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Short Essays: Improving Conditions in AOR Economies

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Preface

Welcome to the *Asia-Pacific Economic Update, 2012* (*APEU*). It continues the tradition at the U.S. Pacific Command (USPACOM) of providing a one-stop source for high-quality economic information about the Asia-Pacific region. If readers require economic data and a concise economic analysis of the 36 USPACOM area of responsibility (AOR) economies, then *APEU* Volume 1 meets that requirement. If a reader is uncertain about an economic term or concept, then Volume 2, which is a lexicon, should be consulted. If, on the other hand, a researcher is concerned about a contemporary AOR economic issue, then Volume 3 is likely to satisfy that requirement because it is a reader on important Asia-Pacific region economic issues. Finally, and for the second year running, if readers have questions about the most important economic resource in the region, energy, then they should consult a new and improved version of Volume 4 of the *APEU*, which is an Energy Supplement.

The 2011 *APEU* Energy Supplement provided information about the energy mix, key statistics, and greenhouse gas emissions profiles for AOR economies. The 2012 *APEU* Energy Supplement goes a step further by examining regional energy trends in the Asia-Pacific; focusing on current and expected energy vulnerabilities and corresponding opportunities.

The 2012 *APEU* Energy Supplement was prepared by Jennifer Hendrixson White, a Presidential Management Fellow who spent six months researching Asia-Pacific energy issues at the Department of Defense (DOD), both at USPACOM and at the Office of the Under Secretary of Defense for Policy in the Pentagon. Ms. White brought to the DOD substantial experience in foreign policy from her post as an Officer for Energy and Environment in the Bureau for East Asian and Pacific Affairs at the U.S. Department of State in Washington, D.C.

The key objective of the *APEU* is to provide high-quality information on AOR economies to USPACOM staff and the broader defense and Asia-Pacific policy community to encourage better understanding of economic conditions in this dynamic and important region. We hope that the *APEU* will inform more nuanced, effective policy, and decision-making related to security and energy issues in the Asia-Pacific region.

We invite you to assess the *APEU* and the impact that this information has on your work. Our mandate is to make AOR economic issues user-friendly—a goal which we best achieve with your input. Please send comments about the 2012 *APEU* to the USPACOM Economic Advisor, Dr. Brooks Robinson (Brooks.Robinson@pacom.mil; +1. 808.477.9195).

Thanks for the opportunity to serve!

Introduction

The 2012 edition of Volume 3 of the *Asia-Pacific Economic Update* reflects efforts to explain contemporary economic conditions in the Asia-Pacific region. Because Northeast Asia is the most important sub-region of the Asia-Pacific region with respect to economic size, there is a heavy emphasis on this sub-region. In addition, because China is the most important nation (read, has the largest economy) in the Northeast Asia sub-region, each paper in the volume includes, among other things, an analysis of the Chinese economy. While it may appear risky to focus so much attention on China, the reality is that the more we know about China's economy, the greater the possibility that we will develop correct China policies. To state conditions bluntly, China is such a large and growing economy with such important implications for the US and global economies that we cannot afford to misinterpret economic conditions in China and develop inappropriate policies. In any event, this volume includes a wide-ranging set of analyses, which should provide new insights for readers and a view for new policy options that can be entertained.

The first of the three papers in this volume, "US and Europe Affect Asia's Trillion Dollar Club," features an analysis the important linkages and interdependencies between the two most important Western World economic centers (the US and the European Union (EU)) and those Asia-Pacific economies with gross domestic product (GDP) that is valued at more than one trillion US dollars in market prices. The focus of the inquiry is "How do the former affect the latter's economic growth?"

The second paper in the volume, "War by Any Other Name," provides a historical economic analysis of China's relationship with selected partner economies to show how China engages in guerilla economic warfare when those partners challenge China's objectives. We provide backgrounds, tactical evidence, and outcomes for three cases of China's guerilla economic warfare. The important implication is that the US can develop counter strategies to China's guerilla economic warfare that will improve and enhance the US posture and profile in the Asia-Pacific region and globally.

The third and final paper in the volume, "Economic Partnerships in Northeast Asia," explores the structure of economic relationships within the Northeast Asia sub-region, and discusses how extra-regional relationships impact economic outcomes within the sub-region. Although the paper includes technical components, readers unfamiliar with econometrics can grasp the content and benefit from the analysis. The paper reveals that, economic integration is not an important feature within Northeast Asia; however, economies in the region stand to benefit from such integration both from an economic and a security perspective.

We invite you to read these papers with deep interest, to question our results and conclusions, and to provide comments and questions as they arise (Brooks.Robinson@pacom.mil). As noted at the outset, we hope that these papers

expand your thinking about the economics of the Asia-Pacific region so that your policymaking for the region is enhanced and improved.

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“US and Europe Affect Asia’s Trillion Dollar Club”

Abstract

Potentially the most important factors determining Asia's economic growth internationally in 2012 are US slow economic growth and the debt crisis in the European Union (EU). Clearly, the extent to which Europe can right its economic boat and set sail again will affect the pace of growth in Asia. In addition, the US's capacity to expand its 2011 $1.2 trillion in merchandise trade with the Asia-Pacific region in 2012, will impact the region's growth. This paper considers how US economic slowness and the European debt crisis will affect economic growth for Asia's trillion dollar club members—that is, those five economies with over one trillion in gross domestic product at market prices—Australia, China, India, Japan, and South Korea. Our goal is not to estimate the precise magnitude of the impact, but to highlight where impacts are likely to occur and to suggest whether the impacts will be significant relative to existing forecasts.

JEL Codes: F10, F14, F43

Key Terms: Europe, US, China, Japan, India, Australia, South Korea, trade, investment

Introduction

Accounting for nearly 20% of the world's gross domestic product (GDP), the Asia-Pacific region is critical to global growth. The Asia-Pacific region's importance is even more pronounced during 2012 with two of the world's major drivers of GDP growth (the US and Europe) on the economic ropes. Europe is on the verge of experiencing a double-dip as even the large economies of the European Union (EU) are producing at a very low-rate, and several economies in Southern Europe (Greece, Spain, and Italy) are experiencing economic downturns.[1] The US is also experiencing very weak growth, in part due to a lack of demand from Europe. Consequently, the world is looking to the Asia-Pacific region to continue to grow at a rapid rate and to generate demand, which might help jump start the US and EU economies again.

Unfortunately, this is not likely to happen; at least in the short-term. Most Asia-Pacific economies are export-led.[2] While it may be possible to do so in the long-term, it is impossible to transform these economies into economic engines that feature domestic-driven growth in the short-term. Hence, the Asia-Pacific region economies continue to rely extensively on demand from the US, Europe, and elsewhere to keep their economic growth rates up. Given a softening of demand from these two primary sources, Asia-Pacific region economies stand to see their growth rates slow. The weaker is Europe and the US, the slower will the Asia-Pacific region economies grow.

This paper focuses on Asia's "trillion dollar club"; i.e., economies that have GDP at market prices that exceed one trillion US dollars (USD)—Australia, China, India, Japan, and South Korea. The trillion dollar club is important because it represents over 80% of the Asia-Pacific's GDP, and about 67% of the region's total exports. First, we examine the interrelation between GDP and economic trade for these economies. Second, we explore how the trading relationship is evolving between trillion dollar club members and the US and the EU, which permits us to conclude that trillion dollar club members are likely to experience slower 2012 growth than originally forecasted. Rounding out the analysis, we show that this slowdown will affect growth in non-trillion dollar club member Asia-Pacific region economies.

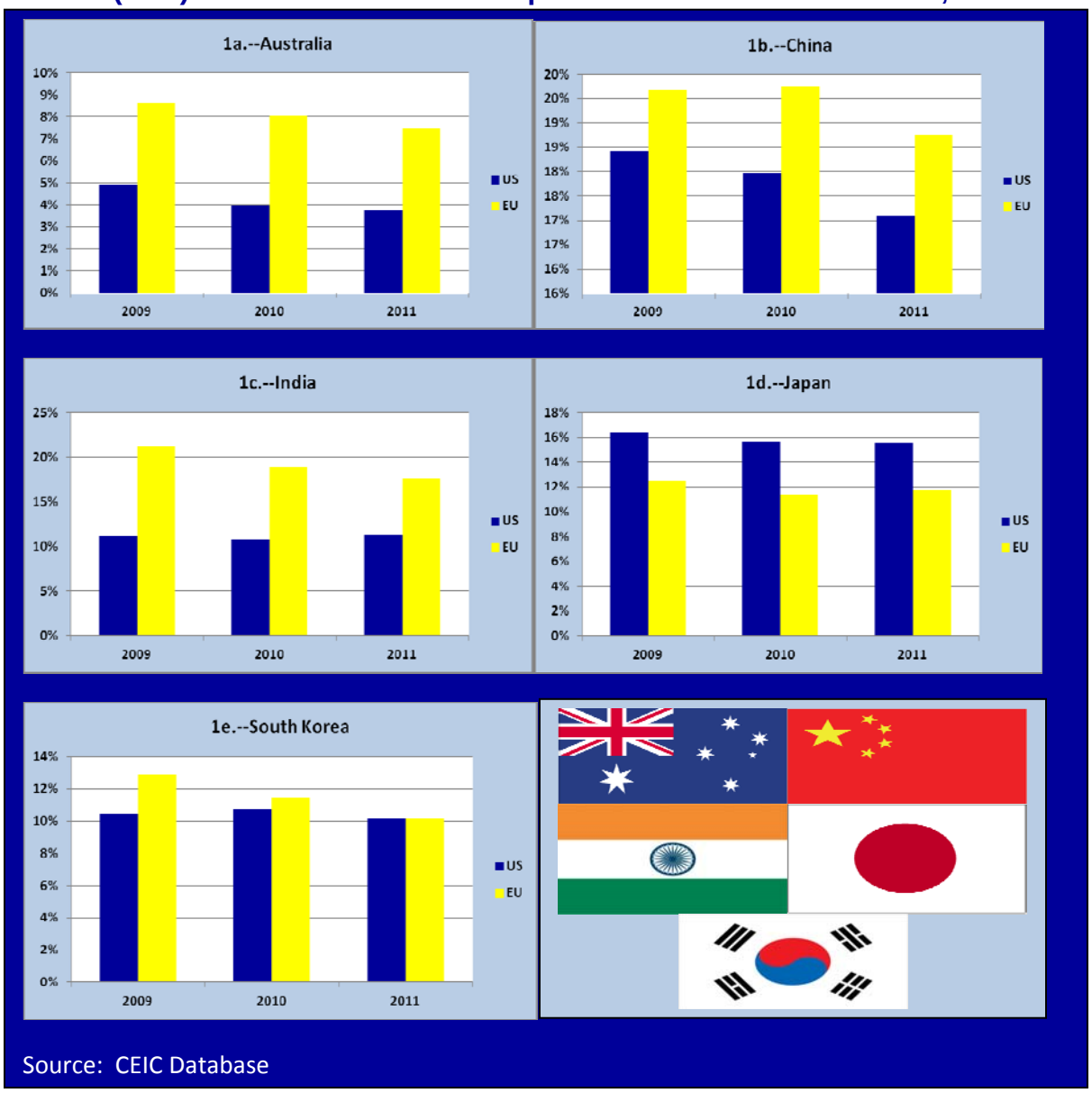
Bottom Line Up Front (BLUF)

Our analysis reveals that, in general, there is a very tight relationship between trade (namely exports) and GDP growth for the Asia-Pacific region's trillion dollar club members. In addition, Europe and the US comprise a significant proportion of trillion dollar club members' exports. Therefore, the slowdown in exports to Europe and the US will precipitate slowdowns in GDP growth for trillion dollar club members. The latter slowdown will be transmitted to other economies in the Asia-Pacific region. The implication is that the US and EU economies must first recover before the Asia-Pacific region can experience reaccelerated growth.

Historical perspective

We begin the analysis by highlighting the historical importance of the US and the EU as export markets for Asia's trillion dollar club members. Charts 1(a-e) depict the importance of US and EU trade with the Asia-Pacific region's trillion dollar club members. The charts show export shares of trillion dollar club members that are accounted for by the US and the EU, respectively, for the years 2009-2011.

Charts (1a-e).—Trillion Dollar Club Export Shares for the US and EU, 2009-2011[3]



Source: CEIC Database

Charts 1(a-e) reveal that, except for Australia, all of the trillion dollar club members reflect combined export shares for the US and EU that exceed 20% for each of the three years considered. China and India average the highest shares; over 30% on a

combined basis. Therefore, we can conclude that, for the trillion dollar club members, exports to the US and EU comprise an important component of their economic strategies, and account for a significant proportion of their economic production and growth.

We continue the analysis by highlighting the importance of exports to GDP growth. We use a Pearson Correlation Coefficient, which is a scale free measure of covariance, to show how highly correlated are exports and GDP for these economies. The underlying data for computing the correlation coefficients are GDP and exports at market prices for the period 2000-2011.[4] Table 1 presents the correlation coefficients.

Table 1.—Correlation of GDP and Exports

Country	Correlations Coefficient
Australia	0.972
China	0.952
India	0.995
Japan	0.148
South Korea	0.973

Source: CEIC Database

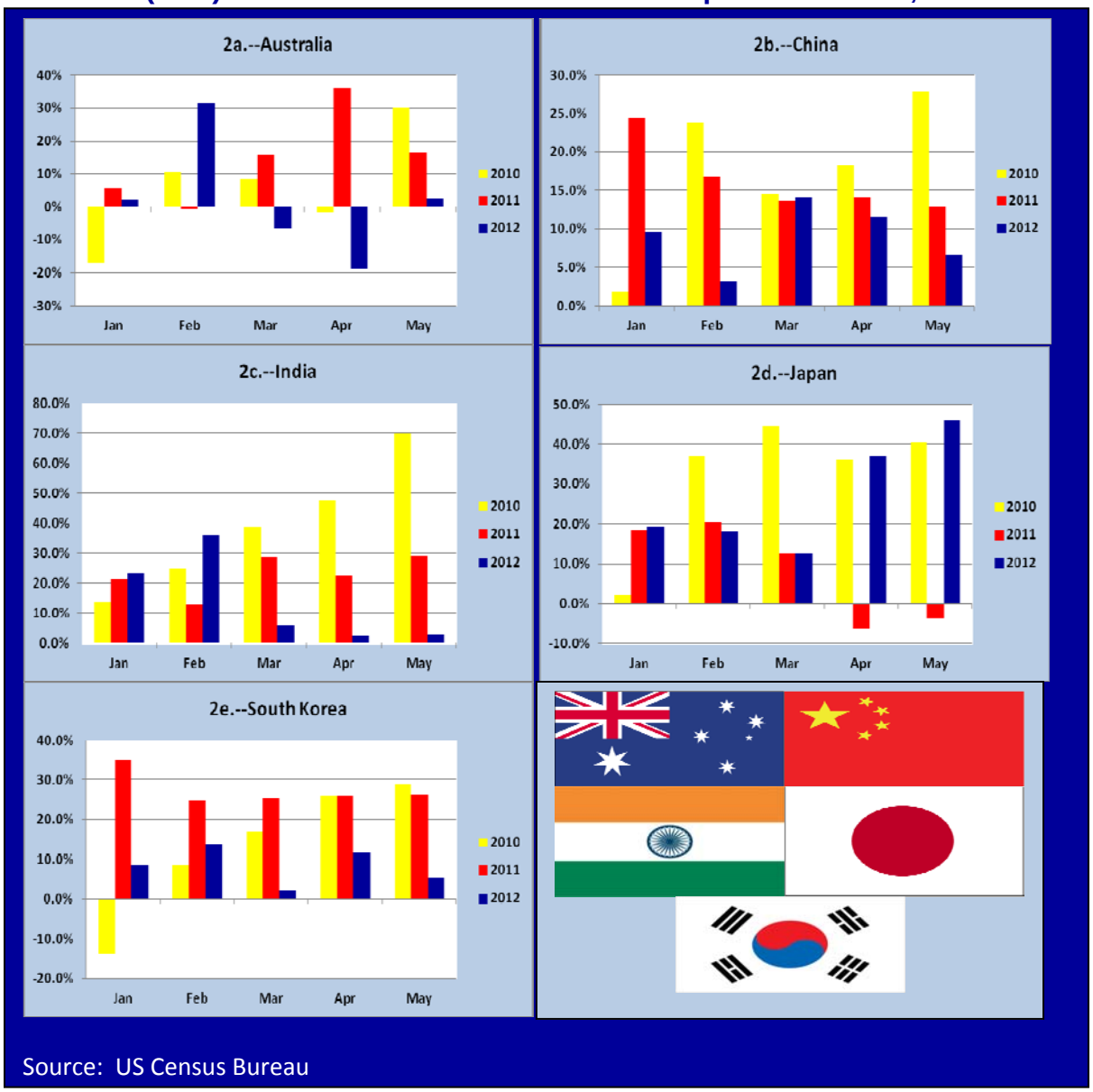
Table 1 shows that GDP and exports are highly correlated for all of the trillion dollar club members, except for Japan. Notably, Japan is a special case because, during the last 12 years, there have been a few years when the growth in GDP and exports have moved in opposite directions. Of course, Japan is also unique in that it has experienced very slow growth for the last two decades.

Note that we focus on the export side of trade because it is an addition in the calculation of GDP, while imports are subtracted in the calculation of GDP. In fact, "net exports" (exports less imports) is a well known component of GDP. Exports contribute to growth because the commodities that are exported are generally produced in the country of origin. Arguably, recent studies caution about an overemphasis on exports' contribution to growth because, especially in the Asia-Pacific region, countries may produce only portions of commodities, while other countries mainly serve as a final point of assembly.[5] Nevertheless, we place heavy emphasis on exports for this analysis because irrespective of whether Asia-Pacific region economies are producers of components or are primarily assemblers, a significant proportion of the final products leave Asia for US and EU destinations—which are the focus of our analysis here.

Early 2012

Having established the importance of exports to the US and the EU for the Asia-Pacific trillion dollar club, and having confirmed the importance of exports to GDP growth, we now turn to a close-up analysis of exports for 2012. We compare the growth in exports to the US and to the EU for trillion dollar club members in 2012 with exports in the preceding two years (2010 and 2011). We zero in on the first five months of the year, so that we can clearly see the 2012 trend. The objective is to show that the growth in exports has decelerated in 2012. Consequently, this deceleration in exports is likely to have an impact on GDP growth. First, we present Charts 2(a-e), which present the results for trillion dollar club members' exports to the US.

Charts (2a-e).—Growth in Trillion Dollar Club Exports to the US, 2010-2012[6]



Source: US Census Bureau

Charts 2(a-e) reveal that, except for Japan, the year-over-year growth in exports for 2012 is generally less than for 2010 and 2011 for trillion dollar club members. Japan is a special case mainly because the 2012 acceleration in exports to the US reflects large increases in exports of vehicles and in turbines for nuclear power plants. While exports of vehicles likely reflect current demand, given the long-range planning required to build nuclear power plants, it is highly likely that exports of nuclear power plant turbines reflect the delivery of previously logged orders. South Korea reflected the largest 2012 deceleration in exports to the US, followed by Australia, India, and China. The large South Korean deceleration is somewhat surprising because it was expected that the South Korea-US (KORUS) free trade agreement (FTA) would stimulate trade between

South Korea and the US.[7] The absence of a bump up in trade in the spring, when the FTA went into force, indicates weak US demand.

Now we turn to Charts 3(a-e), which present the growth of trillion dollar club members' exports to the EU over the 2010 to 2012 period.

Charts (3a-e).—Growth in Trillion Dollar Club Exports to the EU, 2010-2012[8]

Source: EUROSTAT

Charts 3(a-e) show that, with South Korea as an exception, which experienced a very small 2012 acceleration in trade with the EU during the first five months of the year, the remaining trillion dollar club members experienced decelerations. India experienced an almost 10% downturn in exports with the EU; Japan saw a nearly 6% downturn; and China experienced a 1% downturn in 2012. Australia's trade with the EU decelerated

nearly 10%, but the growth was still strong—slowing to 24% during 2012 from 36% in 2011.

Country-by-County Outlook

In September 2011, the International Monetary Fund (IMF) provided forecasts of real GDP growth as part of the *World Economic Outlook, 2011*. At that time, the IMF provided the following forecasts for 2012 growth for the trillion dollar club members: Australia 3.3%; China 9.0%; India 7.5%; Japan 2.3%; and South Korea 4.4%.[9]

In April of 2012, the IMF revised those forecasts down to: Australia 3.0%; China 8.2%; India 6.9%; Japan 2.0%; and South Korea 3.5%.[10] The IMF plans to release its final forecasts for 2012 in October of 2012. We believe that, given the above analysis, those forecasts will be revised down even further. In anticipation of those revised forecasts we provide the following information for trillion dollar club members that rationalizes the anticipated downward forecasts from the IMF.

Australia

Net exports of goods and services accounted for 0.7% of Australia's GDP at market price for the years 2009-2011.[11] Fortunately for Australia, its share of exports that go to the US and the EU was only about 15% over the period 2009-2011 (see Chart 1a). While the combined deceleration in exports to the US and the EU was about 24% for the first five months of 2012 compared with 2011, it is important to note that exports to Europe grew 24% and exports to the US grew over 2% during the first part of 2012 (see Charts 2a and 3a). Consequently, to date, Australia's 2012 economic growth has not been slowed significantly by the US and EU economic slowdown. However, there is no doubt that Australia's will ultimately be affected by the softening of prices for primary commodities, which comprise a significant proportion of its total exports to the Asia-Pacific region and elsewhere. The softening in prices of primary products is the direct result of reduced demand by the US and the EU. For the first two quarters of 2012, Australia has averaged 4.1% growth.[12] Nevertheless, there is real fear on the part of Australia's economic policymakers that economic weakness in the US and the EU, which is impacting economic activity in the Asia-Pacific region, could precipitate considerable weakening of the Australian economy.

China

On a market price basis, net exports of goods and services represented 3.5% of China's GDP over the years 2009-2011.[13] As Chart 1b indicates, the US and the EU accounted for nearly 40% of China's exports during 2009-11. When we consider that, on a combined basis, the deceleration in China's exports to the US and the EU over the first five months of 2012 is nearly 25% compared to 2011 (see Charts 2b and 3b), it is clear that China's overall exports and GDP growth are likely to decelerate. It is important to remember that, although the IMF has most recently forecasted 8.2% growth for China

for 2012, the Government of China (GOC) has forecasted growth at the 7.5% level.[14] Given our analysis, it stands to reason that it is highly likely that China's economic growth for 2012 will be closer to the GOC's forecast than to the IMF's forecast. China's GDP growth has averaged 7.9% for the first two quarters of 2012.[15]

India

The jury is already out on India. The nation has averaged 5.4% growth for the first two quarters of 2012, after experiencing over 7.0% growth during 2011.[16] This sharp deceleration in GDP growth is predicted by the sharp deceleration in exports to the US and the sharp downturn in exports to the EU during the first five months of 2012 compared with the same period of 2011 (see Charts 2c and 3c). Chart 1c confirms this GDP growth outcome by showing that India's exports to the US and the EU account for over 30% of total exports. The entire picture crystallizes when we point out that net exports contributed -4.9% to India's GDP at market prices on average over the years 2009-2011 (imports exceeded exports). Beyond the weakness in its export sector, India's economy has been slowed by monetary policy action; the Central Bank of India kept interest rates at a relatively high level until April of 2012 in order to wring bothersome inflation out of the economy. Now the central bank has the arduous task of attempting to reaccelerating growth without engendering high inflation again.

Japan

Japan's net exports accounted for 0.2% of Japan's GDP on a market price basis for 2009-2011, which indicates that imports nearly offset exports.[17] In the context of this analysis, it is important to point out that Japanese exports to the US and the EU comprised about 30% of the nation's total exports during 2009-2011 (see Chart 1d). Charts 2c and 3c reflect a sharp acceleration in Japans exports to the US during the first five months of 2012 compared with 2011, which is partly offset by a downturn in exports to the EU during the same period. Nevertheless, Japan's GDP growth has averaged 3.2% for the first two quarters of 2012.[18] Japan's growth has been buttressed mainly by a rebuilding effort following the March 2011 earthquake, tsunami, and nuclear incident. However, a key factor in an expected slowdown in GDP growth is the Government of Japan's likely failure to provide additional funds for the rebuilding effort in a timely manner.[19]

South Korea

Charts 2e and 3e reveal that South Korea experienced a large deceleration in exports to the US and a small acceleration in exports to the EU during the first five months of 2012 compared with 2011. It is estimated that this slight acceleration reflects the benefits of South Korea's free trade agreement with the EU.[20] Given that South Korea's exports to the US and the EU comprise about 20% of its total exports (Chart 1e), we can conclude that trade with the US and EU destinations could slow overall South Korean economic growth during 2012. In addition, weak demand from important regional destinations,

including other Asia-Pacific region trillion dollar club members, will likely compromise somewhat South Korea's chances for achieving the IMF's most recent forecast of 3.5% growth for 2012. South Korea has averaged 2.6% in GDP growth for the first two quarters of 2012.[21]

In the next section, we consider further the potential for other regional players to affect and be affected by economic weakness which is associated initially with decelerated trade with the US and the EU.

Second order effects in the Asia-Pacific Region

It would take a detailed analysis of Asia-Pacific region trade flows in order to highlight the many interconnections between trillion dollar club members and other regional economies. Such analysis is beyond the scope of this paper. However, what we know is that most of the smaller Asia-Pacific region economies provide primary products and manufactured inputs to the larger trillion dollar club members. Obviously, there are exceptions to this rule. Namely, Australia, which is a trillion dollar club member, derives much of its growth by providing primary products to other economies in the region and elsewhere. Nevertheless, it is accurate to say that there is generally a symbiotic relationship between economies in the Asia-Pacific region. Therefore, when a group of economies as important as the trillion dollar club experience slowdowns—for whatever reason—the remaining economies in the region are likely to feel the effects of the slowdown and respond with slower growth than would otherwise occur. To complete the cycle, slow growth by non-trillion dollar club members in the Asia-Pacific region, feeds back and causes further slowing of trillion dollar club members' economic growth.

To support this conclusion, we provide Table 2, which presents the average export shares for 2009-2011 that trillion dollar club members comprise of non-trillion dollar club member economies in the Asia-Pacific region that have 2011 GDP at market prices greater than USD 100 billion.[22]

Table 2.—Trillion Dollar Club Members' Average Export Shares, 2009-2011

	Non-Trillion Dollar Club Economies	Export Shares of Trillion Dollar Club Members
1	Indonesia	43.6%
2	Taiwan	40.6%
3	Thailand	30.3%
4	Malaysia	37.3%
5	Hong Kong	62.0%
6	Singapore	26.3%
7	Philippines	33.5%
8	New Zealand	46.1%
9	Vietnam	30.1%

Source: CEIC Database

Table 2 reveals that the average export share to trillion dollar club members for non-trillion dollar club members was 38.9%. Hong Kong, with its close trading relationship with China reflected the highest export share, and Singapore, with its highly developed and diversified economy, reflected the lowest share.

Given these results, and generally recognizing the importance of exports to economic growth for these Asia-Pacific economies, the connection between a slowdown in GDP growth for trillion dollar club members is likely to translate into slower economic growth than would otherwise occur for non-trillion dollar club economies. In addition, we should not forget the feedback effect; i.e., weakness in these smaller economies impacts growth in the trillion dollar club members' economies.

Conclusion

It is common knowledge that most Asia-Pacific region economies reflect an export-led growth orientation. Therefore, it is not surprising to predict that a slowdown in the exports of these economies would likely produce a slowdown in overall economic growth. The major thrust of this paper, which appears to be somewhat less well understood, is that the large trillion dollar club Asia-Pacific region economies are highly integrated with, and dependent upon, the two Western World economic centers—the US and the EU. Moreover, the trillion dollar club Asia-Pacific economies are closely linked to the remaining economies in the region in a symbiotic relationship. Consequently, when policymakers opine that Asia-Pacific economies, which are generally experiencing faster than average global growth, can lead the world out of the economic doldrums and to faster growth, they are mistaken.

The charts and tables in this paper have presented sound evidence concerning the economic relationships between Asia's trillion dollar club, the US, the EU, and non-trillion dollar club Asia-Pacific region economies. The analysis leads us to the conclusion that the nature of these economic relationships is such that Asia-Pacific region economies cannot expect to achieve more accelerated growth unless and until the US and the EU find their way back to vibrant economic conditions. What is required is that the US and the EU must create demand for the goods and services produced by Asia-Pacific economies in order for the latter to experience an economic sprint.

The upshot of this conclusion is that Asia-Pacific region economies are not decoupled from the key global economic centers. More importantly, if the global economy wishes to achieve greater balance and to ensure against imbalance, then certain Asia-Pacific economies must rebalance, move away from an export-led growth paradigm, and transform their economies into engines that are led more by domestically derived growth. Even this conclusion is not new. International economic organizations have called for such rebalancing for some time. However, if the current lull in global economic growth persists, then it may focus the spotlight sufficiently on the imbalance problem, and motivate Asia-Pacific region policymakers to rebalance their economies so that future global economic cycles reflect the potential of the Asia-Pacific region's trillion dollar club to stimulate the global economy out of an economic slowdown.

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“War by Any Other Name”

Abstract

There is nothing new under the sun, yet nations find different ways to achieve their objectives all of the time. There is no better example of this than China's formulation of strategies to engage in economic skirmishes against nations that fail to yield to China's requests. Knowing that it is possibly a generation or more away from being able to challenge the world's lone super power (the US) on equal footing militarily and economically, China has opted to fight guerilla economic warfare. This paper reflects an analysis of China's successful use of guerilla economic warfare and a discussion of appropriate strategies that the US might adopt in response. Because this is an interim strategy for China, the US must also employ interim and long-term strategies to engage China effectively, while continuing to project its superpower status.

JEL Codes: F190, Z190

Key Terms: Economic warfare, China, Trade, Strategy

Introduction

Push-back to the US decision to rebalance to the Asia-Pacific region has come primarily from China. China continues to argue that this rebalancing is aimed at containing a nation that is on the rise. Yet China recognizes that it is some ways away from being able to challenge the US, the world's lone superpower, economically or militarily. Nevertheless, China finds it necessary to flex its strengthening muscles and to continue to device strategies to show the US and other nations that it is a power with which to contend. In this paper, we consider three cases where China has employed what we call "guerilla economic warfare" as an expression of power against nations that defy its requests.

Guerilla economic warfare has many favorable and important features from China's perspective, and China is becoming increasingly adept at imposing real costs on nations using this strategy. However, China's guerilla economic warfare is an interim strategy that China is likely to employ until it finds itself strong enough to act more aggressively and challenge other nations militarily—including the US. Therefore, to engage China effectively, the US should develop an interim strategy that it can employ today, while continuing to prepare for that day when China and the US may engage in direct military conflict.

This paper unfolds in the following sections. After providing a "Bottom Line Up Front" (BLUF), for completeness, we recount China's recent military history. We then characterize China's status quo as a nation; showing that it is not yet in a position for a "frontal attack" on other large and strong nations. This leads us to a section on the rationale for China's decision to adopt guerilla economic warfare as a strategy. We follow with a section that provides evidence on three recent cases of China's guerilla economic warfare: (1) China's conflict with Norway over awarding the 2010 Nobel Prize to Liu Xiaobo; (2) China and Japan's 2010 fishing boat incident and territorial dispute; and (3) China and the Philippines' 2012 clash over Scarborough Reef. We explore how the US might develop a countervailing set of strategies to engage China in response to the latter's guerilla economic warfare. Finally, we provide our conclusions.

BLUF

Today, China is no military match for the US; it is in no position to attack militarily the US or any nation for which the US might provide military support. However, its desire to be a world power and to exercise that power has driven China to adopt guerilla economic warfare as a strategy to impose its will on smaller nations within the international community. China will use guerilla economic warfare until it is able to confront the US on an equal military footing. In order to fulfill its role as the world's lone superpower, the US should see China's strategy as dual-speed. In the interim period and with respect to guerilla economic warfare, the US should develop a complete menu of assistance to aid nations that are attacked economically by China. Given the US "rebalance" toward the Asia-Pacific region, such assistance should certainly be

organized for nations in the region. In the long-term, the US should continue monitoring China's development, and continue its own development of increasingly powerful and sophisticated military strategies, equipment, and technologies.

China's Recent Military Encounters

Other than 1962 Sino-Indian conflict, China has engaged in only one war since World War II: A short-lived Third Indo-China War of 1979. Both sides claim victory, which infers that there was no clear-cut victory or sound defeat. During the last two decades of the 20th century, and most of the first decade of the 21st century, China focused its attention almost exclusively on economic development. However, China has always been concerned with sovereignty issues: Namely, the reunification of Taiwan with the mainland; and control of Tibet. The former became an issue in 2008, when Taiwan's president (Chen Shui-bian) expressed interest in breaking the status quo in order to establish an independent existence. China made plans for physically reuniting Taiwan with the mainland, but the US, in support of the Taiwan Relations Act, entered the Strait of Taiwan, calmed matters down, and reestablished the status quo. No shots were fired.

When the US showed up in the Strait of Taiwan, it must have been readily transparent to the Chinese that it was no military match for the US. China recognized that so many aspects of its military, including fighting experience, were not up to par. Consequently, it readily acquiesced when Taiwan elected a new president (Ma Ying-jeou) in 2008, who was not an advocate of independence and favored the status quo. That is not to say that China has not challenged the US otherwise. The Impeccable Incident is an important case in point.[23] Nevertheless, China recognizes that it has tremendous room for development before it can challenge the US effectively in military combat. The same applies for China's evolving economy. Therefore, before we analyze China's formulation of a guerilla economic warfare strategy to address the circumstances just discussed, let us delineate China's military and economic realities.

China's Reality

China has a 1.3 billion population, while the US population is about 313 million. For 2011, China's economy produced $7.0 trillion in output (gross domestic product (GDP) at market prices); US GDP was $15.1 trillion. On a GDP per capita basis, China stood at $8,400, while it was $48,100 for the US.[24] Importantly, experts predict that China's market price GDP will overtake the US by the mid-2020s; however, it will likely take decades for China to overtake the US in GDP per capita. The US currency, the dollar, serves as the world's premier world reserve currency; China is just beginning to internationalize its currency and must complete many developmental steps before it can challenge the dollar as a reserve currency. The US had a stock of $4.5 trillion in outward foreign direct investment (FDI) at the end of 2010, while China is reported to

have had only a stock of $366 billion in outward FDI.[25] On the trade front, the story is somewhat more balanced. China and US total bilateral merchandise trade stood at $3.6 and $3.7 trillion, respectively, for 2011.[26,27]

Militarily, US Department of Defense (DOD) spending was $711.4 billion for calendar year 2011. For the same period, China's People's Liberation Army (PLA) spent $142.9 billion on defense.[28] The latter figure is controversial, and it is presumed to be absent a considerable amount of military spending not reported in China's official estimates. However, the well-known think tank Rand Corporation's best guess is that China's total military spending was in the $161 billion range for 2011, which is substantially below US defense spending.[29] Also very telling is that, at the end of 2010, the US had over $1.3 trillion in military fixed assets (structures and equipment and software) at its hundreds of domestic installations.[30] No comparable estimate is available for China, but the latter's stock of military physical capital is estimated to be a small fraction of the US stock.

Consequently, whether we are concerned with economic or military comparisons, the US far exceeds China today. Understanding this, China concluded that it would be foolhardy to engage in frontal military challenges with the US. In addition, because the US might be called into action should China engage another nation militarily in the Asia-Pacific region or elsewhere, China found it beneficial to adopt a guerilla economic warfare strategy when it wanted to make known and impose its will. The next section explores the nature of this strategy.

China's Guerilla Economic Warfare

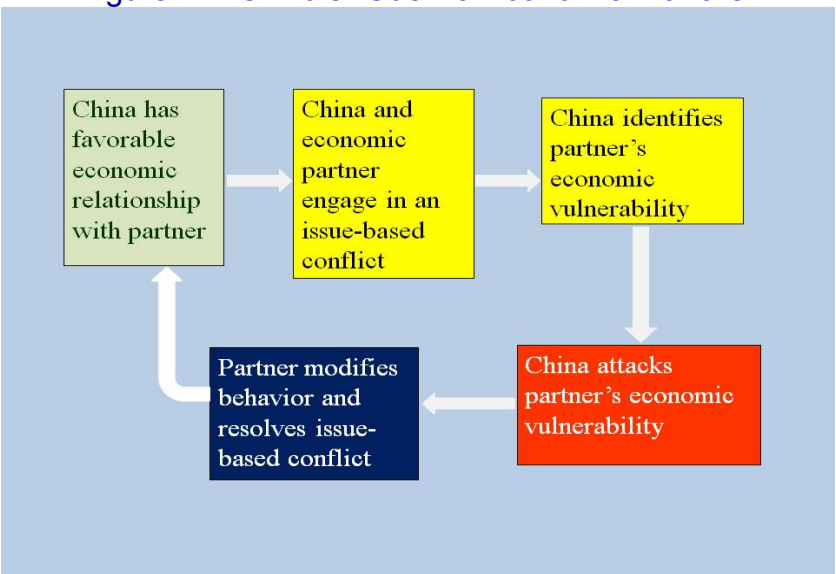
Because China is relatively low on the development (economically and militarily) continuum when compared to the US, it was logical for China to conclude that a non-direct attack approach was best—at least as an interim strategy—in response to conflict. China only had to use history and look south to see that Vietnam had used guerilla warfare to its advantage against the US during the Vietnam War. Moreover, looking slightly north and east, China was able to observe that North Korea uses provocation cycles effectively to manage its antagonistic relationship with the rest of the world. Therefore, an approach based on both of these strategies would likely prove useful in conflicts with the international community.

In other words, China decided that it could use guerilla economic warfare that takes opponents to the brink before backing down as a strategy for responding to the international community in order to express its discontent with outcomes. This strategy avoids the use of military force; therefore, there is never a threat of the unthinkable—nuclear warfare—occurring. In addition, because the attack is economic in nature, the level of aggression can be manipulated strategically and maintained up to, but not beyond, the point at which opponents seek to permanently severe economic ties and draw other economies into the conflict. That is, this strategy allows China to play the role of a puppeteer that administers economic pain surgically, but not beyond the point at which the puppet can recover and the economic relationship resumed. Notably,

China has orchestrated its economic integration with other economies so that no other economy accounts for more than about a 15% share of China's total bilateral trade. Under these conditions, because China is not economically "dependent" on any other economy, China can severe its economic relationship with other economies partially or completely for an extended period without suffering in a dramatic way.[31] On the flipside, China has operated purposely to draw economies into an economic relationship that makes those economies dependent on China.[32] The components of this guerilla economic warfare strategy are fully characterized in Figure 1.

This guerilla economic warfare is most beneficial to China because a clear message can be sent when conflict arises; economic pain can be inflicted; the pain can be removed when the message has been received; and then China and the party with which a conflict has arisen can resume their economic relationship under an ex post status quo. The most important and beneficial outcome from this strategy is that China can shape behavior at the expense of an economic partner, yet enjoy the benefits of the relationship after the shaping period has elapsed.

Figure 1.—China's "Guerilla Economic Warfare"



Two important researchers, Fuchs and Klann (2010), have explored extensively China's use of guerilla economic warfare. It is well known that the Dalai Lama represents a thorn in China's side because Tibet is one of China's core interests. In fact, it is also well known that China takes offense when the Dalai Lama visits countries in support of the Tibetan cause; especially when his visit is given official treatment by heads of state. The aforementioned researchers have shown that there is a direct correlation between the Dalai Lama's visits to other countries, and they estimate that exports to China fall by 8.1%, on average, when the Dalai Lama meets with a head of state.[33] While Fuchs and Klann (2010) argue that China engages in economic warfare based on an analysis of China's trade with 159 trading partners, in the next section we examine three specific examples.

Examples of China's Economic Warfare

This section presents three examples in which China used Guerilla economic warfare in an effort to elicit compliance from a trading partner. In each case, China used trade to force a trading partner with which it had a difference to reconsider its position on an issue. The three cases include: (1) Norway's decision to award the 2010 Nobel Peace Prize to a Chinese dissident, Liu Xiaobo; (2) Japan's efforts to express sovereignty over the Senkaku Islands (known in China as the Diaoyutai Islands), which was evidenced by a dustup between a Chinese fishing trawler and Japan's Coast Guard; and (3) the Philippines' efforts to express sovereignty over the Scarborough Reef, which was evidenced by the Philippines maintaining a naval presence at the reef while Chinese fishing boats also sought to occupy the area. We provide background on the issues that are associated with these three events and then discuss China's economic efforts to elicit compliance from the related trading partner.

Norway

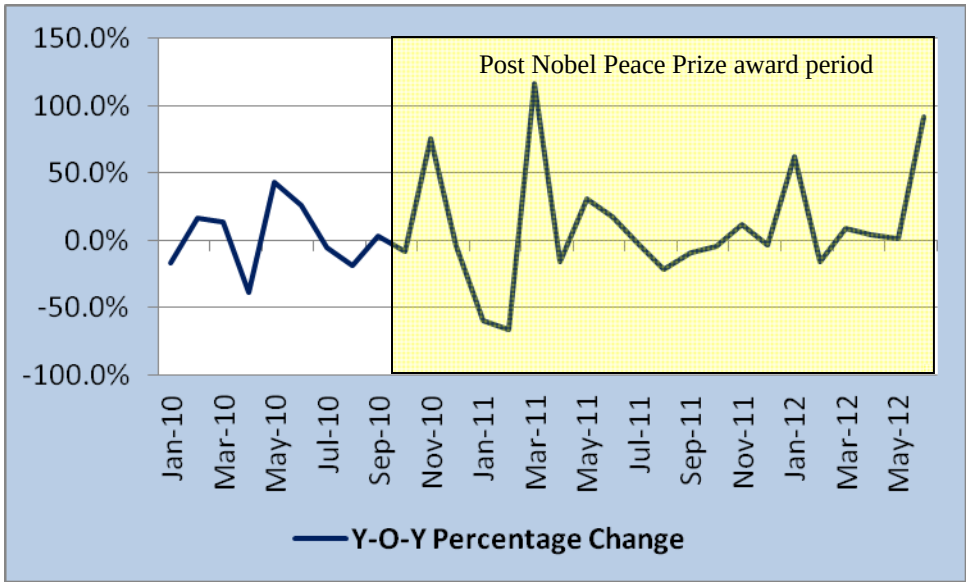
This section captures China's guerilla economic warfare against Norway for awarding the Nobel Peace Prize to Liu Xiaobo. Mr. Liu received the prize for his work as an advocate and writer for human rights in China. He participated in the 1989 Tiananmen Square protest; was a leading author of *Charter 08*, a manifesto on human rights in China; was jailed for 11 years; and experienced two years without political rights. Mr. Liu's Nobel Peace Prize was announced on October 8, 2010.[34] China requested that the prize not be awarded to Mr. Liu because it reflects badly on the nation; Article 35 of China's Constitution indicates that its citizens enjoy all of the fundamental human rights. Consequently, consistent with its practice of striking out economically against nations that challenge its position, China apparently chose to attack Norway's exports of its most famous fish—the salmon.

Figure 2 below reflects data from Statistics Norway that show the pattern in Norway's exports of salmon to China (selected eight-digit Harmonized System Codes from the following five-digit groups 03021, 03031, 03032, 03044, 03045, 03048, 03054, and 16041).[35] Figure 2 shows a volatile pattern. However, from January until September of 2010, Norway's exports of salmon to China increased 2.4% on average. Interestingly, for the year 2009, Norway's exports of salmon to China increased 8.6%. For the twelve months following the announcement of the Nobel Peace Prize winner, Norway's exports of salmon to China averaged 4.2%; however, this average growth includes two large anomalous spikes in November of 2010 (75.2%) and March of 2012 (116.7%). These two spikes may be the result of previously agreed upon contractual deliveries. When we consider the one-year following the award of the prize and exclude these two spikes, we find that Norway's exports of salmon to China declined 14.1%.

Figure 2 shows that, in the "Post Nobel Peace Prize award period," except for the aforementioned spikes, Norway's salmon trade with China was growing very slowly until 2012. Apparently, China was comfortable that it had made its point after 2011 and

began to accelerate its imports of salmon from China in 2012. After applying the stick, China extended carrots and received the benefits of reaccelerating its trading relationship with Norway. While China's overall trade with Norway is small in value by China's standard, and trade in salmon is relatively small, this chain of events and statistics reveal China's capacity to engage in guerilla economic warfare with a trading partner that defies China's request.

Figure 2.—Year-over-Year Percentage Change in Norway's Exports of Salmon to China



Source: Statistics Norway

Japan

In 2010, China issued an important statement concerning its core interests. Among its core interests was included the "Near Seas" to include the South China Sea (SCS), the East China Sea, and the Yellow Sea. The claim to sovereignty over these seas included the islands, fisheries, and subterranean minerals housed in them. In the case of Japan, the Senkaku Islands represent a competing territorial claim with China because the islands are located in the East China Sea. Japan took control of the islands after the Sino-Japanese War of 1895, and has administered the islands since 1970. Although China and Japan have entered into negotiations concerning jointly developing the mineral resources that are located in the East China Sea, they have failed to arrive at a final agreement. Both nations have performed tests for subterranean minerals in areas that are recognized by international standards as falling within their sovereign economic exclusion zones (EEZ).[36] Nevertheless, China continues to contend for control of the Senkaku Islands.

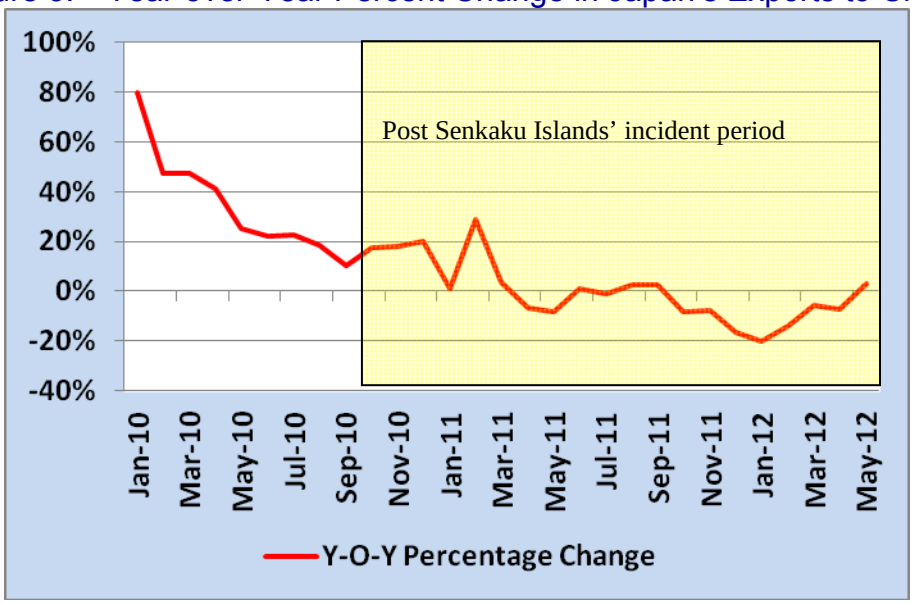
On September 7, 2010, a Chinese fishing boat was found to be within Japan's EEZ near the Senkaku Islands by two Japanese Coast Guard vessels. The fishing boat collided with the Coast Guard vessels. The Japanese arrested the captain and 14-member

crew of the fishing boat. The fishing boat crew was released on September 13, 2010, but the fishing boat and the captain were held in custody by Japan.[37] China was perturbed by this action, and requested that the ship and the captain be released. When Japan refused to release the captain and the boat, China embarked upon a trade embargo program in which Rare Earth Elements (REEs) were no longer exported to Japan.[38] REEs are critical inputs to many products produced by Japan and, at the time, China produced about 95% of the worlds REEs. On September 23, 2012, Japan blinked and released the fishing boat captain.[39]

Unfortunately, it is not possible to clearly and precisely identify in available trade data the stoppage of REE exports from China to Japan following this incident. However, it is possible to discern from aggregate data that Japan's exports to China were reduced significantly over the period following the September 2010 incident that was just described. Figure 3 shows how the year-over-year growth in Japan's exports to China fell following the incident, and have not recovered through May of 2012. Arguably, China's slowing growth has contributed to this slowing of Japan's exports to China. However, the timing of the slow-down defies ongoing economic conditions alone.

In this case, China engaged in guerilla economic warfare on two fronts: (1) Halting the flow of REEs; and (2) slowing its imports from Japan. Despite the history of Japan's exports to China since the 2010 incident, China and Japan have made efforts to rebuild their economic relationship and have even discussed expanding investments, currency exchanges, and free trade agreements. The latter outcomes have occurred despite the pain that China inflicted on Japan through its classic economic warfare tactics. However, more recently, conflict over the Senkaku Islands has surfaced again because the Government of Japan has proposed to purchase the islands.[40]

Figure 3.—Year-over-Year Percent Change in Japan's Exports to China



Source: Japan's Ministry of Finance

Philippines

The case of China's guerilla economic warfare against the Philippines began on April 8, 2012 when the Philippine Navy attempted to detain Chinese fishermen in disputed waters at Scarborough Reef. The reef is in the SCS about 150 miles west of the Philippines coast line and within the Philippines EEZ; it is over 500 miles from China's coastline. The reef represents territory that is claimed by both China and the Philippines, and the incident initiated a standoff in which both nations positioned vessels at the reef.[41]

As the standoff continued, China identified two areas where economic pain could be inflicted on the Philippines: (1) A halting of Chinese tourists to the Philippines; and (2) a halting of Philippines' banana imports to China. According to the Philippines Department of Tourism, China represented the fourth largest source of tourists to the Philippines. During the first three months of 2012, 96,000 tourists had visited the Philippines—a 78% increase over the same period during 2011. As a result of the standoff, China issued a travel warning to tourists planning to travel to the Philippines.[42] Clearly, the stoppage of Chinese tourists imposed severe economic pain on the Philippines tourism industry. Moreover, it is widely known that China had recently pledged to invest billions of dollars in the Philippines tourism industry—a pledge that was held in the balance as the two nations starred each other down at Scarborough Reef.

More damaging, China began to deny entry to Philippine bananas that reached Chinese ports claiming that they were bug infested. By mid-May, Philippine fruit exporters had incurred losses of around $33.6 million;[43] in recent years, the country has exported about $380 million in bananas.[44] The *Financial Times* reported that up to 200,000 banana farmers and ancillary workers could lose their jobs if China stopped importing Philippine bananas.[45]

The Philippines responded to this economic warfare by sending two special envoys to Beijing to settle the matter.[46] However, as of this writing, the two nations have not fully reconciled the conflict. Consequently, the Philippines' tourism and banana industries continue to suffer as a result of the standoff at Scarborough Reef. Theoretically, the two nations will ultimately reconcile after the Philippines has suffered more economic pain. Given the history of China's guerilla economic warfare, it is not farfetched that China wins a favorable decision from the Philippines over access to the reef, but China will also benefit by resuming tourism visits to the Philippines, by earning returns on its tourism investments in the Philippines, and by enjoying the delicious banana that are grown on the Southern Philippine island of Mindanao.

While data are not currently available on the Philippines' tourism and banana industries total losses as a result of the conflict with China, the foregoing description of events make clear the point that the Philippines has been engaged in economic warfare with China. As a small and poor country that happens to be US treaty ally, it seems

reasonable that a better outcome could have been forthcoming. We take up this issue in the next section as we discuss US responses to China's economic warfare.

US Response to China's Economic Warfare

As the world's lone superpower, and as the nation that is sought throughout Asia as a counter-balance to China, the US is not only expected to help identify a solution in the case of military conflict, but also in the case of China's guerilla economic warfare. Although the US faces its own fiscal issues at the moment, it has purposely decided to "rebalance" toward the Asia-Pacific Region. Therefore, it is impossible for the US to ignore China's future use of guerilla economic warfare. In order to serve as an effective counter-balance to China, the US must take action to remain strong economically and militarily. In fact, the US, if it is to be truly respected and relied on in the Asia-Pacific region, should develop a dual-track strategy to address China's actions.

As the superpower and as the counter-balance, the US should provide international economic logistical and coordinating support to those attacked by China using guerilla economic warfare. In this regard, the US can perform the following roles:

- Assist Asian nations that are attacked with identifying new trading partners when China halts the importation of products.
- Provide Asian nations that are attacked with logistical and transportation assistance so that products can be transshipped to new locations quickly—after China rejects products.
- Motivate available financial institutions (potentially the regional development banks; e.g., the Asian Development Bank) to organize trade financing to help ensure that exporters in attacked nations are insured against export losses with their newly identified trading partners.

In other words, the US should develop a complete "menu" of trade services that the US can draw upon to prevent economic harm to nations that are attacked by China using guerrilla economic warfare. While such a full menu of services does not and did not exist when China recently attacked the Philippines, the US did provide a modicum of support and arranged the purchase of some of the Philippines bananas.[47]

Conclusion

Based on the analysis presented in this paper, the US is urged to view China's military strategy as dual-speed. Currently, because China is some distance away from challenging the US as a military power, guerilla economic warfare has been adopted by China as an interim strategy. In the long-term, assuming that China does not become locked in an eternal catch-up cycle, China expects to achieve equal footing with US and to possess a high technology military force. To effectively address China in the context

of a rebalance toward the Asia-Pacific region, the US should develop an interim strategy to assist those nations that are attacked by China using guerilla economic warfare.

At the same time, and as part of the ongoing need to address China as a military power that seeks to compete, the US must continue to monitor China's development of its long-term military strategy, and to develop effective counter strategies, equipment, and technologies. The US should seek to continue extending its military superiority, with the understanding that it is in a perpetual race to outdistance China—otherwise military confrontation becomes a possibility. To the extent that the US can out-produce China on the military front, military conflict may be avoided, but China's guerilla economic warfare will continue and expand.

“Economic Partnerships in Northeast Asia”

Abstract

This paper explores the development of, and potential for, economic partnerships in Northeast Asia (China, Japan, South Korea, Taiwan, and Hong Kong). Such partnerships are mainly characterized by trade in goods and services and by financial transactions. We use the "workhorse" model of trade analysis, the gravity model, to assess the nature of trading partnerships in this region. In addition, we consider financial flows (mainly foreign direct investment (FDI)) between these economies in order to comprehend how they augment trading partnerships. Finally, we account for the only formal partnership arrangement within Northeast Asia (the China-Hong Kong Closer Economic Partnership Arrangement (CEPA)) during the period under study (2000-2010), and for extra-regional integration arrangements in the Asia-Pacific region and their effects on economic partnerships within Northeast Asia. All of this analysis enables us to answer the question: "How will trade, FDI, and integration arrangements affect future economic outcomes and security and stability in Northeast Asia?"

JEL Codes: F14, F15, F17, F21

Key Terms: Northeast Asia, economic partnerships, trade, foreign direct investment (FDI)

Introduction

The "Asian Century" is characterized, at least initially, by developments in Northeast Asia (China, Japan, South and North Korea, Taiwan, and Hong Kong).[48] A persistent question concerning Northeast Asian economies is, "Why haven't more formal partnerships developed?" The expectation is that the formation of such partnerships would accelerate economic growth and enhance security and stability in the region. Although only one formal partnership is in place within Northeast Asia (the 2004 China-Hong Kong Closer Economic Partnership Arrangement (CEPA)) during the period under study (2000-2010), these economies reflect extensive economic relationships in trade in goods and services and financial flows.[49] In this article, we seek to determine the structural nature of these economic relationships. Not only do we explore the nature of regional trading relationships (mainly for merchandise trade), we also analyze financial interactions between these economies (mainly foreign direct investment (FDI)). Another important question that we address concerns how extra-regional formal economic partnerships affect intra-regional economic relationships. Ultimately, our goal is to gain insights concerning how current regional economic relationships will affect future regional economic outcomes, stability, and security.

After providing a bottom line up front (BLUF), we begin by examining the contemporary literature to determine what it has to say about existing and possible future economic partnerships in the region and about formal extra-regional partnerships. Second, we conduct econometric and correlation analyses to highlight the structural nature of existing economic relationships and prospective future partnerships. Third, we present the results of the analyses. Fourth, we interpret the results with respect to future security and stability in the region. Afterwards, we conclude.

BLUF

Our structural trade regression models produced the following key results: Income growth is trade expanding, while population growth is inversely correlated with the expansion of intraregional trade. Our analysis of FDI flows revealed that certain Northeast Asian economies (especially South Korea) coordinated their trade and investment effectively, while other economies did not. Our forecasts predict that, from a growth perspective, South Korea-Taiwan, China-Taiwan, and China-South Korea promise to represent the top bilateral trading partnerships in the Northeast Asia region by 2020. Importantly, we concluded that further economic integration should guarantee the prosperity, peace, and security of the region.

Literature Review

This section provides our definition of bilateral/multilateral economic partnerships and delineates existing and prospective future economic partnerships within the Northeast Asia region. For simplicity, we define "partnership" to mean the existence of formal free trade agreement (FTA)-like arrangements. We further restrict this definition to FTAs

mainly for goods—i.e., additional facets of bilateral/multilateral economic relations (e.g., financial transactions) do not necessarily have to be included in an FTA.

As already noted, there is only one existing intra-regional FTA-like arrangement (the aforementioned CEPA) during the period under study. Given the level of economic exchanges that are ongoing in the region (see Figure 1), it is somewhat perplexing that more FTAs do not exist. This could be attributed, in part, to the cultural animus engendered in the region by historical developments—particularly, the role played by Japan leading up to and during World War II. Even as economic interaction grows, there are often reminders concerning the cultural animus that remains in the region.[50]

Nevertheless, the region's three largest economies (China, Japan, and South Korea) are increasingly the beneficiaries of economic partnerships with extra-regional partners. For example, each has entered into an FTA with the Association of Southeast Asian Nations (ASEAN). Appendix A provides a complete list of the FTAs that Northeast Asian economies had in force during the period under study (2000-2010). Although, outside the scope of this study, it is worth mentioning that South Korea has a new FTA with the US, which recently went into force.[51] Due to their unique statuses, Hong Kong and Taiwan are parties to only a few FTAs.

Despite historical and cultural differences, the potential for intra-regional partnerships remains. For example, in 2010, Korea and China decided to begin talks leading up to an FTA.[52] Moreover, in 2012, China, Japan, and South Korea entered into an investment deal that may ultimately lead to an FTA.[53] The unknown element in these proposals is, "How would Hong Kong and Taiwan be affected by these new partnerships?"

In addition, there is no dearth of extra-regional partnership opportunities. Specifically, it is widely known that Japan is considering joining the US-led Trans-Pacific Partnership. Japan is also formulating an FTA with Australia.[54] Taiwan has long been desirous of an FTA with ASEAN. Finally, each of the five economies under consideration is in the process of negotiating additional partnership agreements with extra-regional economies.

The "commercial liberal" tradition argues that the more economic partnerships there are, then the greater the level of stability and security.[55,56] The countervailing view is that greater economic integration creates more opportunities for conflict.[57] The near absence of intra-regional economic partnerships, yet the absence of violent conflicts, hints at the importance of US forces and their provision of security services in the region. More importantly, economic conditions signal that the creation of more formal intra-regional partnerships, along with the continued provision of security services by US forces, should help to guarantee future security and stability in the region.

Analysis and Data

This section presents analytical methods and data that are used to test key research questions. First, in order to comprehend the structural nature of the current economic relationships between regional members, we develop a gravity econometric model of trade. We use the results of this model to not only interpret the current nature of trading relationships between regional economies, but also to characterize the prospective nature of future economic relationships—with and without formal partnership arrangements.

Second, we present and analyze regional balance of payments financial account data on FDI flows to comprehend the nature of existing economic relationships.

Gravity econometric trade model

Following Cheng and Wall (2005), we use a basic gravity fixed effects pooled regression model for the analysis:[58]

Equation 1

$$\ln X_{ijt} = \alpha_t + \sum_{i,j=1}^{20} \alpha_{ij} + \beta_1 \ln Y_{it} + \beta_2 \ln Y_{jt} + \beta_3 \ln N_{it} + \beta_4 \ln N_{jt} + \varepsilon_{ijt}.$$

In this equation, *ln* is for the natural logarithmic transformation of variables; X_{ijt} represents the value of real exports from economy i to economy j in period t (t=1..11); α_t is the first of two fixed effects intercept terms, and it is specific to year t and common to all economy pairs; α_{ij} is the second fixed effect intercept term, which is specific to each of the 20 economy pair i and j and common to all years ($\alpha_{ij} \neq \alpha_{ji}$, the terms capture the effects of all omitted variables—i.e., unexplained heterogeneity); the betas (β) are the estimated coefficients (they are assumed to be constant over time and across trading partners); Y_{it} and Y_{jt} represent the real gross domestic product (GDP) of economy pairs i and j, respectively, during period t; N_{it} and N_{jt} represent the populations of economy pairs i and j, respectively, during period t; and ε_{ijt} represent the model's error term for economy pairs i and j, respectively, during period t. The error term is assumed to meet standard conditions for pooled regressions.[59]

The market price export data are from ISI Emerging Market's CEIC database; they are converted to constant price (real) data by deflation using Consumer Price Indexes for the respective economies, which were obtained from the World Bank's "World dataBank."[60,61] The GDP data are from the World dataBank and are stated in 2000 constant (real) dollars. The population statistics are also from the World dataBank. The model was run on a balanced panel (pooled cross-section time series) data set (t=2000-2010) using SHAZAM.[62,63]

As noted above, the estimated coefficient for the α_t variable accounts for those unchanging factors that differ between economy pairs; e.g., the distance between the

two economies. This is an intercept term and the sign on this coefficient is indeterminant. The estimated coefficients on the α_{ij} variables in Equation 1 account for the unexplained heterogeneity between economy pairs i and j, which changes from period to period; e.g., historical, cultural, and language differences that affect the economic relationship. *A priori*, the signs on these coefficients are also indeterminant. The β_1 coefficient represents the income elasticity of economy i with respect to exports from economy i to economy j. The β_2 coefficient is the income elasticity of economy j with respect to exports from economy i. We expect the signs on the β_1 and β_2 coefficients to be positive; that is, economy i exports are expected to be positively correlated with changes in its income and the income of economy j. Similarly, the β_3 and β_4 coefficients represent the percentage change in exports from economy i and j, respectively, in response to a one percent change in the populations in economies i and j, respectively. Following Cheng and Wall, we expect the sign on β_3 to be negative, while the sign on β_4 is expected to be positive.[64] That is, exports of economy i are expected to be negatively correlated with changes in its own population, but positively correlated with changes in the population of economy j. Combined, these four estimated parameters enable us to anticipate the future nature of the trading relationships between economies i and j as their incomes and populations grow or contract. We will combine the regression results with International Monetary Fund (IMF) forecasts of income growth and U.S. Census Bureau forecasts of population growth to estimate trade volumes to 2020 (see the "Northeast Asia's exports in 2020" section below).[65,66]

Augmented Gravity model: Economic partnerships

A multiplicity of sources, mainly national statistical agencies, provide details concerning intra- and extra-regional formal partnership arrangements that Northeast Asian economies have developed. It is important to account for these extra-regional partnerships when seeking to identify the structural nature of the relationship between these economies. We augment Equation 1 by adding a fixed effect ((0,1) dummy variable) to account for the existence of the China-Hong Kong CEPA intra-regional partnership.[67] The coefficient on this dummy variable is expected to be positive; the partnership should be associated with increases in overall intra-regional trade. We also add a compendium of four dummy variables to account for the onset and continuation of extra-regional partnerships with respect to the five economies under study.[68] The signs on the coefficients for the latter five dummy variables are indeterminant. Because it is difficult to know, willy-nilly, the nature of extra-regional trade, it is difficult to predict how extra-regional exports will affect intra-regional exports. For example, economy "i" may export intermediate goods extra-regionally for further processing into final goods, which may be imported into the region by economy "j." However, economy "i" may also produce parts for the final goods that are imported by economy "j." If economy "j" imports parts from economy "i," then regional trade has increased as a result of the initial round of extra-regional exports by economy "i." On the other hand, extra-regional demand for economy "i's" final goods may preclude those goods from being traded with economy "j," which means that intra-regional trade would be diminished by the initial

round of extra-regional exports by economy "i." As with the results from Equation 1, we use the results of the augmented model (Equation 2) to estimate the value of trade between economies i and j out to 2020.

Equation 2

$$lnX_{ijt} = \alpha_i + \sum_{i,j=1}^{20} \alpha_{ij} + \beta_1 lnY_{it} + \beta_2 lnY_{jt} + \beta_3 lnN_{it} + \beta_4 lnN_{jt} + \gamma_1 D_{1t} + \sum_{k=1}^{4} \gamma_{2-5} D_{kt} + \varepsilon_{ijt}$$

.

Where the seventh and eighth terms on the right hand side of the equal sign are interpreted in the following way: The gammas (γ) are estimated coefficients; D_{1t} represents the existence of China-Hong Kong intra-regional partnership (CEPA) in period t, and D_{kt} represents the extra-regional partnerships for the *k* economies (China, Japan, South Korea, and Taiwan) in period t. We consider the impact of the seventh term as Equation 2(a), and the impact of the eighth term as Equation 2(b).

Financial flows from International Transactions reports

Bilateral financial account data from each economy's International Transactions accounts on FDI and portfolio investment flows would enable a thorough analysis of the value of investment from economy i to economy j. Such data would permit us to not only assess economy i's commitment to establish long-term business relationships in economy j, but also economy i's short and long-term financial investments in economy j for which returns in the form of interest payment alone would be forthcoming. Unfortunately, the Northeast Asian economies have not developed their statistical system sufficiently to separately identify and publish all bilateral financial flows. Therefore, our analysis is constrained to consideration of FDI flows between these economies for 2000-2010.[69] We perform correlation analysis for these FDI flows across the five economies vis-à-vis the related export flows. These results infer the extent to which Northeast Asian economies are coordinating their economic efforts and provide hints concerning prospects for the future security and stability in the region.

Results

Gravity trade model

Table 1 provides the results for the Gravity econometric trade regression models, which are discussed below. We begin with the explanatory power of the model. For Equation 1, the Buse R^2 is .938, which reflects significant explanatory power.[70] Let us skip, for the moment, the two intercept terms and move to the GDP terms. The coefficients on the GDP variables are positive and are statistically significant at the one percent level. The estimated values for the β_1 and β_2 coefficients are 1.681 and 2.172, respectively, indicating that a one percent change in real GDP in countries i and j, respectively, is associated with the aforementioned percentage changes in exports between the two economy pairs. The signs on these coefficients are consistent with expectations, and

their magnitudes indicate a sizeable trade response to real GDP growth for the five economies represented in the model.

The estimated coefficients on the β_3 and β_4 variables are both negative and statistically significant at least at the five percent level. Given values for the two coefficients of -12.711 and -8.440 imply a sizeable inverse relationship between exports and population in economies i and j, respectively. While the sign on the β_3 coefficient is as expected, the sign on the β_4 estimated coefficient is unexpected; it was hypothesized that there would be a positive relationship between the change in economy "j's" population and the change in economy "i's" exports. On a combined basis, these estimated coefficients may be interpreted to mean that as Northeast Asian economies; populations grow, there is a tendency to utilize marginal production at home (export less) and to produce more at home (import less)—a set of logical and reasonable outcomes.

Details of the two intercept terms are provided in Appendix C. As for the first (α_t) of our two intercept terms, which is specific for each year but common to all cross sections, it varies in sign (positive and negative) and in statistical significance. Generally, the coefficients can be interpreted to explain increases and decreases in trade depending on the year under consideration with respect to the 2000 reference year. We find that the coefficients are negative for years in and around a down global business cycle and positive for years in and around an upward global business cycle. These coefficients may be viewed as a barometer of globalization over the period 2000-2010, and they reveal no strong overall pattern in this regard.

As for the second (α_{ij}) intercept term, which is specific for each of our 20 economy pairs, but common for all years, they are all positive and statistically significant at the five percent level. They represent that portion of the intercept that accounts for the unexplained heterogeneity between the economy pairs.

Table 1 also provides the results for Equation 2(a). Start by considering the effect of adding a variable for the China-Hong Kong partnership. Adding this variable does not change significantly the size or statistical significance of the remaining estimated coefficients in the model. The coefficient on the China-Taiwan partnership dummy variable (γ_1) is negative and only statistically significant at the 10 percent level. It may be interpreted to mean that the existence of the China-Hong Kong partnership is associated with a general reduction in intra-regional exports. Due to the "pass through" relationship between China and Hong Kong, it implies that the China-Hong Kong partnership created a window through which more exports poured out of the region than into the Northeast Asia.

Finally, Table 1 provides results for Equation 2(b), which includes estimated coefficients for extra-regional partnerships for each of the Northeast Asian economies, except Hong Kong. These are coefficients for dummy variables that indicate the existence of extra-regional partnerships (i.e., FTAs) for these economies (γ_2-γ_5). Two of the estimated

coefficients are positive and two are negative. Only the estimated coefficient for China's extra-regional partnerships is statistically significant (at the five percent level) and it is positive. These results infer that, except for China, extra-regional partnerships did not appear to have a statistical significant affect on intra-regional exports. For China, the existence of extra-regional partnerships was associated with increases in intra-regional exports; i.e., China appears to have benefited from economies of scale.[71]

Overall, the estimated results of the Equation 1 and 2 models reveal that trade increases with income growth among trading pairs, that there is an inverse relationship between trade and population growth, that the formation of the one intra-regional trading partnership between China and Hong Kong contributed marginally and adversely to the growth of intra-regional trade, and that only China's formation of extra-regional trading partnerships affected intra-regional trade significantly, and in a positive manner.

Correlation: Exports and outward FDI

This section of the paper presents the results of our efforts to assess how trading partnerships can be augmented by financial flows. Theoretically, economies that identify opportunities to capture markets in target economies via trade may find it beneficial to invest in those same economies—to produce for sale in-country, for sale in the region, or for sale at home. Consequently, it is logical to expect trade flows to be highly correlated with outward FDI flows. Under these conditions, not only will the International Transactions' Current Account balance expand due to exports but also due to income flows from foreign affiliated companies.

Given the relatively close geographical proximity of the economies in Northeast Asia and their relatively high volume of trade, it would not be surprising to find that there are also strong FDI flows in the region. We tested this hypothesis by estimating Pearson Correlation Coefficients for exports and outward FDI flows on an economy-by-economy basis. Table 2 presents the results.

Table 2 shows that most economies in Northeast Asia took great care to coordinate their exports and FDI with China. Given the tight connection and the pass-through nature of the relationship between China and Hong Kong, it is also not surprising that most economies in the region coordinated well their exports and FDI with Hong Kong. While China and South Korea reflect strong positive correlations between their exports and outward FDI with Japan, Taiwan and Hong Kong do not. It appears that only Japan coordinates closely its exports and FDI with South Korea, and only South Korea coordinates its exports and FDI with Taiwan. Overall, the table shows that South Korea is most effective at coordinating its exports and FDI, and that, generally speaking, there is significant room for the economies of Northeast Asia to improve their coordination of trade and financial flows.

We must caveat the results of this correlation analysis by noting that there may be problems with the FDI data, particularly from China, Hong Kong, and Taiwan. This

realization is made apparent by the negative correlation coefficients that are derived using data from these economies. Notably, the Heritage Foundation has undertaken a gargantuan effort to develop a time series of China's FDI because of the apparent erratic nature of the series published by China's Bureau of Statistics.[72] At the same time, we must recognize that China's significant outward FDI efforts are a recent phenomenon.

Northeast Asia's exports in 2020

The foregoing structural analysis enables the development of forecasts. We use the Equation 1 and 2 results to prepare 2020 point forecasts of exports for the 20 economy pairs. We also compare those estimates with the 2010 reality. To prepare the forecasts, we use the mean value of the α_t variable, estimated coefficients for the α_{ij} variables, and we apply the $\beta_{1\text{-}4}$ estimated coefficients to IMF derived forecasts for economy i and j real GDP in 2020 (converted to natural logarithms), and to US Census Bureau forecasts of economy i and j populations for 2020 (converted to natural logarithms). In addition, we use γ_1-γ_5 estimated coefficients, to the extent that they are statistically significant, when preparing the forecasts. Table 3 presents the results of our forecasting effort.

Table 3 shows that the three largest volume export pairs in 2020 are Japan-China, South Korea-China, and Hong Kong-China. The three largest export growth (annual percentage change) pairs over the 2010-to-2020 period are South Korea-China, Taiwan-China, and South Korea-Taiwan. On the other hand (not shown in the table), the three largest volume bilateral trade pairs in 2020 are China-Hong Kong, China-Japan, and China-South Korea. This pattern is consistent with 2010 partnerships. As for the three largest bilateral growth pairs over the 2010-to-2020 period, they are South Korea-Taiwan, China-Taiwan, and China-South Korea. If this latter trend prevails over an extended period, and if "growth" trumps "size" in the calculus of relationship importance, then Northeast Asia could be in for a significant shift in which nations are viewed as comprising the most important trading partnerships.

Trade and Security in Northeast Asia

The last half-century has been peaceful for the five economies that are surveyed in Northeast Asia. Notably, only one intra-regional partnership was formed during the period under study, and that partnership was, in large measure, a by-product of a special relationship between China and Hong Kong. Given all of the trade that transpired between these economies it is difficult to comprehend why more trading partnerships did not form. Arguably, the lack of their formation is the result of an elongated history of old issues between region members. However, the fact that high trade volumes flowed over the past decade and without armed conflict implies that, if economic partnerships prevailed in the region, then prospects for armed conflict would be nearly nonexistent.

The foregoing argument is airtight except for one important consideration. There are competing maritime claims involving marine and subsurface resources. Specifically, all economies in the region are very protective of their fisheries and of the potential oil and natural gas that exists in the subsurface of the maritime domains that they claim. It is beyond the scope of this article to delve deeply into this issue, but suffice it to say that these competing claims serve as a key reason on the horizon for intentional armed conflicts or for miscalculations that morph into armed conflicts.

Given that competing maritime claims constitute a crucial path to armed conflicts, it is logical to conclude that economic partnerships may serve as a way to alter that path. Although beyond the period under study, China's Economic Cooperation Framework Agreement (ECFA) with Taiwan, which went into force in 2011, provides good evidence in this regard. While China and Taiwan continue to disagree about Taiwan's political status, they are using the ECFA to address the issue. The path is best characterized as "addressing easily resolvable (read economic) issues now, and pushing off the very difficult (read political) issues until later." From China's perspective, and for some in Taiwan, the expectation is that the economic integration that is accomplished under the ECFA will ultimately build a bridge that permits future political integration.

As another example, China's and Japan's competing maritime claims may or may not be integral to decisions to go forward with the investment agreement that was highlighted above in the section titled "Literature Review." However, once the investment agreement is finalized and implemented, and assuming that it leads ultimately to an FTA, then the two economies will be locked into a symbiotic relationship that may help resolve issues associated with their competing maritime claims. From a game theoretic perspective, once an investment agreement and an FTA are in place, both economies will have great incentive to play fairer and to avoid the pain that would result from a disruption of these arrangements. As extra insurance for fair play, it is logical for Japan to retain its close and allied military arrangement with the US.

Therefore, while economic partnerships that facilitate more trade may not deter all prospects for armed conflict in the region, they can create tremendous benefits and they may serve as a wedding force that acts as a strong disincentive for armed conflict.

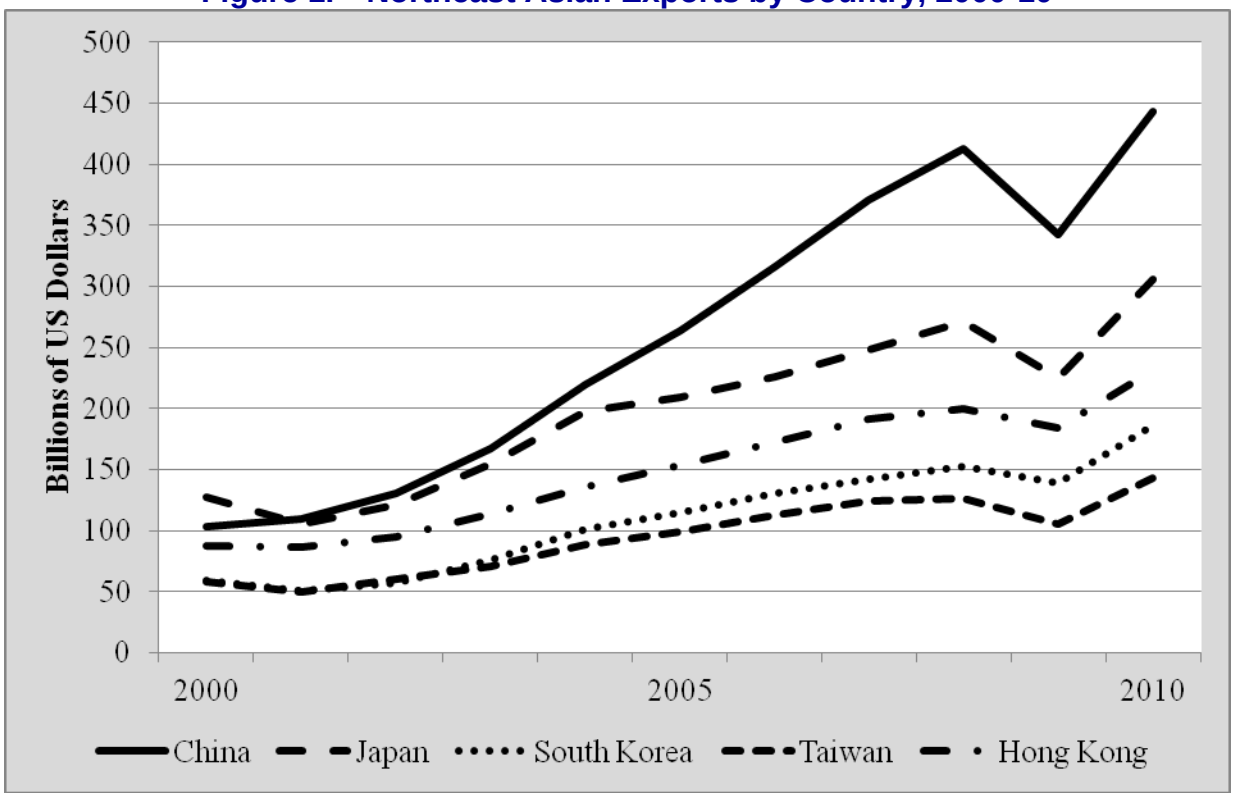
Conclusion

The research presented in this paper enabled the identification of the nature of trade structural relationships that existed between the economies of Northeast Asia during 2000-2010. As expected, income growth was found to be trade expanding, while somewhat unexpectedly population growth was found to be inversely related to intra-regional trade. Importantly, the one intra-regional partnership in force during the period under study did not contribute to an expansion of intra-regional trade. In addition, only China's extra-regional partnerships appeared to matter, and they were associated with an expansion of intra-regional trade; i.e., China appears to have benefited from economies of scale.

Although certain economies, especially South Korea, coordinated well their international trade and FDI transactions, other economies did not. In other words, economies in the region did not take full advantage of opportunities to benefit from economic integration. This is manifested explicitly in the dearth of formal economic partnerships in the region. As noted, some of these outcomes may be attributable, in part, to data unreliability.
As for future trade in the region, our forecasts predict that, in terms of size of bilateral trading partnerships, China-Hong Kong, China-Japan, and China-South Korea will continue to be at the top of trading partnerships. However, from a growth perspective, South Korea-Taiwan, China-Taiwan, and China-South Korea are likely to rank as the top bilateral trading partnerships. The important question is whether growth trumps size in the calculus of which trading partnership is viewed as most important.

Given the region's recent history, it is logical to conclude that the development of economic partnerships will help further reduce prospects for future armed conflicts. However, competing maritime claims are a sore sticking point that checks this logic. On the other hand, if and when economic partnerships evolve, they may create such benefits that they raise the level of pain that would be incurred if the partners went to war. Therefore, the sooner such partnerships are formed, and the longer these partnerships remain in force, the greater the probability that Northeast Asia will enjoy prosperity, peace, and security.

Figure 1.—Northeast Asian Exports by Country, 2000-10



Source: ISI Emerging Markets CEIC Database

Table 1.—Results of Regression Models

Variables	Estimated Parameters (Panel Corrected Standard Errors in Parenthesis)+		
	Equation 1	Equation 2(a)	Equation 2(b)
Constant (α_t)*			
Constant (α_{ij})*			
Economy i's GDP ($\beta_1 ln\ Y_{it}$)	1.681* (0.295)	1.700* (0.300)	1.524* (0.298)
Economy j's GDP ($\beta_2 ln\ Y_{jt}$)	2.172* (0.341)	2.191* (0.346)	2.207* (0.342)
Economy i's Population ($\beta_3 ln\ N_{it}$)	-12.711* (3.775)	-12.308* (3.660)	-11.998* (3.527)
Economy j's Population ($\beta_4 ln\ N_{jt}$)	-8.440** (3.230)	-8.034** (3.119)	-8.204** (3.049)
China-Hong Kong partnership ($\gamma_1 D_1$)		-0.101*** (0.053)	-0.109** (0.0504)
China's extra-regional partnerships ($\gamma_2 D_2$)			0.134** (0.069)
Japan's extra-regional partnerships ($\gamma_3 D_2$)			-0.002 (0.048)
Korea's extra-regional partnerships ($\gamma_4 D_2$)			-0.027 (0.050)
Taiwan's extra-regional partnerships ($\gamma_5 D_2$)			0.012 (0.053)
BUSE (1973) R^2	.938	.939	.945
Standard Error of the Estimate	0.104	0.103	0.104
N	220	220	220

+--*Significant at the 1% level; **significant at the 5% level; and ***significant at the 10% level.
*--Results for these estimated coefficients are provided in Appendix C.

Table 2.--Pearson Correlation Coefficients for Exports and Outward FDI, 2000-2010+

	China*	Japan	South Korea	Taiwan	Hong Kong
China		.6396	-.4693	NA	.8180
Japan	.8998		.6864	.2447	.7383
South Korea	.7921	.6777		.7425	.6483
Taiwan	.8619	-.0484	.2126		-.0709
Hong Kong	.4503	.3299	.0618	-.0130	

+--Shaded cells indicate high correlation.
***--**China's correlation coefficients are based on data for 2003-2010.
NA—Not available.

Table 3.—2020 Forecast of Northeast Asia Regional Trade

Country Pair	Exports in 2010 (Logarithms)	Exports in 2020 (Logarithms)	Annual Percentage Change
China-Japan	11.48678	11.81325	0.28%
China-South Korea	10.92848	11.54138	0.55%
China-Taiwan	10.27913	11.08597	0.76%
China-Hong Kong	12.08255	12.60381	0.42%
Japan-China	11.94245	13.99858	1.60%
Japan-South Korea	11.06580	12.13828	0.93%
Japan-Taiwan	10.88397	12.29288	1.22%
Japan-Hong Kong	10.67917	11.64071	0.87%
South Korea-China	11.35521	13.62724	1.84%
South Korea-Japan	9.93289	10.87882	0.91%
South Korea-Taiwan	9.37068	11.01154	1.63%
South Korea-Hong Kong	9.82499	10.90937	1.05%
Taiwan-China	11.15749	13.19762	1.69%
Taiwan-Japan	9.70523	10.76920	1.05%
Taiwan-South Korea	9.18305	10.43732	1.29%
Taiwan-Hong Kong	10.44702	11.90975	1.32%
Hong Kong-China	12.19189	13.23615	0.83%
Hong Kong-Japan	9.66754	9.01773	-0.69%
Hong Kong-South Korea	8.79942	8.68585	-0.13%
Hong-Kong-Taiwan	7.35250	7.85044	0.66%

Appendix A

Partnership Arrangements of Northeast Asian Economies in Force through 2010

Economies	Partnership Arrangements and Date Entered Into Force
China	Hong Kong CEPA* (January 2004); ASEAN FTA (Goods, July 2005); Chile FTA (October 2006); Pakistan FTA (July 2007); New Zealand FTA (October 2008); and Peru FTA (March 2010)
Japan	Singapore EPA (November 2002); Mexico EPA (April 2005); Malaysia EPA (July 2006); Chile SEP (September 2007); Thailand EPA (November 2007); Indonesia EPA (July 2008); Philippines EPA (November 2008); ASEAN CEPA+ (December 2008); Switzerland FTA (July 2009); Vietnam EPA (August 2009)
South Korea	Chile FTA (April 2004); Singapore FTA (March 2006); European Free Trade Association FTA (September 2006); ASEAN FTA (Goods June 2007); India CEPA (January 2010)
Taiwan	Panama FTA (January 2004); Guatemala FTA (July 2006); Nicaragua FTA (January 2008); El Salvador FTA (March 2008); Honduras FTA (July 2008);
Hong Kong	China CEPA* (January 2004)

CEPA*-Closer Economic Partnership Arrangement; ASEAN-Association of South East Asian Nations; FTA-Free Trade Agreement; EPA-Economic Partnership Agreement; SEP-Strategic Economic Partnership; CEPA+-Comprehensive Economic Partnership Agreement

Sources: The sources for the information presented in Appendix B are: China, Ministry of Finance and Commerce, http://fta.mofcom.gov.cn/english/fta_qianshu.shtml; Japan, Ministry of Foreign Affairs, http://www.mofa.go.jp/policy/economy/fta/index.html; South Korea, Ministry of Foreign Affairs and Trade, http://www.mofat.go.kr/ENG/policy/fta/status/overview/index.jsp?menu=m_20_80_10; Taiwan, Ministry of Economic Affairs http://www.trade.gov.tw/english/Pages/List.aspx?nodeID=672; and Hong Kong, Trade and Industry Department http://www.tid.gov.hk/english/cepa/index.html.

Appendix B

Derivation of Variables in Equation 1 and 2 Models

Variables	Explanation
Exports	CEIC data on exports converted to real values by deflation using consumer price indexes (CPI) (2000=100), then transformed to natural logarithms. Taiwan's exports and CPI data are from the nation's Statistical Bureau.
Real GDP	Real (2000=100) GDP estimates from the World Bank are transformed to natural logarithms. Taiwan's GDP statistics are from the nation's Statistical Bureau.
Population	World Bank population data are transformed to natural logarithms. Taiwan's population data are from the nation's Statistical Bureau.
China-Hong Kong Partnership Dummy	This variable was developed by inserting a "1" for the years 2004 through 2010 for each data panel involving China and Hong Kong trade.
Extra-Regional Partnership Dummy	These variables were developed by inserting a "1" for the first and all subsequent years for which the four economies established extra-regional partnerships (see Appendix A). Otherwise, the variable takes on the value 0. Importantly, there are only four of these variables because Hong-Kong did not establish extra-regional partnerships during the period under study (2000-2010).

Appendix C

Estimates of Intercept Terms for Equations 1, 2(a), and 2(b) (Panel Corrected Standard Errors in Parenthesis+)

Years and Country Pairs	Equation 1	\ Equation 2(a)	Equation 2(b)
2001	-0.053 (0.033)	-0.059*** (0.032)	-0.056*** (0.031)
2002	0.025 (0.053)	0.013 (0.053)	0.022 (0.055)
2003	0.148 ** (0.066)	0.133** (0.067)	0.148** (0.070)
2004	0.223** (0.087)	0.212** (0.089)	0.241** (0.091)
2005	0.153 (0.106)	0.137 (0.110)	0.148 (0.113)
2006	0.091 (0.130)	0.069 (0.136)	0.089 (0.139)
2007	-0.014 (0.157)	-0.042 (0.165)	-0.012 (0.168)
2008	-0.034 (0.172)	-0.066 (0.181)	-0.033 (0.183)
2009	-0.138 (0.178)	-0.172 (0.186)	-0.140 (0.188)
2010	-0.071 (0.204)	-0.111 (0.215)	-0.068 (0.217)
China-Japan	324.36** (119.8)	307.24** (115.7)	308.33** (110.6)
China-South Korea	319.58** (117.2)	302.90** (113.2)	303.86** (108.3)
China-Taiwan	313.75 ** (115.1)	297.38** (111.2)	298.22** (106.3)
China-Hong Kong	306.92** (111.7)	291.11** (107.9)	291.76** (103.2)
Japan-China	314.94** (118.4)	297.81** (114.3)	300.27** (109.5)
Japan-South Korea	288.96** (108.7)	273.19** (105.0)	275.10** (100.5)
Japan-Taiwan	283.73** (106.5)	268.28** (102.9)	270.07** (98.50)
Japan-Hong Kong	274.80** (203.1)	259.84** (99.61)	261.44** (95.33)
South Korea-China	305.36** (115.4)	288.67** (111.4)	291.09** (106.6)
South Korea-Japan	283.00** (108.2)	267.22** (104.5)	269.23** (99.98)
South Korea-Taiwan	273.25** (103.5)	258.22** (99.94)	259.98** (95.62)
South Korea-Hong Kong	264.86** (100.0)	250.34** (96.61)	251.90** (92.44)
Taiwan-China	296.15** (112.8)	279.76** (108.9)	282.32** (104.3)
Taiwan-Japan	274.11** (105.6)	258.65** (102.0)	260.78** (97.64)
Taiwan-South Korea	269.28** (103.0)	254.26** (99.53)	256.25** (95.25)
Taiwan-Hong Kong	257.09** (97.41)	242.88** (94.12)	244.56** (90.06)
Hong Kong-China	283.64** (108.7)	267.81** (105.0)	270.62** (100.6)
Hong Kong-Japan	259.86** (101.5)	244.90** (98.06)	247.29** (93.90)
Hong Kong-South Korea	255.02** (98.90)	240.49** (95.56)	242.76** (91.49)
Hong-Kong-Taiwan	248.81** (96.74)	234.60** (93.46)	236.74** (89.48)

+--**Significant at the 5% level; and ***significant at the 10% level.

Endnotes

[1] References to the EU in this paper are to the 27 nations that comprise the European Union.
[2] Our emphasis throughout this paper is on merchandise exports; i.e. exports of goods. Exports of services are relatively small in volume for most Asia-Pacific trillion dollar club members.
[3] The data for these charts are from the CEIC Database. ISI Emerging Markets. Retrieved from the Internet on August 31, 2012; http://www.ceicdata.com/.
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[48] The paucity of available data on the North Korean economy precludes inclusion of this isolated nation in our detailed analysis.

[49] We exclude from consideration here the China-Macau CEPA, which entered into force in January of 2004 because Macau's economy is very small, and is (like Hong Kong) a special autonomous region of China. Importantly, although the China-Taiwan Economic Cooperation Framework Agreement was concluded in 2010, trade under the ECFA did not begin until January of 2011.

[50] The region's three largest economies (China, Japan, and South Korea) have not forgotten about Japan's role leading up to and during WWII, including, for example, the destruction that occurred in China and the treatment of South Korean "comfort women."

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[62] For details on the derivation of the data used in our analysis, see Appendix B.

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[67] This dummy variable takes on the value 1 for the period 2004-2010 when the China-Hong Kong CEPA is in force; it assumes the value 0 for all other years.
[68] These dummy variables take on the value 1 for the years during the period under study when the Chinese, Japanese, South Korean, and Taiwanese economies first engaged in a formal extra-regional partnership and for all subsequent years; otherwise, the variable assumes the value 0 (see Appendix A). Hong Kong had no extra-regional partnerships during the period under study.
[69]For China, these data are only available beginning in 2003.
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[71] That is, China's improved access to extra-regional markets allowed it to produce more due to economies of scale and to export more to the extra- and intra-regional markets.
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