**Appendix 6** Indonesian Bombing Chronology

<b>Date</b>	<b>Location</b>
October 2002	Bali Bombing I
August 2003	J.W. Marriot Hotel, Jakarta
November 2004	Australian Embassy
October 2005	Bali Bombing II
July 2009	J.W. Marriot Hotel and Ritz Carlton Hotel, Jakarta

**Appendix 7** Types of National Interests

Source: (Roskin, 1994)

## Appendix 8 Levels of US National Interests

<b>Levels of National Interests</b>	<b>Descriptions</b>
Vital Interests	Conditions that are strictly necessary to safeguard and enhance Americans' survival and well-being in a free and secure nation.
Extremely Important Interests	Conditions that, if compromised, would severely prejudice but not strictly imperil the ability of the US government to safeguard and enhance the well-being of Americans in a free and secure nation
Important Interests	Conditions that, if compromised, would have major negative consequences for the ability of the US government to safeguard and enhance the well-being of Americans in a free and secure nation
Less Important Or Secondary	Unimportant and have little direct impact on the ability of the US government to safeguard and enhance the well-being of Americans in a free and secure nation

Source: (The Commission On America's National Interests, 2000)

## **Appendix 9** US National Interests

### **United States National Interest**

#### **Vital Interests**

1. Prevent, deter, and reduce the threat of nuclear, biological, and chemical weapons attacks on the United States or its military forces abroad.
2. Ensure US allies' survival and their active cooperation with the US in shaping an international system in which we can thrive.
3. Prevent the emergence of hostile major powers or failed states on US borders.
4. Ensure the viability and stability of major global systems (trade, financial markets, supplies of energy, and the environment)
5. Establish productive relations, consistent with American national interests, with nations that could become strategic adversaries, China and Russia.

#### **Extremely Important Interests**

1. Prevent, deter, and reduce the threat of the use of nuclear, biological, or chemical weapons anywhere.
2. Prevent the regional proliferation of WMD and delivery systems.
3. Promote the acceptance of international rules of law and mechanisms for resolving or managing disputes peacefully.
4. Prevent the emergence of a regional hegemon in important regions, especially the Persian Gulf.
5. Promote the well-being of US allies and friends and protect them from external aggression.
6. Promote democracy, prosperity, and stability in the Western Hemisphere.
7. Prevent, manage, and, if possible at reasonable cost, end major conflicts in important geographic regions.

8. Maintain a lead in key military-related and other strategic technologies, particularly information systems.
9. Prevent massive, uncontrolled immigration across US borders.
10. Suppress terrorism (especially state-sponsored terrorism), transnational crime, and drug trafficking.
11. Prevent genocide.

### **Important Interests**

1. Discourage massive human rights violations in foreign countries.
2. Promote pluralism, freedom, and democracy in strategically important states as much as is feasible without destabilization.
3. Prevent and, if possible at low cost, end conflicts in strategically less significant geographic regions.
4. Protect the lives and well-being of American citizens who are targeted or taken hostage by terrorist organizations.
5. Reduce the economic gap between rich and poor nations.
6. Prevent the nationalization of US-owned assets abroad.
7. Boost the domestic output of key strategic industries and sectors.
8. Maintain an edge in the international distribution of information to ensure that American values continue to positively influence the cultures of foreign nations.
9. Promote international environmental policies consistent with long-term ecological requirements.
10. Maximize US GNP growth from international trade and investment.

### **Less Important or Secondary Interests**

1. Balancing bilateral trade deficits.
2. Enlarging democracy everywhere for its own sake
3. Preserving the territorial integrity or particular political constitution of other states everywhere.
4. Enhancing exports of specific economic sectors.

## Appendix 10 National Power Indices

### Süßmilch (1741)

Power = Population x Population Density

### Friedensburg (1936)

Military Power = Self-Sufficiency in National Resources x Population

### German (1960)

Power = N ( L + P + I + M )

N: 2 if it possesses nuclear weapons - 1 if it has none, L: function of the use of land, P: function of the use of manpower, I: function of the use of resources, M: number of military personnel

### David J. Singer (1972)

Power = ( tpop + upop + sp + fc + mb + saf ) / 6

tpop: total population, upop: urban population, sp: steel production, fc: fuel/coal production, mb: military budget, saf: military personnel

### Cline (1975)

Power = ( C + E + M ) × ( S + W )

C: critical mass (population and territory), E: economic power, M: military power, S: strategic objectives, W: national will

### Fucks (1978)

VP = ( E × P<sup>1/3</sup> + 3 × S × P<sup>1/3</sup> ) / 4

VP: virtual power, E: secondary energy production, P: population, S: steel production

### Beckman (1984)

Power = ( steel + pop × pol\_stab + engy + nuc\_weap ) / 4

steel: percentage of world steel production, pop: percentage of world population, pol\_stab: score for political stability, engy: energy production as percentage of world total, nuc\_weap: percentage of deliverable nuclear weapons

#### 黄硕风 (1989)

$$Y_t = K_t \times (H_t)^\alpha \times (S_t)^\beta$$

Y: comprehensive national output, K: coordinated coefficient, H: "mass" of CNP, S: "acceleration" of CNP, t: time,  $\alpha$ : hard elasticity index,  $\beta$ : soft elasticity index

#### National Security Council Secretariat (Government of India) NSCS (2002)

$$NSI = (HDI + RDI + GDPPI + DEI + PI) / 5$$

NSI: National Security Index, HDI: Human Development Index, RDI: Research and Development Index, GDPPI: GDP Performance Index, DEI: Defense Expenditure Index, PI: Population Index

#### Агеев (2004)

$$IPI = (M + T + NR + P + E \times 1.5 + C\&R + S\&E + A + FP) / 9.5$$

IPI: integral power indicator, M: management, T: territory, NR: natural resources, P: population, E: economy, C&R: culture and religion, S&E: science and education, A: army (armed forces), FP: foreign policy (geopolitical environment)

#### Hillebrand (2006)

$$\text{TechPower} = \text{GDP} \times \text{GDPPC}$$

TechPower: economic-technological capability, GDPPC: GDP per capita

#### Zarghani (2006) زرقانی

$$NP = (EC + PL + CL + SC + MI + TR + ST + TN + AS) / 9$$

NP: national power, EC: economical factor, PL: political factor, CL: cultural factor, SC: social factor; MI: military factor, TR: territorial factor, ST: scientific and technological factor, TN: trans-national factor, AS: astro-space factor

**Sulek (2010)**

Po: general power, D: gross domestic product, L: population, p: area of a political unit, Pr: military power, W: military expenditures, S: number of soldiers in active service

$$P_o = D^{0.652} \times L^{0.217} \times p^{0.109}$$

$$P_r = W^{0.652} \times S^{0.217} \times p^{0.109}$$

## **Appendix 11** Comprehensive National Power Developed by Colonel Huang Shuofeng

- **Natural Resources**
  - Man Power Resources
    - Total population
    - Life expectancy
    - The proportion of the economically active population in the total population
    - The number of university students per 10,000 people
  - Land Resources
    - The area of national territory
    - The area of cultivatable territory
    - The area in forest
  - Mineral Resources (reserves)
    - Iron
    - Copper
    - Bauxite
  - Energy Resources (reserves)
    - Coal
    - Crude oil
    - Natural gases
    - Water energy
  
- **Economic Activities Capability**
  - Actual Economic Strength (total)
    - Gross domestic product (GDP)
    - Industry production capability (electric energy production, steel output, cement output, logs output)
    - Food supply capability (total grain output, degree of self-sufficiency in grain)

- Energy supply capability (volume of energy production, volume of energy consumption, crude oil processing capability)
- Total cotton output
- Actual Economic Strength (per person)
  - GDP per person
  - Industry production capability (electric energy production, steel output, cement output, logs output)
  - Food supply capability (total grain output, average calories per person)
  - Energy supply capability (volume of energy consumption)
- Production Efficiency
- Social labor production rate
- Industry labor production rate
- Agriculture labor production rate
- Material Consumption Level
  - Volume of energy consumption based on GDP calculations
- Structure
  - The proportion of the tertiary industry in the GDP
- **Foreign Economic Activities Capability**
  - Total import and export trade
    - Total import trade
    - Total export trade
  - Total international reserves
    - International reserves (not including gold);
    - Gold reserves
- **Science and Technology Capability**
  - Proportion of research and development in the GDP
  - Number of scientists and engineers

- The number of scientists and engineers per 1,000 people
- Proportion of machinery and transportation equipment exports in total exports
- Proportion of high-technology intensive exports in total exports
- Social Development Level
  - Education Level
    - Education expenditures per person
    - Proportion of people studying in higher education
    - Proportion of people studying in secondary school education
  - Cultural Level
    - Adult literacy rate
    - Number of people per one thousand who get a daily newspaper
  - Health Care Level
    - Health care expenditures per person
    - Number of people doctors are responsible for
    - Number of people nurses are responsible for
  - Communications
    - Number of people who have a telephone per 100 people
  - Urbanization
    - Proportion of the urban population in the total population
- Military Capability
  - Number of military personnel
  - Military expenditures
  - Weapons exports
  - Nuclear weapons (the number of nuclear launchers; the number of nuclear warheads)
- Government Regulation and Control Capability

- Proportion of final government consumption expenditures in the GDP
  - Proportion of central government expenditures in the GDP
  - Investigation through interviews asking nine questions
- Foreign Affairs Capability
    - Uses ten factors in a "nerve network model" to carry out a broad assessment

## Appendix 12 Defense Sector Inefficiencies

Inefficiencies	Possible Solution
Too many support personnel	Transfer service personnel from support activities to front-line units Embrace new technologies to reduce manpower Create joint services
“In-House” services are inefficient due to absence of competition	Outsource non-critical activities such as aircrew training, transportation, food catering, air/sea-lift, etc.
Wasteful duplication of training and support service	Interagency coordination Shared services
Weapons program criticized for excessive unnecessary technical sophistication (gold plating)	More stringent cost-benefit-impact analysis of various alternatives / substitutes
Cost overruns and delays in weapons development programs	Create competing domestic suppliers Competitive bidding Fixed price contracts

Source: (Hartley, 2011)

## **Appendix 13** Data Sources

## **Appendix 14** Data Compilation

## **Appendix 15** Military Weapons Computation