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Logistics in Central and Eastern European Countries and Entering Strategies of Korean Firms

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ABSTRACT

This article examines logistic environments and situations of Central Eastern European (CEE) countries. CEE countries are located on the crossroads between East and West Europe as well as North and South Europe allowing shipping centers based there to access customers across Europe. CEE is close to mature markets in the European Union allowing just-in-time deliveries that are not possible from China. CEE has a relatively under-developed transportation network but is attracting increasing amounts of investment flows from the EU, local government and large foreign and domestic private players in the logistics sector. It is the right time for Korean logistics companies to try to penetrate into those markets by expanding their global logistics bases to take advantage of logistic environments in CEE markets. It is recommended that Korean companies need to establish globalization strategies to move into CEE markets by securing economies of scale through M&A, piggy-backing, strategic alliances.

I. Introduction

The importance of Eastern European countries has grown as a result of EU enlargement. Thanks to their central position between Europe and Russia, many of these countries fulfill a bridge function. The transport networks are relatively well developed. Because many manufacturing companies are moving their production facilities to Eastern Europe, logistic service providers are being compelled to this step as well

The countries of Eastern Europe occupy a strategically central position on the continent and are located at Western Europe's interface with Russia. As a result of the European Union's enlargement to the east, they are increasingly serving as a bridge. As far back as antiquity and the Middle Ages, important trade routes, including the amber and silk roads, ran through Eastern Europe on their way from Western Europe to Russia and Asia.

The logistics industry in Central and Eastern Europe and Russia is set to experience substantial growth over the next five years. Data monitor predicts that nominal spending on logistics and storage in the region will grow from around €184 billion in 2008 to just under €250

billion by 2012. This will primarily be derived from fast growing domestic country-markets as well as increasing merchandise exports. The overall Central and Eastern Europe (CEE) economy is estimated to grow at an average growth rate of five percent during 2007-2012, with strong contribution from the automotive, consumer goods, electronics and machinery, retail and telecom industries. This is also paving the way forward for increased development and outsourcing of contract logistics in the region.

On the whole, CEE has a relatively under-developed transportation network but is attracting increasing amounts of investment flows from the EU, local government and large foreign and domestic private players in the logistics sector. Praveen Ojha, a Senior Logistics Analyst with Data monitor, says "The lenient tax policies and moves for privatisation have also helped attract a good amount of foreign direct investment funds into the region. With rising private consumption and fast-growing external and internal trade, the CEE region has displayed high-potential for the sustained growth of the transportation and logistics market."

The Central & Eastern European region has grown dynamically over the past decade, starting its development even before the accession of many of the leading economies to the European Union. The nine original candidate countries in the region were joined in 2007 by Romania and Bulgaria which have also benefited from high levels of investment in their transport infrastructure.

Indeed, migration of manufacturing eastwards has been one of the defining trends and challenges of European supply chains. In addition, international retailers have scrambled to take advantage of the new wealth generated in these countries, helping to meet the needs of consumers with growing disposable income. This has led to the introduction of sophisticated distribution strategies and the demand for high-end logistics service providers.

The road network of eastern European countries is relatively well developed. However, many countries lack networks of superhighways. The rail network is generally very dense and relatively well developed. Inland waterway transports play only a minor role. For eastern Europe's infrastructure to reach western European standards, around 16 billion must be invested by 2015 in central and southeastern European countries in railways, roads and airports.

The eastern European logistics market is characterized by wide regional differences. While the Czech Republic, Slovakia, Slovenia, Hungary and Poland have made major strides, Romania, Bulgaria and Croatia are trailing far behind. The infrastructure is in even worse shape farther to the east. Eastern European harbors, particularly the major sea ports in Poland, perform a significant amount of transshipping and are being increasingly expanded. In an international comparison, Poland's harbors in particular are making enormous improvements to the quality of their services and are gaining on western European ports. The Polish harbors of Gdansk and Gdynia are striving to become the leaders among container ports in the southern Baltic region.

The purpose of this paper is to analyze the present situation of logistics environments in Central European Countries and to present some strategies for Korean logistics companies to penetrate into those markets.

II. Logistic Environments in Central and Eastern Europe

2-1. Growing Trade and Supply Chains & Infrastructure

The dominant trade route into and out of Europe is via ports in the Le Havre Hamburg range. These ports feed the dominant Europe core, while activity in the more peripheral Mediterranean ports is small in comparison. However, a continual shift in world trade patterns is likely to exert a significant impact on Europe's logistics infrastructure going forward. As China and India's share of world output is set to increase markedly over the next decade, this implies increased trade between themselves and Europe, relative to the

more traditional trading route between the US and Europe.

2-2. Economic Growth in Central and Eastern Europe

The large increases in the scale of consumption and production in Central and Eastern Europe that we expect to see in the next decade and beyond will begin to exert increasing pressure on supply chains. Logistics activity around the major ports, such as Hamburg, will gradually become less optimal compared to options such as shipping straight to Tricity or using trans-shipment hubs in the Eastern Mediterranean to feed the ports in the North Adriatic.

Capacity expansion plans of these 'emerging' ports alongside a concurrent improvement in road and rail links will further advance their deployment as growing logistics centers, provided that planned investments are seen through.

The proposed future expansion of the North Adriatic (NAPA) ports will increase container capacity to some six million TEU by 2020, helping to drive goods through this location into Europe. Improving rail links will help to drive freight between the NAPA ports and Europe. However, there are constraints to rail capacity, so the continual development of future rail corridors will be key.

Investment in port capacity and deep-water facilities, alongside road improvements will provide Tricity with the opportunity to emerge as a major container hub in keeping with Poland's growing economic status. Lodz has the opportunity to emerge as a key distribution hub of Poland given its central position, while growth will also focus on Wroclaw and Upper Silesia to support large population concentrations.

PORTS (NAPA) AND EASTERN EUROPE

Corridor	Road links status	Rail links status
Adriatic - Baltic axis	The route partially overlaps Helsinki Corridor VI and provides a connection between Gdansk and the Adriatic ports by two routes (via the Czech Republic or Slovakia). The main disruptions in the network take place in Poland as large parts of the A1 highway remain either under construction or planned.	RNE Corridor 07 links the Baltic ports of Tricity (Gdansk and Gdynia) with the North Adriatic ports of Trieste and Koper. The route is in use with many sections undergoing modernisation in order to increase speed and capacity.
Helsinki Corridor V	The route links the NAPA ports with Budapest and then Kyiv. The only gap on the EU side is the planned M3 section in Hungary. M06 motorway connects Ukrainian/Hungarian border with Lviv and Kyiv.	RNE Corridor 08 links Koper and Trieste with Budapest, and crosses RNE Corridor 11 in Ljubljana.

The absolute increases in consumer spending are expected across Europe from 2011 to 2020. What immediately stands out is Poland's presence in the big league, with overall consumer spending in the economy trumping that of much of established Europe, with the exceptions of France and the UK.

What is also noteworthy is the strong showing of both the Czech Republic and Romania. Both are expected to report increases above that of much larger Western European economies. This growth in consumer spending will drive an increased need to direct goods to these locations. What is also key is the fact that the increased size of these markets will make direct supply chains more scalable and cost efficient, and help to drive their national logistics markets.

Low wage rates, strong transport links with Germany and central Europe, and independent, floating currencies will prove key in driving manufacturing growth in Eastern Europe in the short to medium-term. In the longer-term better linkages to global supply chains will help to sustain growth providing the improvements in infrastructure continue. Overall, the largest growth in manufacturing activity in Europe will be in Germany and Poland, whose economies will remain entwined.

Manufacturing growth in the Czech Republic and Romania will be ahead of forecast increases in Austria, France, Spain and Sweden, further signifying the shift of manufacturing east.

Figure 1. Consumer Spending Increase 2011-2020(million euros)

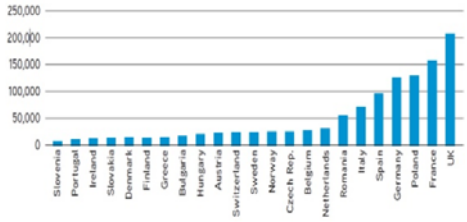


Figure 2. Manufacturing GVA Increase 2011-2020(million euros)

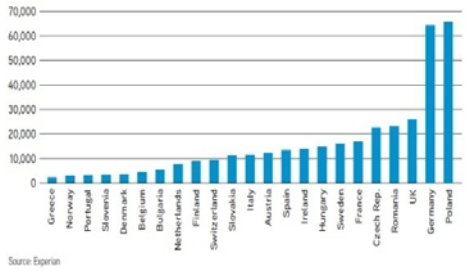
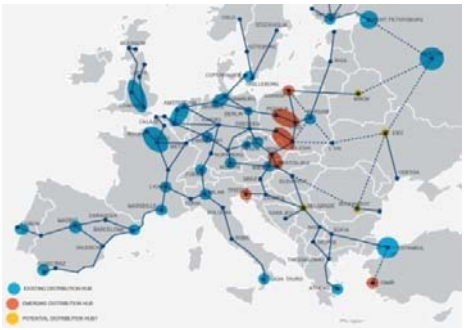


Figure 3. Europe's Logistics Hub



2-3. Logistic Environments in Central and Eastern Europe

CEE has a relatively under-developed transportation network but is attracting increasing amounts of investment flows from the EU, local government and large foreign and domestic private players in the logistics sector. "The lenient tax policies and moves for privatization have also helped attract a good amount of foreign direct investment funds into the region", says Praveen Ojha, Senior Logistics Analyst with Data Monitor and co-author of the study. "With rising private consumption and fast-growing external and internal trade, the CEE region has displayed high-potential for the sustained growth of the transportation and logistics market. Railway infrastructure, monopolized by local governments is relatively scantily developed in the region. Only 50% of the railway tracks are operative due to poor investment and maintenance. Consequently, the intermodal capabilities are limited and a majority of the gross tonnage, which could ideally be transported by rail, is being transported via trucks as road infrastructure is quite well developed. Government is encouraging private participation, especially in railways, to attract more foreign investments to improve the overall transport infrastructure. Maritime transport plays a major role in the transportation of bulk and dry cargo, but is not a preferred transport mode across the region. Air transport is still the costliest transport mode due to its efficiency and timely deliveries. Maritime and rail transport have together lost a significant market share of 10% to road freight over the last decade. However, in Poland, Bulgaria and Latvia there has been an increase in rail freight volumes over the same period.

As the manufacturing and distribution activity is concentrated in a few major centers (Prague, Warsaw, Budapest, Bucharest, Sofia, Poznan, Kiev, Moscow and St. Petersburg), other cities in CEE need to develop as ideal distribution and logistics hubs in the coming five years. This will create new opportunities to leverage the existing space, labor and logistics infrastructure and result in the creation of new transport networks, distribution and warehousing facilities. The Contract Logistics market is still under-developed due to the highly fragmented nature of both the freight forwarding industry as well as the road freight industry. With the rapidly growing economy, an ever-expanding manufacturing industry, increased international trade and foreign investments in transport infrastructure, this

sector is set to undergo a positive transition over the next five years.

The small number of large Logistics Service Providers (LSPs) in the CEE region is steadily increasing, especially in the larger markets of the Czech Republic, Hungary, Poland and Russia. Both large local and foreign LSPs are actively pursuing the outsourced logistics business (especially in the Automotive, Electronics, Machinery and Retail industry verticals) and are thus the major contributors to the contract logistics market in the region. These players continue to invest in both their local divisions as well as an expanded portfolio of logistics services.

Data Monitor expects third-party logistics services to receive a boost due to the increased focus on contract logistics activities, both from the local strategic partnerships (LSPs) as well as the customer industries (automotive, electronics, machinery, retail, etc.).

The CEE region is also experiencing high demand for warehousing of agricultural and perishable products. However, inventory management, Supply Chain Management (SCM) consultancy and IT solutions are some key areas of greater growth in the future. Going forward, all this, along with the EU accession of the region, will result in an increasing number of international freight forwarders and large LSPs scaling-up their investments and activities to exploit the logistics outsourcing market especially in the Czech Republic, Hungary, Poland and Russia.

III. Logistic Market in Central and Eastern Europe

3-1. Poland

The industrial and logistics market in Europe is on track to grow exponentially over the next 10 years according to the latest research from Colliers international, with Poland and Turkey set to benefit the most. The report analyses the broad macroeconomic trends which Colliers expect to drive change in Europe's logistics markets over the next ten years. Poland in particular is set to emerge as a major force as it benefits from new infrastructure, manufacturing and consumer demand growth.

The intermodal transport in Poland is still a young market with slow but stable growth. The largest Polish Baltic seaports are located in Gdansk, Gdynia, Szczecin, and Swinoujscie. Gdansk is one of three principal sea ports. It is situated on both banks of the Martwa Wisla, to the west branch of the Wisla River at its estuary in to the Gulf of Gdansk. Gdynia Port is one of the largest and most modern ports in the Baltic Sea. The town and port are situated on the northwest coast of the Bay of Gdansk. Significant smaller seaports are located in Darlowo, Elblqg, Kolobrzeg, Leba, Police, Wladystawowo, Ustka, and Stepnica. The Polish maritime economy produces 2.5% of GDP, and the sector's share in exports is 6%. The main Polish seaports have transport connections with the most important international seaports in the world. Maritime ferry transport routes lead from Polish ports to Sweden, Germany, and Denmark.

In Poland, the Act on Sea Ports and Harbors of 1996 forms the basis of port policy. The Act stresses the public function of ports, and puts forward a number of rules on cooperative and transparent relations between the Polish Government and the port authorities.

Transportation in Poland is still dominated by local/regional players in the road freight sector. Some western logistics companies, namely Kuehne & Nagel, FM Logistics, Allport, DHL, Flextronics, Vos Logistics, Maersk Logistics, Schenker, and Hellmann are already operating within the Polish market. However, these foreign companies currently operate on a small scale compared to the local/regional main players.

Recently, an Austrian transport and logistics group Cargo-Partner has expanded its presence in Eastern European with two new offices in Poland and one in Ukraine. They believe that Poland has developed into an extremely important market, particularly in the logistics industry.

3.2. Slovenia

The logistics and transportation industry has traditionally been one of the strongest industries in

Slovenia. The industry's segments are very diverse; while road transportation is a hub of activity with almost perfect competition and a strong political clout, rail transportation is hopelessly inefficient. Both passenger and freight cargo are losing money to the former monopolist Slovenske Zeleznice. Maritime transportation is again a different story; although with almost no shoreline, one strong port and a strong shipping company have developed, both mainly export oriented. Air transportation is of only national importance and very dependent on a national carrier and the dominant airport operator; both are doing fine.

The Slovenia Transport Logistics Cluster was formed to compete with the European logistics market. It is an association of 12 companies and 3 institutions: freight forwarding and shipping agencies, port services, ecological and university research institutions. Currently, transportation logistics service suppliers within the STLC prepare common education programs, market presentations, equipment acquisitions and complete service developments. The STLC's vision is to create comprehensive conditions for its members that enable them to offer full logistical support above and beyond the Slovenian transportation route relative to the markets of Central and South-east Europe. Slovenia is encountering fiercer competition by virtue of it having joined the European Union on May 1st, 2004, and it is only through harmonious cooperation between the companies associated in the STLC that they can succeed in the European market.

Slovenia has all the attributes of a distribution and logistics hub: a fortuitous geographical position at the heart of the region intersected by traditional trade and transport routes − the location of choice for international companies planning their future regional distribution set-up.

As an EU member state, Slovenia is a gateway for Asian and EU manufacturers and traders to faster and more reliable trade routes that meet at fully equipped logistics centers. Shipping to Slovenia's only cargo port − the Port of Koper − means gaining 7 to 10 days for ships arriving from Asia compared to sailing to Europe's northern ports. Its total maritime throughput is about 15 million tons.

3.3. Romania

The country's biggest port is Constanza, which is also a free trade area. More than 60% of Romania's exports and imports are handled through Constanza, and considerable investments are being made to develop the Constanza Sud (south) harbor.

The Danube stretches over 1,075 km in Romania, and it's river traffic is almost exclusively conducted on this river. In the maritime and inland waterway transport sector, similar principals have been adopted as in Bulgaria where state owned bodies or entities are in charge of the port infrastructure (quays, breakwaters, landfill, etc.) and award concessions to private bodies for port operations.

The port and navigation infrastructure are administered by the APM-SA Constanza National Company, CAN-SA Constanza National Company, APDF-SA Giurgiu National Company, APDM-SA Galati National Company, and AFDJ-SA Galati Autonomous Regie.

Goods transported by sea were 50.8% of the total, while cargo moved by road accounted for 40.3%. Rail and other transport modes, including inland waterways, accounted for 8.5%. Only 0.3% of the volume of goods traded between Romania and the EU were moved by air.

The total of Romanian exports handled by road transport companies amounted to 2 million tons in 2002. Of this, local companies handled 81% of the total. EU haulage companies accounted for 15.7% (314,000 tons), while other companies (non-Romanian and non-EU) controlled the rest (75,000 tons). The total for imports handled by road was 2.5 million tons in 2002, of which Romanian companies handled 71%. The percentage of goods transported by EU haulers was 22%. However, the proportion of goods handled by non-EU and non-Romanian operators was only 6.9%.

3.4. Croatia

Although the country has many ports, it is considered that there is a lack of good intermodal connections, well developed cargo handling equipment, and well trained staff. Furthermore, the rail connections between Croatia and its neighboring countries to the east are poor. The Croatian shipping market is expected to grow at a faster rate than the average for market growth in the Balkans.

The project which is underway to connect Croatia's largest seaport with its capital city envisages the construction of 11 bridges, nine tunnels, and facilities. The main section is expected to be opened for traffic in late 2008, and will complete the construction of the Rijeka-Zagreb highway, which began about 30 years ago.

Croatian ports aim to increase their efficiency and productivity by cooperation or partnership with foreign operators. These alliances open new horizons in the revival of Croatia's economy, as transport and port business are crucial to the economy and a significant part of the country's integration with Europe.

Croatian ports are ideally positioned for ocean carriers serving Central and Eastern Europe, especially in the Adriatic Line service. With the World Bank's loan of $264 million for the Croatia Rijeka Gateway Project, container traffic is likely to grow rapidly.

The regional road and rail infrastructure will be connected, and the port itself will be greatly modernized and expanded. The government is seeking a private operator to build and operate the facility. The port will eventually allow goods to move between Eastern and South Central Europe and world markets.

The Port of Rijeka is attempting to become a hub port by introducing a feeder service. This involves the collection of containers from the Brajdica terminal for further distribution to Bar and Ploce, and other North Adriatic ports. Container traffic in Rijeka has been increasing, especially due to the expanded weekly services of feeder connections by CMA-CGM.

IV. Entering Strategies of Korean Firms

4-1. Alliances

Strategic alliances became important as a quick and easy way to offer clients enhanced services in different geographical areas. It has been an especially popular way for mega shipping liners to extend their networks. At present, alliances are applied by vertical integration in different fields, such as those between shipping lines and GTOs, and between shipping lines and 3PLs. Alliances work best in stable, conservative markets where the threat of competitors acquiring an alliance agreement is low. This is one of the reasons why many logistics companies use alliances to extend their networks into new markets where competition is low. The major weakness of the alliance model is the potential lack of strategic direction, and a lack of connectivity and loyalty. Individual members may have their own distinct corporate priorities and identity, as well as different opinions on the future of the alliance.

4-2. Joint Venture

A joint venture is a formal relationship in which two or more parties create an entity with a shared stock ownership. JVs are typically used by companies which have complementary services or attributes to exploit in a particular market. When entering into a foreign market, a joint venture can be used to reduce risks, share information and experiences, and raise the necessary capital.

4-3. Efficient Globalization Strategy

Korean logistics companies need to establish an efficient globalization strategy in the long term perspective for growth. Individual companies should focus on their own global logistics network strategy, without relying too much on the viable effects. To realize this, growth strategy, oligopoly strategy, and globalization strategy should be utilized in phases in connection with one another.

Various localization strategies should be established. It has adjusted well to local markets through strategies of localization by analyzing local preferences and

inviting local CEOs, customers and staff. Various globalization tools need to be secured for successful launching into foreign markets. Korean companies are mainly propelled by organic growth when they establish new customers in foreign markets. However, global companies prefer M&A and strategic alliances to organic growth when they go into foreign markets.

V. Conclusions

The logistics industry in Central and Eastern Europe and Russia is set to experience substantial growth over the next five years. Data Monitor predicts that nominal spending on logistics and storage in the region will grow from around €184 billion in 2008 to just under €250 billion by 2012. This will primarily be derived from fast growing domestic country-markets, as well as increasing merchandise exports.

The overall Central and Eastern Europe (CEE) economy is estimated to grow at an average growth rate of five percent during 2007-2012, with strong contributions from the automotive, consumer goods, electronics and machinery, retail and telecom industries. This is also paving the way for increased development and outsourcing of contract logistics in the region. On the whole, CEE has a relatively under-developed transportation network but is attracting increasing amounts of investment flows from the EU, local government and large foreign and domestic private players in the logistics sector. Praveen Ojha, Senior Logistics Analyst with Data monitor, says "The lenient tax policies and moves for privatization have also helped attract a good amount of foreign direct investment funds into the region. With rising private consumption and fast-growing external and internal trade, the CEE region has displayed high-potential for the sustained growth of the transportation and logistics market."

Since the beginning of the 21st Century specialized logistics companies have also expanded into the target markets of CEE countries such as Romania, Slovenia, and Poland, and have started vigorously advancing into the surrounding countries such as Hungary, the Czech Republic, and Slovakia. It seems likely that this trend will continue into the foreseeable future and that it will not cease.

In order to take advantage of this opportunity, Korean logistics companies need to accelerate the expansion of their Southeast Asia and China based advancement strategies. Korean companies need to establish a globalization strategy in the long term perspective for growth. Individual companies should focus on their own global logistics network strategy. Various localization strategies should be established. Tesco, a global retail company, used a "glocalization" strategy to establish a strong market and actively accepted the acquired local company's role and characteristics. Also, various globalization tools such as M&A, piggy-backing, strategic alliances, and so on need to be utilized.

The Korean government needs to shift its current focus of general support for some industries to supporting certain competitive companies. The generation of competitive global logistics companies can eventually lead to general growth of the Korean logistics industry.

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The Determinants of The Real Exchange Rate in The Philippines

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Keywords:
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ABSTRACT

Using time series data from 1985 to 2006, the factors that significantly affected the short and long run behaviors of the real exchange rate in the Philippines were analyzed. Through ordinary least squares multiple regression, the expected directional effects of the money supply and of openness to trade on the real exchange rate were estimated, validating that the projected outcomes of the relative Purchasing Power Parity Theory and the Interest Parity Theory apply in the Philippine setting. On the other hand, through cointegration analysis, the expected directional effects of government spending and of relative productivity differentials on the real exchange rate were observed; that is, the Balassa-Samuelson effect holds in the long run. Overall, the results support the notion that the money supply and trade policies can affect the real exchange rate in the short-run but relative productivities of the tradable and non-tradable sectors of the economy have to be considered to regulate long-run real exchange rate behavior.

I. Introduction

The exchange rate is an important consideration in analyzing the macroeconomic conditions in open economies. Its importance stems from the fact that it can be used as an indicator of the country's level of competitiveness in foreign trade. To illustrate, a depreciation of the country's currency will make its goods relatively cheaper for foreigners while domestic residents will find imports more expensive, thus, improving the trade balance. (Krugman and Obstfeld, 2000).

Exchange rate instability implies a difficulty on the part of speculators and other players in the economy who forecast on the basis of current experience and on the trends in exchange rate movements. These players include exporters, importers, import competing industries, overseas Filipino workers' families, consumers and even the government itself. Further, foreign debt, which is predominantly in foreign currency, increases or decreases depending on whether there is depreciation or appreciation of the local currency. Thus, exchange rate stability means reduced

risk and uncertainty on the part of the players. There are many explanations and speculations not only regarding the causes but also the effects of exchange rate fluctuations.

According to the Purchasing Power Parity (PPP) Theory, the exchange rate between two countries is determined by the national price levels. The relative PPP theory predicts that a fall in a currency's domestic purchasing power, as a consequence of an increase in the domestic price levels (of tradable goods as opposed to non-tradable), will lead to proportional currency depreciation in the foreign exchange market. Conversely, it calculates that an increase in the currency's domestic purchasing power will be followed by a proportional currency appreciation (Krugman and Obstfeld, 2000).

On the other hand, Balassa (1964, as cited in Papell and Prodan, 2003) and Samuelson (1964, as cited in Papell and Prodan, 2003) focused on the fact that divergent international productivity levels could, via their effect on wages and home good prices, lead to permanent deviations from Cassel's absolute version of PPP. They linked PPP to exchange rates and inter-country real-income comparisons, arguing that the absolute version of PPP is flawed as a theory of exchange rates. Assuming that PPP holds for tradable goods, they argued that the productivity differentials between countries determine the domestic relative prices of non-tradable goods, leading to deviations from the long run trend of PPP (Papell and Prodan, 2003).

The Balassa-Samuelson model is one of the cornerstones of the traditional theory of the equilibrium real exchange rate. For most countries, there has been a tendency for increases in the price of non-traded goods to exceed the price increases in the traded goods sector. The Balassa-Samuelson model explains this phenomenon through the differential productivity growths between the tradable and the non-tradable sectors. It is argued that the tradable sector has relatively higher productivity growth than the non-tradable sector. The relatively slower rate of growth in the non-tradable sector then results in a relative price increase in the non-traded goods. Consequently, if the tradable sector's productivity is growing faster at home than abroad, an appreciation of the real exchange rate will be realized.

From another perspective, the life cycle hypothesis is the theoretical linkage between fertility rates and the real exchange rate. It argues that individuals allocate their consumption in the best possible way to provide for their consumption in old age (i.e., save for the future). Extending the argument further, individuals may opt to decrease their present consumption to allow for bequests to their heirs. However, families with greater numbers of minor siblings consequently increase their current consumption as they have to provide for the needs of their children (Dornbusch, Fischer and Startz, 2001). In other words, child rearing is associated with increased consumption and thus reduced savings. As savings decrease, investment increases, and the current account improves. To address this current account response, a real depreciation, as part of the equilibrium adjustments, will take effect (Rose and Supaat, 2007).

Furthermore, Rose and Supaat (2007) also showed that as the fertility rate increases, consumption of non-tradable goods also increases. Children will tend to consume more of services such as health care and education, which will increase the relative price of the non-traded goods. Following the Balassa-Samuelson Hypothesis, this will cause an appreciation of the local currency. Thus, as fertility rate changes, the Life Cycle Hypothesis argues that the consumption (and savings) behavior of the family will change. Consequently, the real exchange rate will fluctuate to adjust for such changes.

From yet another angle, one theory holds that the foreign exchange market is in equilibrium when deposits of all currencies offer the same expected rate of return. The proposition requiring that the expected returns on deposits of any two currencies should be equal when measured in terms of the same currency is

called the interest rate parity condition. It implies that potential holders of foreign currency deposits view them all as equally desirable assets (Krugman and Obstfeld, 2000).

The increasing interest in exchange rates not only domestically but also abroad is the springboard of this study. In this study, theories on exchange rate determination were utilized to determine the factors that significantly affect short and long run exchange rate behaviors in the Philippines.

II. Methodology

In the post-war period, the Philippines was under a fixed exchange rate regime, maintaining the official par value of PhP2.00 to USD1.00. In the 1960s, it shifted towards a floating exchange rate regime, although the Central Bank did not do away with the guiding rate in determining the international value of the peso against the US dollar, described as a "managed" float (Usigan, 1989). The exchange rate system operative since October 15, 1984 could be characterized as a "free" float of the peso, where rates are determined in the foreign exchange markets (Suleik, 1992). Thus, the data used in this study comprise a time series starting from 1985, when the exchange rate started moving freely with the several factors that affect it, to 2006. A majority of the secondary quarterly data were sourced from the Bangko Sentral ng Pilipinas, National Statistical Coordinating Board, and National Statistics Office.

2.1 The Exchange Rate Function

The function considered in this study is an integration of the variables considered in the aforementioned frameworks/hypotheses, from studies both here and abroad, and tries to analyze the overall effects of the different variables on the real exchange rate behavior in the Philippine setting. The function can be expressed as:

$$RE = f(PPP, BS, F, I, C, R, GS, PS, MS, N, US, POP, TL)$$

where: PPP represents the Purchasing Power Parity; BS is the relative productivity differential, as a test of the Balassa-Samuelson hypothesis; F stands for fertility rate, as a test of the Life Cycle Hypothesis; I is the interest rate, which is included to test the Interest Rate Parity Theory; C stands for consumption; R is remittances; GS is the government spending; PS is the political situation in the Philippines; MS stands for the money supply; N is inflation; US represents the state of the US economy; POP stands for the population; TL is trade liberalization.

The C, R, GS and PS variables were included in the function to test whether the results of past studies hold in the Philippine setting. MS and N are the monetary variables which may potentially affect the exchange rate. TL would measure the country's openness to trade. The PS and US are dummy variables which are measured using available studies on the political history of the Philippines and the economic history of the United States, respectively. During years of political instabilities in the Philippines, PS is valued at 1 and 0 otherwise. On the other hand, during years of economic disturbances in the United States, US is valued at 1 and 0 otherwise.

2.2 Analytical Procedure

Thus, a general model incorporating all the variables was run, which is represented by an equation with a functional form that can be expressed as:

$$\log REt = \beta 1 + \beta 2PPP + \beta 3BS + \beta 4C + \beta 5NFIA + \beta 6GS + \beta 7PS + \beta 8US + \beta 9I + \beta 10MS + \beta 11N + \beta 12POP + \beta 14\,BIRTH + \beta 13TL + \varepsilon$$

where: REt is the real (bilateral) exchange rate of Philippine peso and US Dollar over time t; PPP is measured as the difference between the domestic and

foreign price levels or consumer price indices; BS refers to the relative productivity differentials between the tradable and the non-tradable goods in the United States and in the Philippines, measured by the ratio of CPI (accounts for the tradable goods) and WPI (accounts for the tradable goods) for the two countries; C represents aggregate consumption as a proportion of GDP; GS is the government spending as a proportion of GDP; PS is a dummy variable for the political situation, valued at 1 when political instability is present and 0 otherwise; US is a dummy variable for the state of the US economy, valued at 1 when a significant disturbance in their economy is observed and 0 otherwise; I stands for the interest rate parity between the Philippines and the United States; MS signifies the money supply or narrow money; N is the inflation rate; POP represents the country's population growth rate; BIRTH stands for the country's birth rate; TL stands for openness to trade measured by the level of imports and exports; and NFIA stands for the Net Factor Income from abroad, a proxy variable for the OFW remittances.

A cointegration analysis was initially done to test for long run relationships among variables, excluding the dummy variables (PS and US) which could not be tested using the technique. The variables (or series) were first tested for the presence of unit roots using the Augmented Dickey Fuller (ADF) Test. Forecasting may be of little practical value for non-stationary series (Gujarati, 2003); thus stationarity among the variables was first established before the cointegration analysis.

However, in both the stationarity and cointegration tests, too much emphasis is given to testing and too little is given to estimation (Romero and Sancio, 1997). Hence, to address the problem of cointegration, a multiple regression analysis on the equation was also conducted, including the dummy variables (PS and US) in the equation, to determine the extent of the effect of each variable on the exchange rate behavior. It was also used to analyze, if there exists, short run relationships among variables.

Before the multiple regression was run, a correlation analysis and a causality test were done on the general model. The correlation analysis was done to check for any strong relationships among the independent or explanatory variables that may affect the regression estimates. The Granger causality test was done to see if an explanatory variable actually helps in the prediction of the dependent variable— that is, the variables included in the right hand side of the equation Granger cause changes in the left hand side (i.e., the real exchange rate) and not the other way around.

III. Empirical Analyses

3.1 Cointegration Analysis

All the variables were examined for the existence of a unit root, which implies nonstationarity. Based on the ADF tests, only the POP, BIRTH, MS, and INF series were proven stationary (at 1% level of significance). However, since the other series (RE, CONS, GOV, IP, NFIA, PPP, TRADE, and BS) are all integrated of the first degree [I(1)] at the 1% level, a cointegration analysis was done to check if their linear combinations are stationary, thus implying a stable long run relationship between them.

In the cointegration analysis, the dependent variable RE was initially regressed on each explanatory variable in order to generate their residual series. Based on the ADF tests, in the long run, a stable relationship exists between the real exchange rate and the relative productivity differential between the US and the Philippines (BS) and government spending (GOV). To further analyze the relationship, Table 1 summarizes the results of the cointegration analysis on real exchange rate–relative productivity differential linear combination.

Based on the coefficient of determination, it can be said that 28.7% of the long run fluctuations in the exchange rate are explained by the relative productivity differentials between the US and the Philippines. The

regression as a whole can be said to be significant at all levels. Therefore, the Balassa-Samuelson hypothesis holds in the long run.

It is evident that a negative relationship exists between the relative productivity differentials and the real exchange rate. This implies that if the relative price of non-tradables in the Philippines increases due to increased productivity in the tradable sector, the real exchange rate will appreciate. On the other hand, if the relative price of non-tradables in the US increases, the real exchange rate will depreciate. Such a relationship can be referred to as the Balassa-Samuelson Effect. As the BS index increases by a unit, the real exchange rate will appreciate by PhP0.28.

Table 1. Cointegration Result of Real Exchange Rate–Relative Productivity Differential (REBS) Linear Combination.

Variable	Coefficient	Standard Error	t-statistic	p-value
BS	-0.286656	0.090394	-3.1712	0.0034
C	0.259566	0.360733	0.7196	0.4772
R-squared	0.283098	Durbin Watson stat	2.09906	
Adjusted R-squared	0.236846	F-statistic	6.1208	
S.E. of regression	2.091564	Prob (F-statistic)	0.00575	

Previous results would show that the Balassa-Samuelson effect does not hold in the short run, even though it holds in the long run. This may be attributed to some of the assumptions of the Balassa-Samuelson model which do not hold in the Philippine context— for instance, the assumptions that productivity improvements are more dominant in the tradable sector and that the productivity improvements in the Philippines are more dominant in the non-tradable sector. Another assumption of the Balassa-Samuelson model that was not met is that labor is internally perfectly mobile and competitive. It can be said that in the short run, labor may not be internally mobile, and it might take some "time" before perfect labor mobility and competitiveness can be observed in the economy. Therefore, some assumptions of the Balassa-Samuelson model may not hold in the short run, and results may be mixed. However, in the long run, the assumptions will be valid and the Balassa-Samuelson effect can be observed.

On the other hand, to further analyze the long run relationship between the real exchange rate and government spending, Table 2 summarizes the results of the cointegration analysis on the said variables.

Table 2. Cointegration Result of the Real Exchange Rate–Government Spending (REGOV) Linear Combination.

Variable	Coefficient	Standard Error	t-statistic	p-value
GOV	-0.223776	0.075716	-2.9555	0.0041
C	0.026546	0.278523	0.0953	0.9243
R-squared	0.542956	Durbin Watson stat	1.86072	
Adjusted R-squared	0.513278	F-statistic	18.2948	
S.E. of regression	2.535781	Prob (F-statistic)	0.00000	

Based on the results, in the long run, there exists a negative relationship between government spending and the real exchange rate. As government spending increases by a percentage, the real exchange rate will appreciate by 0.224 units. It can be concluded that 54% of the variations in the real exchange rate can be explained by the model and that the regression as a whole is significant.

The results confirm the findings of Chaban (2006) that, in the Philippine setting, a rise in domestic spending in the non-tradable sector (say for instance, increased fiscal expenditure on service infrastructures) would lead to a greater demand for non-traded goods (or services) as compared to the traded goods. This would lead to a domestic price increase in the non-tradable goods, and hence, an appreciation of the local currency. The theoretical linkage, therefore, between government spending and the real exchange rate can be explained by the Balassa-Samuelson effect.

3.2 Multiple Regression Analysis

In analyzing the model, the variables BS, POP and BIRTH were dropped due to statistical inefficiencies (i.e., data unavailability or invariability). A priori, the results might appear insignificant due to relatively insufficient data and thus the said variables were dropped.

Before running the multiple regression, a correlation analysis was done on the remaining variables. As the correlation results would show, it can be said that strong correlations exist among the variables PPP, NFIA and MS. In order to check for the presence of multicollinearity, the explanatory variables were regressed against each other to generate the respective R2 values and, consequently, the variance inflation factors (VIF) of their linear combinations. If the VIF is greater than 10, multicollinearity could be a serious problem (Danao, 2004).

Based on the test, PPP is the culprit variable since a high degree of multicollinearity is present between the PPP and the other two variables, whereas the two variables MS and NFIA do not exhibit a serious multicollinearity problem. In this regard, the variable PPP was also excluded in the multiple regression analysis.

Lastly, a Granger causality test was done on the remaining variables. The results show that the variables GOV and MS "Granger cause" real exchange rate changes (at 10% level of significance), IP "Granger causes" real exchange rate changes (at 5% level of significance) and TRADE "Granger causes" real exchange rate changes (at 1% level of significance). On the contrary, CONS, NFIA, INF, POL and US were also dropped from the multiple regression analysis because they were not found to "Granger cause" real exchange rate changes (i.e., it cannot be said that the variables cause fluctuations in the real exchange rate).

Therefore, only the variables GOV, TRADE, MS and IP were included in the multiple regression analysis because: 1) there is relatively sufficient data; 2) there is no multicollinearity between those variables and the real exchange rate; and lastly, 3) those variables significantly cause changes in the real exchange rate and the relationship does not go otherwise. Table 3 reports the results of the multiple regression analysis.

Table 3. Regression Results of the Model.

Variable	Coefficient	Standard Error	t-statistic	p-value
Constant* **	3.918416	0.142591	27.48005	0.0000
GOV	0.002823	0.018315	0.154159	0.8779
TRADE* **	-0.005845	0.000891	-6.55756	0.0000
IP	0.00154	0.002609	0.590183	0.5567
MS* **	0.002173	0.000327	6.636577	0.0000
R-squared	0.654609	F-statistic		39.3269
Adjusted R-squared	0.637964	Prob (F-statistic)		0.00000
S.E. of regression	0.091094	Durbin-Watson stat		0.77192

***at the 1% level of significance

Using multiple regression analysis, it can be concluded that the short run variations in the real exchange rate are explained by the predictors included in the model. The R2 value shows that around 65.44%

of the variations in the real exchange rate behavior can be explained by the included variables in the model. Using the adjusted R2 value, it can still be concluded that 63.31% of the short run fluctuations in the real exchange rate are explained by the variables in the model. Thus, using either of the two measures, the model seems to have a good fit.

Further, the significance of the regression equation was examined using the F-test. Looking at either the f-statistic or its p-value, the regression as a whole can be said to be significant at the 1% level. Lastly, with a Durbin-Watson d value greater than the R2 value, the proposition that the estimated regression will be spurious because of the presence of nonstationarity in one or more variables was rejected (Gujarati, 2003).

Based on the individual t-statistics, the following results were arrived at: (1) trade significantly influences the real exchange rates; (2) money supply significantly affects the real exchange rate; and (3) the other predictors (GOV and IP), however, do not significantly affect the real exchange rate behavior in the short run. Therefore, TRADE and MS significantly affect the short run real exchange rate behavior in the Philippines and have impacts in opposite directions. The following summarize the inferences that can be made.

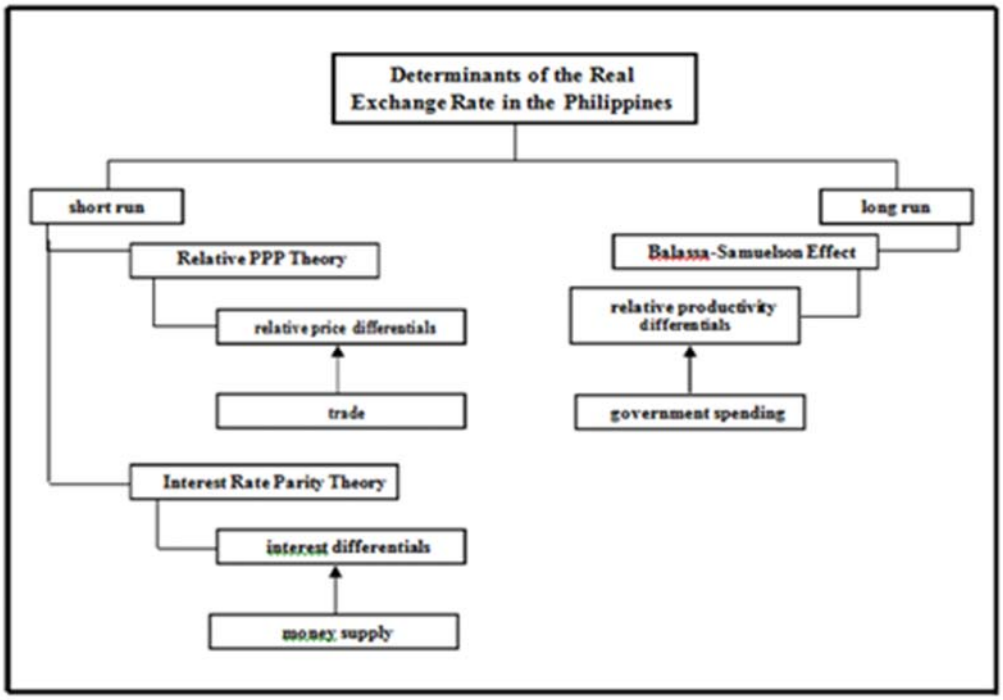
A negative relationship exists between trade and the real exchange rate. As trade openness increases by a percentage, the real exchange rate will appreciate by 0.006%. This result supports the findings of Rose and Supaat (2007) that a percentage increase in the country's openness to trade (measured as a percentage of the GDP) would lead to (about 0.0014%) appreciation of the real exchange rate. The mechanism works through the domestic prices—countries that are more open to trade tend to have lower domestic prices of the tradable goods. As a result, the real exchange rate will appreciate. Hence, the theoretical linkage between trade and the real exchange rate can be explained by the (relative) Purchasing Power Parity Theory.

The real exchange rate and the money supply are positively related. As money supply increases by a percentage, the real exchange rate will depreciate by 0.002%. Intuitively, as the number of pesos in the economy increases relative to dollars, depreciation can be expected. Moreover, as discussed by Krugman and Obstfeld (2000), if the money supply increases relative to money demand, the domestic interest rate must decrease. This will decrease the opportunity cost of holding money and thus money demand will increase to restore the equilibrium. The decrease in the domestic interest rates will lead to a real exchange rate depreciation, as elucidated by the Interest Rate Parity Theory—the theoretical linkage between the money supply and the real exchange rate.

IV. Conclusion

By using time series data from 1985 to 2006, this study provided an analysis of the different factors affecting the real exchange rate behavior in the Philippines. A general model including the variables of consumption (CONS), government spending (GOV), net factor income from abroad (NFIA), trade (TRADE), money supply (MS), inflation rates (I), interest differentials (IP), price differentials (PPP), relative productivity differentials (BS), population growth rates (POP), birth rate (BIRTH) and the two dummy variables for the state of the US economy (US) and the Philippine political situation (POL) was tested using cointegration techniques and multiple regression analysis. Results are summarized diagrammatically in Figure 1 and are discussed in the succeeding sections.

Figure 1. Summary of Results.



Using ordinary least squares regression, the relative purchasing power parity theory and the interest rate parity theory were proven to hold in the short run. Moreover, results of the multiple regression analysis confirmed the aforementioned results through the significance of the variables of trade and money supply. The theoretical linkage between trade and the real exchange rate is the relative purchasing power parity theory; that is, as trade openness increases, the domestic price of the tradable goods changes, thus affecting the real exchange rate. On the other hand, the interest rate parity theory links the money supply to the real exchange rate because as money supply changes, the real interest rate varies and, as a consequence, the real exchange rate will fluctuate.

Using cointegration analysis, the Balassa-Samuelson effect was proven to hold in the long run. Moreover, the significance of government spending in the long run confirms the previous results — that is, the theoretical linkage between government spending and trade as the manifestation of the Balassa-Samuelson effect. This is due to the fact that as government spending on services (e.g., service infrastructures, health and education services) increases, the relative price of non-traded goods in the economy also increases. Thus, the real exchange rate will appreciate as predicted by the Balassa-Samuelson hypothesis.

4.1 Policy Implications

The real exchange rate is associated with the competitiveness in foreign trade, where depreciation is favorable in improving the trade competitiveness of the country. However, appreciation would be advantageous in servicing the country's foreign debt. Therefore, a real exchange rate fluctuation, for instance, depreciation, while beneficial to some, would be undesirable to other sectors of the economy.

For instance, in the short run, the purchasing power parity and the interest rate parity theories can serve as benchmarks in trying to affect the real exchange rate behavior. This implies that the domestic price levels and interest rates may be used to indirectly influence and restore the equilibrium exchange rate. The domestic price and interest rate levels, in turn, may be influenced through the money supply and trade policies.

However, such policies will only be effective in the short run. If the government aims to regulate the long run real exchange rate behavior, it must consider the relative productivities of the tradable and non-tradable sectors of the economy since it was proven that the Balassa-Samuelson Effect holds in the Philippine setting. Government spending may also be used to affect the long run real exchange rate (as it influences the productivity differentials in the country). It can be said that even though policies to affect the relative productivity differential may not be effective in the short run; in the long run, the effects will be realized.

4.2 Limitations of the Study

This study provided an analysis of the factors which affect the real exchange rate behavior in the Philippines. However, in the course of the study, it was realized that some of the data are not available. These are the monthly or quarterly fertility rates, OFW remittances for the year 1985-1988, and the Wholesale Price Index from 1985-1997, which is based on 1998 prices (1998=100). Hence, proxy variables were used.

Moreover, there is no literature to summarize all the significant political instabilities that happened in the country. Contrary to the objective evaluation of the US dummy (i.e., using the National Bureau of Economic Research report on the US business cycle), a subjective analysis of the events in the Philippine history was done using newspapers, legacy and history books, reviews, etc. to value the POL dummy. The political crisis definition used in this study was adapted from Cabaling and Gomez (2001), which states that "a political crisis is a crucial or decisive situation that may eventually lead to the disablement of the political leadership in the country". This includes coup attempts, impeachment trials, grave scandals involving the president, and so on. Since it was only valued between politically stable and politically unstable, the degree of political instability for each quarter was not considered.

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Armington Elasticities for Selected Oil Products in the Philippines

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ABSTRACT

Armington trade elasticities for energy inputs are key ingredients towards building an energy-oriented Computable General Equilibrium (CGE) model. These elasticities illustrate the sensitivity of domestic consumers in substituting imported oil products to their domestic counterparts when their relative prices change. Such estimates are still unavailable for the Philippines, hence this study attempted to generate these elasticities using alternative methods suggested in literature. LPG and kerosene were found to be highly sensitive to changes in relative prices in the short-run, while diesel and gasoline exhibited sensitivity only in the long-run. Future attempts to estimate these elasticities using other techniques are necessary in order to obtain alternative estimates.

I. Introduction

In his paper entitled "A Theory of Demand for Products Distinguished by Place of Production", Armington (1969) developed a trade model wherein commodities are differentiated not just by type, but also by place of origin. The distinction implies that products of different countries of the same type are imperfect substitutes in demand. The model addresses the issue in traditional trade models on the assumption that products from different countries are perfect substitutes. These traditional models, when tested empirically, may produce results that might not be realistic or theoretically attractive due to the imposition of such a classical assumption.

The so-called "Armington assumption" has been used extensively in many studies in international trade. The model accounts for intra-industry trade, which permits the inclusion of such sectors in a CGE model. This differs from traditional models which assume a country's specialization in the production of a certain commodity. The model also permits calculations of cross price elasticities among products from varying places of origin. Alston et al. (1990) notes that the model's flexibility and ease of use makes the Armington model popular in international trade

research. The results derived from such studies have been deemed successful in terms of plausibility of estimates and statistical significance.

Given the assumption, one can derive so-called "Armington elasticities". This statistic represents the elasticity of substitution between a domestically produced product and its imported counterpart. This measures the sensitivity of the demand for imported products when the relative prices of imported and local products change. Various econometric methods and models have been used in estimating these elasticities using data on domestic production, imports, and domestic and foreign prices of goods collected from statistical bureaus of different countries and organizations.

Armington elasticities are important components of Computable General Equilibrium (CGE) models which incorporate trade in the analysis. Import demand equations are included in the structure of the model to illustrate substitutability between a domestically produced good and its imported counterpart. CGE Modellers could obtain these elasticities from past studies or derive these through various empirical techniques if these are not yet available in literature.

Energy-oriented CGE models are variants of the usual CGE models which are used to analyze energy related issues such as energy regulation and policies, oil price hikes and environmental impacts of energy use, among others, and their impacts on various sectors of the economy. Armington elasticities for energy products in the Philippines have already been estimated (Clarete and Warr, 1991; Kapuscinski and Warr, 1996; Cororaton, 2000). The problem arises with the aggregation; for instance, Kapuscinski and Warr (1996) grouped energy products into "crude oil, coal, and natural gas" and "coal and petroleum products".

CGE results might be sensitive to the use of various parameters; hence, it is important to estimate Armington elasticities for specific products, rather than for commodity groups. In the case of building energy-oriented CGE models, Armington elasticities for specific energy products such gasoline, diesel, LPG and kerosene would be necessary. In this light, this study attempted to derive these elasticities for selected oil products through various regression methods.

II. Review of Literature

Regression techniques, some employing various time-series methods, have been widely used in estimating Armington elasticities. Reinert and Roland-Holst (1992) used OLS and Cochrane-Orcutt estimates to calculate Armington trade elasticities for 163 mining and manufacturing sectors in the US. Positive and significant estimates were obtained in most of the models, but the estimates were generally low, which implies limited substitution possibilities between domestic US products and their imported counterparts.

On the other hand, Gallaway et al. (2003) computed short- and long-run Armington elasticities for 311 industries in the US. The authors employed geometric lag models, error correction models (ECM), and first difference OLS regression models to derive both short- and long-run estimates based on the time series properties of the dataset. Long-run estimates were found to be twice as large as their short-run counterparts on the average. This was noted as an important result; long-run Armington elasticities used in the past CGE models were always assumed to be lower than the short-run elasticities. Also, significant differences were found among estimates in most three digit Standard Industrial Classification (SIC) category firms, highlighting the importance of the degree of disaggregation of the data when obtaining estimates. Similar methods for estimating Armington elasticities were employed by Gibson (2003) and Ogundeji et. al (2010) for South Africa, Tourinho et al. (2003) for Brazil, Nemeth et al. (2008) and Lundmark and Shahrammehr (2009) for Europe, and Flores and Cassoni (2010) for Uruguay.

Aside from the use of regression models, other techniques can also be applied in estimating Armington elasticities. A recently emerging technique involves the implementation of maximum entropy estimation methods. This technique is based on the "information theory", where estimates are calculated based on knowledge of likely parameter values and information about the system and parameter constraints (Nunez, 2005). This technique is mostly used in deriving parameters for CGE models in countries where data availability is a major issue. Arndt et al. (2001), Nganou (2005) and Nunez (2005) used this method to estimate Armington elasticities for various products in Mozambique, Lesotho and Mexico, respectively.

The economic geography approach is an emerging field in economic analysis and Balisteri et al. (2010) illustrated how the approach can be used in estimating Armington elasticities through fixed-effects gravity regressions. Geographical distance and trade costs are included in deriving the estimates. The approach was used to estimate Armington elasticities for oil and petroleum products for various regions in the world. Estimates were found to be generally higher than those found in literature and those commonly adopted in CGE models. Interpreted as long-run estimates, the results suggest that fuel switching from one source to another (i.e., one exporting country to another) and from domestic to foreign oil products is relatively easy in the long run.

One may find a high degree of variation among Armington elasticity estimates derived from different studies. Various factors may affect the magnitude and significance of the estimates, which may include:

- presence of foreign-owned affiliates, entry barriers, and union presence in a country (Blonigen and Wilson, 1999);
- multilateral versus bilateral trade data (Saito, 2004);
- level of aggregation of the data (Batista and Junior, 2005);
- methodology used (Cassoni and Flores, 2008)

Mcdaniel and Balistreri (2002) presented three generalizations derived from literature on Armington elasticity estimation:

- Long-run estimates are generally higher than their short-run counterparts;
- Higher elasticities are generally found in studies which used more disaggregated data, and;
- Studies using time series models tend to report lower estimates than those of cross-sectional studies.

Armington elasticities for the Philippines' various sectors, including the energy sector, have been estimated in past studies. Kapuscinski and Warr (1996) used OLS, partial adjustment models, and ECM models to estimate Armington elasticities for the Philippines. However, the use of the Kapuscinski and Warr estimates may be questionable in trying to construct an energy-oriented CGE model, as the authors grouped energy products into "crude oil, coal, and natural gas" and "coal and petroleum products". A higher level of disaggregation is ideal in such an undertaking, at least for groupings composed of the major energy sources: oil, coal, gas, and electricity.

The estimation of Clarete and Warr (1991) also had the same aggregation with the said study, plus an item on "electricity, gas, and water". These estimates were used in the APEX CGE model for the Philippines. Cororaton (2000) also presented Armington elasticities used in his Philippine Computable General Equilibrium Model (PCGEM). However, aggregation is still an issue as the estimates had the following groupings; "petroleum refining" and "electricity, gas, and water". Aside from aggregation, these estimates may be outdated; hence, new estimates could be computed to include recent trade data.

III. Framework and Methodology

Traditional economic models of international trade do not account for intra-industry trade among countries. Assumptions of these trade models would normally include: (1) that countries specialize in the production of a good, and (2) identical products from different places of origin are perfect substitutes. While these models provide meaningful conclusions, data and empirical studies usually do not support such models. In a well celebrated paper, Armington (1969) developed a theory of demand for goods differentiated not only by kind, but also by place of origin. For example, French machinery and Japanese machinery are thus two different goods distinguished in the Armington model. This implies that such goods are considered imperfect substitutes to one another in the consumer's point of view.

Shoven and Whalley (1992) presented a simplified version of the derivation of the demand functions for the Armington trade model for single country estimation. For a certain good, suppose a supply of the good can be sourced domestically (d) or imported from the rest of the world (m). The objective is to minimize expenditures for the good subject to a CES function of the composite of both the domestically produced good and its imported counterpart as follows:

$$\min E = p_m x_m + p_d x_d$$

$$\text{s.t. } \bar{x} = \left(\alpha_1^{1/\sigma} x_m^{(\sigma-1)/\sigma} + \alpha_2^{1/\sigma} x_d^{(\sigma-1)/\sigma} \right)^{\sigma/(\sigma-1)}$$

(Equation 1)

where:

E = total expenditures for the good

pm = price of imported good

pd = price of domestically produced good

xm = quantity of imports of the good

xd = quantity of domestically produced good

$\bar{x}$ = quantity of the composite good (domestic and imported)

α_i = distribution parameter, such that $\sum_{i=1}^{2} \alpha_i = 1$

The parameter σ measures the ease of substitution between the domestically produced good and its imported counterpart. This is the so-called "Armington elasticity". As with the two-input elasticity of substitution, σ is interpreted as follows: if the value of σ is greater than unity it implies that substitution possibilities are high between the imported and domestically produced good. On the other hand, a value less than unity implies limited substitution possibilities while a zero value implies that the domestically produced good cannot be substituted with an imported counterpart. The domestically produced good and its imported counterpart are considered perfect substitutes if σ is equal to unity.

From the minimization problem in Equation 1, first-order conditions will yield equilibrium quantities of domestic production (Xd*) and imports (Xm*) as follows:

$$x_d^* = \frac{\alpha_2 \bar{x} \left[\alpha_1 p_m^{1-\sigma} + \alpha_2 p_d^{1-\sigma} \right]^{\frac{\sigma}{1-\sigma}}}{p_d^{\sigma}}$$

(Equation 2a)

$$x_m^* = \frac{\alpha_1 \bar{x} \left[\alpha_1 p_m^{1-\sigma} + \alpha_2 p_d^{1-\sigma} \right]^{\frac{\sigma}{1-\sigma}}}{p_m^{\sigma}}$$

(Equation 2b)

The ratio of Equation 2a and Equation 2b is commonly used to specify the import demand equation:

$$\frac{x_m}{x_d} = \left(\frac{\alpha_1}{\alpha_2} \right) \left(\frac{p_d}{p_m} \right)^{\sigma} = \delta_m \left(\frac{p_d}{p_m} \right)^{\sigma}$$

(Equation 3)

Equation 3 was used in this study as the basis for the econometric estimation of the Armington elasticities for different energy products in the Philippine case. By taking the logarithm of the equation, this can be represented by a simple OLS equation:

$$\ln y = \ln \delta_m + \sigma \ln x + \mu \qquad \text{(Equation 4)}$$

where:

lny = growth in the ratio of the quantities of imported and domestic product ; $\left(X_m / X_d\right)$

lnx = growth in the domestic and foreign price ratios; $\left(p_d / p_m\right)$

$\ln \delta_m$ = log of the ratio of the distribution parameters

σ = Armington elasticity

Estimation of Equation 4 was based on the methods used by Gallaway et al (2003), Gibson (2003), and Ogundeji et al. (2010), where the model was specified to account for the stationarity properties of the ratios of the price and quantity series that were used to estimate the model. The stationarity condition of the variables in the model determines whether both short- and long-run Armington elasticities can be obtained or only one of them is feasible. The Augmented Dickey-Fuller tests were conducted to establish whether the variables in the model are stationary at log level form or at their first difference. Cointegration tests were also conducted to test for long-run relationships if both *y* and *x* were found to be integrated at order I(1).

For models having stationary log level data for both *y* and *x*, a distributed autoregressive specification was used. Equation 4 is modified as follows:

$$\ln y_t = \ln \delta_m + \sigma \ln x_t + \lambda \ln y_{t-1} + \nu_t$$

(Equation 5)

where ν_t is an identically distributed (iid) error term and σ is the short run Armington elasticity. The long-run Armington elasticity can be computed as $\sigma / (1 - \lambda)$ given that $0 < \lambda < 1$ (Gallaway et al., 2003).

If both *y* and *x* series are found to be integrated at order I (1) and cointegrated, an error correction model (ECM) was used to obtain both short- and long-run Armington elasticities. The cointegrating regression is specified as follows:

$$\ln y_t = \ln \delta_m + \sigma_{LR} \ln x_t + \varepsilon_t \qquad \text{(Equation 6)}$$

where the variables are said to be cointegrated if and only if the error term of the cointegrating regression is found to be stationary. The ECM model is specified as:

$$\Delta \ln y_t = \ln \delta_m + \sigma_{SR} \Delta \ln x_t + \theta \varepsilon_{t-1} + \eta_t$$

(Equation 7)

where η_t is an iid error term and σ_{SR} is the short-run Armington elasticity. The long-run Armington elasticity is represented by σ_{LR} in the cointegrating regression (Gallaway et al. 2003).

Finally, if only one between the y and x series is stationary, or if both are integrated at I(1) but do not exhibit cointegration, a first differenced OLS regression model was used. The specification of the model is as follows:

$$\Delta y_t = \ln \delta_m + \sigma \Delta x_t + \upsilon_t \qquad \text{(Equation 8)}$$

where υ_t is an iid error term and σ is the short-run Armington elasticity. The long-run Armington elasticity cannot be computed in this specification. It is implied that if one of the series is stationary while the other is integrated at order I (1), then the two series do not exhibit any long run relationship (Gallaway et al., 2003).

These alternative models were used based on the specific stationarity of the price and quantity ratios in the data set. The Armington elasticities were estimated for gasoline, kerosene, diesel, and liquefied petroleum gas (LPG) to determine whether imported and locally produced varieties of these products are substitutable or not. When necessary, Lagrange multiplier tests were

conducted to test for autocorrelation. Models with autocorrelated error terms were estimated via Cochrane-Orcutt procedure to remove inefficiencies in the estimates of Armington elasticities brought about by the autocorrelation problem (Reinert and Roland-Holst, 1992).

IV. Nature and Sources of Data

Estimation of Armington elasticities was conducted using monthly data. The Oil Price Monitor published by the Department of Energy (DOE) presents weekly average prices of gasoline, diesel, kerosene and LPG; hence, data for these fuels were collected for the estimation of the trade elasticities. Monthly data on fuel imports and domestic sales (in kilolitres) were obtained from the dataset of the Joint Oil Data Initiative (JODI). Domestic sales were computed as the difference of domestic gross production and the total exports of these fuels.

End-of-the month averages of domestic fuel prices were obtained from the DOE, while foreign prices were obtained from the United States Energy Information Administration (EIA). Spot prices of New York Harbor Conventional Gasoline, Los Angeles Ultra-Low Sulfur CARB Diesel, US Gulf Coast Kerosene-Type Jet Fuel, and Mont Belvieu Propane were used as proxy for foreign prices of gasoline, diesel, kerosene and LPG, respectively.

For the estimation of Armington elasticities of gasoline and diesel, data collected were from January 2003 to September 2011. Data for kerosene were from March 2005 to September 2011, and data for LPG were from March 2005 to February 2011. All prices were expressed in pesos per liter and monthly average peso-to-dollar exchange rates from the Bangko Sentral ng Pilipinas (BSP) were used to convert the dollar prices of foreign fuels into peso prices.

V. Results and Discussion

The logarithm of quantity and price ratios for diesel, gasoline, LPG, and kerosene were tested for stationarity to determine the estimation technique to be used for deriving Armington elasticities. Table 1 shows the results of Augmented Dickey-Fuller tests implemented on the said variables. For diesel and gasoline import demand models, both the logarithm of the ratios of domestic and imported quantity and prices were found to be stationary at level form; hence, Model 1 (i.e., distributed autoregressive model) was used. However, Model 3 (i.e., first difference model) was used for the import demand models of kerosene and LPG since the data on the logarithm of price ratios were found to be integrated at order one or I (1) while the logarithm of the quantity ratios were stationary at level form. Hence, only short-run Armington elasticities were estimated for these commodities. Estimates of Armington elasticities for diesel, gasoline, LPG, and kerosene are presented in Table 2. The estimated coefficients of the models are presented in Appendix Tables 1 and 2.

Table 1. Augmented Dickey-Fuller Tests

ENERGY	LEVEL FORM		1st DIFFERENCE		LEVEL OF INTEGRATION
	DF Test Statistic	Stationarity	DF Test Statistic	Stationarity	
Diesel					
Ratio of Quantities	-4.192**	Stationary			I(0)
Ratio of prices	-3.334*	Stationary			I(0)
Gasoline					
Ratio of Quantities	-3.884**	Stationary			I(0)
Ratio of prices	-3.992**	Stationary			I(0)

LPG					
Ratio of Quantities	-3.333*	Stationary			I(0)
Ratio of prices	-2.989	Nonstationary	8.120**	Stationary	I(1)
Kerosene					
Ratio of Quantities	-4.678**	Stationary			I(0)
Ratio of prices	-2.567	Nonstationary	5.347**	Stationary	I(1)

*significant at 5% *significant at 1*

Table 2. Estimates of Armington Elasticities for Selected Oil Products

	SHORT RUN	LONG RUN
Diesel	0.748	1.832
Gasoline	0.892	1.447
LPG	1.055	n/a*
Kerosene	2.930	n/a*

*long run Armington trade elasticities cannot be estimated

All Armington elasticity estimates were found to be positive, implying that foreign and domestically-produced oil products are substitutes. The elasticity of substitution of imported and local LPG and kerosene were found to be relatively high in the short run (i.e., 1.055 and 2.930, respectively). This implies that foreign and domestically-produced LPG products are highly substitutable. The same can be said for kerosene. However, high short-run substitutability cannot be inferred for diesel and gasoline since the estimated elasticities were both less than 1.0, (i.e., 0.748 and 0.892, respectively. Nevertheless, the analyses have shown that the domestic and foreign counterparts of these two fuel products become highly substitutable in the long-run as their Armington elasticities yielded values greater than unity (i.e., 1.832 for diesel and 1.447 for gasoline). These findings are consistent with the results of McDaniel and Balistreri (2002) that long-run estimates of Armington elasticities are usually higher than their short-run counterpart. The estimated elasticities are also sensitive to the econometric technique used (Cassonni and Flores, 2008), which may explain the significant difference in elasticities computed using the distributed autoregressive model (i.e., diesel and gasoline) versus those computed using the first difference regression model (i.e., LPG and kerosene) with the latter yielding larger short-run elasticity values.

VI. Implications for Economic Modeling

Comparing the results of this study with the estimates of Kapuscinski and Warr (1996), Clarete and Warr (1991) and Cororaton (2000), one may find that the present estimates of Armington elasticities are relatively higher. Table 3 presents the estimates from these past studies. McDaniel and Balistreri (2002) noted that estimates from disaggregated data tend to be higher as the degree of disaggregation increases. This is consistent with the results of this study, as past estimates were based on aggregated data on crude oil and petroleum products. Gallaway (2003) also noted that estimates derived from monthly data are more volatile and can be highly sensitive; hence, the tendency is for the estimates of the present study to be higher compared to estimates using annual or quarterly data.

Table 3. Armington Elasticities of Energy Inputs from Past Studies

ENERGY INPUT/ GROUPING	CLARETE AND WARR (1991)	KAPUSCINSKI AND WARR* (1996)	CORORATON (2000)
Crude Oil, Coal and Natural Gas	0.70	0.650	
Coal and Petroleum products	0.60	0.558	
Petroleum Refining			0.60

*derived from ECM estimates as prescribed by the author

The estimates of this study can be used for an energy-oriented CGE model where petroleum products are disaggregated. One can choose to break down the requirement for the energy input groupings in the present I-O Table by getting the share of each individual energy inputs and multiplying these shares with the total energy input requirement of the industry. This can be helpful in analyzing trade policies related to specific energy inputs (e.g., tariffs on imported diesel products). Note that existing CGE models were based on aggregated Armington elasticities for energy inputs. However, projections from such assumptions may not be as reliable since under such cases, the Armington elasticities tend to be underestimated as the level of aggregation of data increases.

VII. Summary, Conclusions and Recommendations

Various methods for time series analysis were used to derive short- and long-run Armington elasticities for selected oil products. Results of the study showed that kerosene and LPG were highly sensitive to changes in their relative prices in the short-run. On the other hand, diesel and gasoline were found to be less sensitive in the short-run but highly sensitive in the long-run. The estimated Armington elasticities were higher than estimates from past studies, owing to more disaggregated data used in this study, as well as the higher frequency in the chronology of data (monthly) that was used in the analysis. The results of this study have various implications for the construction of a future energy-oriented CGE model for the Philippines. Disaggregated Armington elasticities for petroleum products can now be used by the modelers based on the estimates of this study.

There are also other methods of estimating Armington elasticities which can be explored. For instance, the concepts from the emerging field of economic geography can be applied in order to incorporate geographic considerations in estimating trade elasticities. Maximum entropy estimation methods also allow for estimating these elasticities despite massive data constraints. The bottom line is that more studies concerning Armington elasticities of energy products should be conducted to give CGE modelers, researchers, and policymakers more options and better estimates of these elasticities.

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APPENDIX

Appendix Table 1. Regression Results of Distributed Autoregressive Model for Diesel and Gasoline

	DIESEL	**GASOLINE**
X	0.7479628*	0.8917707**
Y_{t-1}	0.5916431**	0.3838999**
Constant	-0.2791836**	-0.5455281**
Adjusted R^2	0.3755	0.2838
F-value	31.97**	21.41**

*significant at 5% *significant at 1*

Appendix Table 2. Regression Results of 1st Difference Model for LPG and Kerosene

	LPG^	**KEROSENE^**
ΔX	1.054976	2.929875**
Constant	-0.0126277	-0.014444
Adjusted R^2	0.0352	0.0947
F-value	3.52	8.95**

*significant at 5% *significant at 1*
^models were run via Cochrane-Orcutt Procedure to remove the autocorrelation problem in the error term

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Strategic Movement of Business Domains

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ABSTRACT

This research is a study on redefining business domains for connecting business to R & D. That is the process of defining the business domain, through previous studies to reconsider the business domain and to analyze the actual redefining firm's business domain.

I. Setting the Business Domain for Sustainable Management

In recent years, because of the emergence of substitute products and the advent of decline stage in the product life cycle, it has become difficult to maintain the competitiveness of enterprises. Firms, as a response of the arrival of the decline stage in the product, are ordered to carry out sustainable management. Trying to arrange a new revenue base by diversifying products and business, firms engaged in the R & D of new products and services to be provided to the market for this purpose. However, if it cannot accommodate in the firm's existing business area, new product proposals are rejected. R & D results, which are not such in use, have cost regardless of the huge amount R & D investments, which also cannot be recovered. Considering access to R & D results and being flexible should be able to change the area of business of the firm.

In addition, when redefining business areas to use the results of R & D, firms must consider relevance to existing business areas. This is a problem because the superiority of management that has accumulated in companies. Business areas cannot be exhibited; a new business area is too far away when compared with the existing business area. The big problem is the relationship between the mismatch and the existing business domains. Of course, an attitude of trying to take advantage of all R & D results and frequent changes in the firm's business area is a factor that can

reduce the efficiency of enterprise management, but that is considered if there is no change in the definition of the firm's business areas that cannot be sustainable for the management of the firm. Therefore, when it tries to make use of the results of R & D, what to do to define the company's business areas will be an important issue. In this case, we analyzed using the organization of previous research related to a company's business domain using the case study of the factors involved in the process of setting the business domain.

II. Previous Research on the Definition of Business Domain

There is a Levitt (1960) paper in determining the company's business areas. He pointed out that the firm's business is the cause of decline and can be defined by the product definition (Marketing Myopia), such as in the old railway firms and movie firms. In addition, he said to get out of the product life cycle, it has shown the need is obtained by considering a customer's usage rather than product centrism in definition of a firm's business domain. For the definitions of Levitt, SAKAKIBARA said (1992:pp.11-12), they must be considered separately for business areas (business areas of reality) and strategic areas (areas to aim), and rather than the physical definition of the product, it is important to define the functional definition in the business domain. SAKAKIBARA (1992: p.40-45) described the three dimensions that make up the firm's domain: Space (Broad VS Narrow), Time (Static VS Dynamic) and Meaning (Special VS General). In other words, it is possible to define a domain that can be growth for companies, through dynamically, generally, broader, enterprise business domain.[1]

In addition, when a firms define a business domain, if the firm does not proactively make a mismatch between the business areas and future business areas of existing companies, that firm will increase the need to develop management resources that will be needed in the future as it is also known that it is difficult to not be able to maintain a sustainable business (ITAMI, 2003: pp.366-371).[2] In other words, it is necessary to express any resources that may need to be acquired when defining a firm's business domain for business development. These previous studies have addressed the items that should be taken into account when defining the firm's business domain. However, there seems to parts that are configured through operations to be performed in the business domain the process has not described.

If the limit of the firm's growth has been recognized, the business domain will be redefined through process in the firm. For example, in recent years, due to digitization, many firms are facing a decline. In particular, the film industry is also a case of companies greatly affected leading to the bankruptcy from digitization. In other words, the situation must change the business domain. Therefore, it is possible to analyze the process of setting the business domain belonging to the film industry which may find a solution to this problem. Fujifilm Holdings (Formerly, Fuji Photo Film Co., Ltd., in following 'FUJIFILM') is a company that has changed business domain in order to develop new important business to recognize the maturity of the market of existing businesses. To explore the factors that allow the redefinition of the firm's business domain by analyzing the process by redefining the business domain of FUJIFILM.

III. Changes in the Business Domain of FUJIFILM

[1] However, it is also pointed out that there is a possibility that the space is too wide and cannot be consolidated among businesses and be too dynamic while there is no defined as a business and that means it is too generalized, thereby losing the identity of the company (SAKAKIBARA, 1992 : p.80).

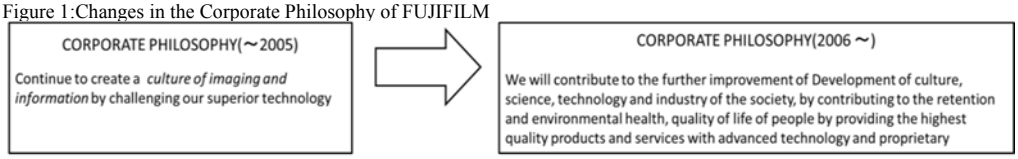
[2] ITAMI has said about setting corporate strategy, corporate strategy is to define the business areas in the future. Therefore, can be thought of as the definition of business domain.

Since 1970, over the years FUJIFILM has been focused on photographic fil, while having a size at the top of the industry in the development and manufacture of photographic film (NAGAI, 2010: p.196). In addition, FUJIFILM has expanded the business areas of FUJIFILM while producing a slogan I & I (Imaging & Information) of diversification that was established in 1984 (SUZUKI, 1992: p.42). Expanding areas under a slogan of I & I was OA imaging, printing industry, medical diagnostics. It represents, in short, that this aim was to "a comprehensive images and information industry". This I & I, from 1983, has promoted business development including providing in the market of FCR (FUJI computing Ted radiography)[3] (KOUNO et al, 1993: p.15).

However, the emergence of digital cameras brought major changes in the market. Digital cameras use imaging devices (optical sensors), and recognizing the image, a camera saves images in a digital format. This digital camera, unlike the camera making images on photographic film, generally can be identified in situ images. In addition, it is possible to edit digital images, giving greater convenience to the user. Digital cameras drove to reduce the market for film cameras for that reason. With a shrinking market for film cameras, there was a reduced film market as film camera images save material. For this change, FUJIFILM developed the DSC (Digital Still Camera) themselves in 1988 and launched into the digital camera market in 1993. However, a core business of FUJIFILM, the photographic film business was exchanged for entry into the new market to be reduced further. Photographic film business dropped 20% annual sales in 2000.

FUJIFILM had to develop a new management strategy "VISON 75" in 2004 after 75 years of its inception, and in 2006, developed a "VISON 75" (2006) to complement "VISON 75". FUJIFILM has been changed to "FUJIFILM Holdings" from "Fuji Photo Film Co., Ltd.," in October 2006. As shown in Figure 1, FUJIFILM's corporate philosophy has changed to "We will contribute to the further improvement of the development of culture, science, technology and industry of society by contributing to retention and environmental health, quality of life of people by providing the highest quality products and services with advanced technology and proprietary" (FUJIFILM Holdings, 2006) from "Continuing to create a culture of imaging and information by challenging our superior technology" (FUJIFILM Holdings, 2005). Along with this, FUJIFILM has been actively developing a life science business. FUJIFILM changed the name of the Institute of ASAKA to the Institute of Life Science Research in 2004 and began R & D for the launch of the pharmaceutical business in health care. Then, it released supplements and health care products in the life science business and began selling cosmetics. As a result, 2010 sales have exceeded $100 million. Moreover, FUJIFILM has a plan to increase its number of product lineups, and is aiming to expand overseas as well (KOTANI, 2011 : p.24).[4]

Figure 1:Changes in the Corporate Philosophy of FUJIFILM



[3] FCR is a system which digitizes the image information using the X-ray Imaging Plate (IP), stored in the IP on behalf of the screen / film-ray image detection medium X.

[4] FUJIFILM announced a new product lines called "RUNAMEA" on 25th July 2012(FUJIFILM Holdings H.P.).

IV. Analysis

FUJIFILM's main business domains were those focused on changes in images and information. However, it changed to social development and health promotion in the present. It is also seen from the fact it changed to Fujifilm Holdings from Fuji Photo Film Co., Ltd. is FUJIFILM's previous name. In addition, we are able to confirm that from the corporate philosophy of FUJIFILM, from contributing to a "culture of imaging and information", was changed to contribute to "improving the quality of life of the people." FUJIFILM was able to acquire justification for the change as such a project to develop a new pillar in the life science business. In addition, in 2009, FUJIFILM has transmitted to the outside as part of the improvement of quality of life a life science business slogan: "Protect a life, cure a life, shooting a life" (FUJIFILM Holdings, 2009: p.12). Therefore, it is considered that to the "life" from the "film" of FUJIFILM business domain that the target has changed. However, these may not be significant changes in the acts that will be taken life that when taking pictures, and the act will be shot on film. In other words, it would be a generalization of the "life" from the "film" is meant to be business domain.

This is a change in the functional definition ("Provides a process for taking life" in shooting "targets the life" of the scene), and of the physical definition ("The process of producing a film" in "shot with the film" scene) (SAKAKIBARA, 1992 : pp.18-20). However, by being generalized meaning to "healing", "protect" business not just "shooting", the case of FUJIFILM we were able to define expanding the business domain. In order to define the domain in relation to business, the "film" project area may be difficult because it is apart from main business area for a long time that FUJIFILM run.

That is, the changes in the functional definition of how to work in a business domain and at the same time a generalization of the business domain, now the "healing" and "protect" business domains are now available. Thus, in the domain business is what meaning generalization (generalization of the meaning of the target domain) and functional changes (functional change to the target domain, change of perspective) occurred at the same time. Flexibility was possible to mismatch as that occurs when you redefine the business domain, precisely because there was a change in these two.

V. Conclusions

In this study, we analyzed the changes in the business domains of FUJIFILM to organize previous research concerning the firm's strategic domain. FUJIFILM did not make it to the business domain extension just by redefining the business domain. FUJIFILM has changed the functional definition of business domain in order to accept the results of R & D activities based on their technology. In other words, for the redefinition of flexible business domains that enables sustainable business management, it is necessary to change the functional definition of the domain. In this study, we present the change in the functional definition as the definition of domain business process. However, the characteristics that allow the change have not been described. There is also a need to analyze the domain of a number of firms rather than a one firm, FUJIFILM.

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Supply-Chaining, Transaction Costs, and Governance Structures: A Conceptual Framework and Its Applications

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ABSTRACT

While supply-chain management is principally a business management concept, supply chains involve contractual relationships among economic agents, uncertainty of outcomes, conflict and complementarity, power and property rights, and the prevalence of opportunity costs. A fuller understanding of its workings necessitates a more multidimensional approach.

This paper focuses on the theoretical underpinnings of new institutional economics to better frame the analysis of supply chains. Specifically, the transaction cost economics (TCE) concepts marshaled by Ronald Coase and Oliver Williamson were used to build a framework for analyzing the design of supply chains. The paper tries to situate the concept of supply chain within the range of structures proposed in the TCE literature, with the markets on one end of the spectrum and hierarchies in the other. We show that an integrated supply chain belongs to a middle category in the spectrum. Case studies of several industries affirmed that a dominant governance structure in the form of either a coordinated or fully integrated supply chain would evolve to minimize transaction costs.

I. Introduction

Supply chains are dominating the way in how businesses throughout the world are efficiently run. With globalization, competition has not only been among individual trading firms but among the interconnected and supply-chaining firms and enterprises. Ronald Coase, in his classic article "The Nature of the Firm", posed the question "Why do firms exist?" 75 years ago; now, with the changing face of economic organizations, the more relevant question would be: "why do supply chains exist?" At the heart of the answer to both questions are basically the economics of transaction costs. The paper focuses on the theoretical underpinnings of transaction cost economics to better frame the analysis of supply chains. The paper attempts to build a conceptual framework to see how supply chains develop to address transactional issues. Case studies are presented to illustrate how the framework can be used to analyze supply-chaining in actual settings.

II. The Nature of the Firm: A Background

Understanding the workings of a supply chain can be framed by looking at the theoretical views on the existence of a firm. Left on its own, the market allocates factors of production between different uses through the price mechanism. However, if the market is a "marvel", why is there a need for firms? For one, as Coase (1937) noted, it is costly to use the market mechanism, especially in finding the correct prices. For another, there are costs of contracting for each exchange transaction that occurs in a market. When present, these transaction costs are minimized or eliminated by forming an organization (a firm), with some authority to direct resources, which internalizes these costs. Hence, for Coase (1937), the firm and the market are but alternative ways of organizing transactions.

In a neoclassical setting, technological constraints determine the nature of the firm. Assuming competitive markets where flow of information is perfect, all agents are rational, and property rights are well-defined, the attainment of overall efficiency is straightforward. Firms are treated as "black boxes" in which optimum marginal conditions of production are always satisfied with technology as the only consideration. Yet in the real world there are "frictions" in the market mechanism that render it inefficient. These frictions pertain to transaction costs, which are defined in the literature in several ways but are broadly understood to mean the costs of contracting, negotiating, and consummating an exchange. They are distinguished from production costs which are the costs of transforming inputs into outputs. Arrow (1969), as cited by Williamson, defined transaction costs as the "costs of running the economic system."

III. Transaction Cost Economics: A Pattern

Williamson (1973, 1985) posited that transaction costs are economized by assigning transactions (which differ in attributes) to governance structures (which also differ in capacities and costs) in a discriminating way. He defined governance structures as "the organizational frameworks within which the integrity of a contractual relation is decided." Thus, governance structures will change given changes in the nature of the transactions. Firms, markets, and relational contracting are themselves governance structures located in a hierarchy of forms. At one end of the spectrum of hierarchies is the market in which prices serve as a sufficient coordinating mechanism to organize production and exchange. With market failures, other non-market mechanisms are resorted to in order to economize on transaction costs. The efficiency issue thus, as in Coase's point, goes beyond the problem of implementing the correct technology. Emphasis on organizational features is needed as the firm is viewed not simply as a production function, but as a governance structure.

In order to redefine the concepts of transaction costs and their relation to contracting, Williamson (1973) introduced the concepts of bounded rationality, opportunism and asset specificity, which he collectively referred to as "behavioral assumptions." Bounded rationality "refers to the rate and storage limits on the capacities of individuals to receive, store, retrieve, and process information without error." Opportunism "is an effort to realize individual gains through a lack of candor or honesty in transactions." In another paper (1975) he defined opportunism as "self-interest plus guile." It is essentially the assumption that agents pursue their self-interest in a non-cooperative manner (Martin 2002). Opportunistic behavior undermines the conduct of a fair and mutually beneficial exchange. Asset specificity refers to "durable investments that are undertaken in support of particular transactions, the opportunity costs of which investments is much lower in best alternative uses or by alternative users should the original transaction be prematurely terminated." Holmstrom and Roberts (1998) explained how asset specificity is measured implicitly by level of quasi-rents created by investment. When all the above behavioral assumptions are present, planning is incomplete (due to bounded rationality), promises are not upheld (due to

opportunism) and bilateral trading (because of asset specificity) now matters. This leads to, in the terms of Williamson, the world of *governance*:

> This is the world with which transaction cost economics is concerned. The organizational imperatives that emerge in such circumstances is this: *organize transactions so as to economize on bounded rationality while simultaneously safeguarding them against the hazards of opportunism*. (italics in the original, p. 32)

Factors Affecting Transaction Costs

Asset specificity is of four types: site specificity, physical asset specificity, human asset specificity, and dedicated assets. Safeguards are needed in the presence of asset specificity. With uncertainty, it is important to ascertain how governance structures would respond to disturbances. With bounded rationality, the implementation of contracts is destined to face uncertainty. Further, traders may behave opportunistically, renege on their promises and "surprise" opponents. For frequency of transactions, the cost of a specialized governance structure will be easier to recover for large transactions of a recurring kind.

It is posited that the above dimensions are positively related to the adoption of a governance structure. When transaction costs are low, the transaction will be carried out through the market. However, when transaction costs are high, it becomes efficient to set up an organizational structure for carrying out the transaction. The market exchange is vulnerable to opportunism in these circumstances. Hence, hierarchical forms of organization are often favored. How these structures change to respond to economize on transaction costs would depend on the difference in attributes of transactions. But how do governance structures support efficient transactions? Williamson (1998) quoted Commons (1932)[1] who said that "the ultimate unit of activity […] must contain in itself the three principles of conflict, mutuality, and order. This unit is the transaction." Hence, a governance structure is a means to bring about order in a relation where potential conflict threatens opportunities to seize mutual gains. From this, the safeguarding function of governance structures can be deduced.

Another important function of a governance structure, aside from safeguarding, is to address coordination problems. Costs of coordination are incurred in information processing and decision-making among partners in an exchange. Inter-organization coordination costs arise in transactional relationships where partners have agreed upon a division of labor and have to coordinate and manage, across organizational boundaries, activities to be completed jointly or individually.

The Overall Institutional Environment

Still, it is argued in the literature that the choice between coordinating mechanisms depends not only on behavioral assumptions among agents, but also on the characteristics of the broader social and institutional environment within which transactions are embedded. In particular, trust relations involve the existence of shared norms and values among contracting parties. The framework by Williamson (2000) showed how economics of institutions allow various levels of social analysis in which the new institutional economics approach are framed.

IV. Transaction Cost Economics and the Supply Chain

Lambert and Cooper (2000) said strictly that a supply chain is not a chain of businesses with one-to-one business relationships, but a network of multiple

[1] Commons, J. R. (1932). "The Problem of Correlating Law, Economics, and Ethics," Wisconsin Law Review, December, 8(1), 3-26.

businesses and relationships. A formal definition of a supply chain is given by the National Research Council (2000) as cited by Wysocki et al. (2006): "A supply chain is an association of customers and suppliers who, working together yet in their own best interests, buy, convert, distribute, and sell goods and services among themselves resulting in the creation of a specific end product."

Given this definition, every firm can be part of a supply chain, and "supply chains have always existed even within the contest of spot-market interfaces between firms, level by level, in a vertical chain." (Wysocki et al. 2006). In producing, moving, and selling a product, firms and business have always transacted with each other either through the market mechanism or through some form of relational contracting. In the (spot) market interface no long-term and personal relations are effected. Firms and business transact impersonally through the market in sourcing inputs, selling primary products, wholesaling and marketing, further processing, and retailing and selling to final consumers. At one extreme, a whole supply chain may be fully integrated and can be thought of as one big firm. In between these two forms are supply-chaining firms that maintain contractual relations with each other. Transactions are done repeatedly among themselves, and long-term relations are enforced. For the purpose of this paper, we can refer to the market-mechanism-supported supply chain as the "traditional supply chain" while the relationship-based supply chain is referred to as the "coordinated supply chain" (to be distinguished from the vertically-integrated firm).

Transaction Costs, Behavioral Assumptions, and the Supply Chain

In the supply chain process, each stage in the chain could be a potential source of transaction costs. The behavioral assumptions of bounded rationality, opportunism, and asset specificity may well apply in any setting. In a traditional supply chain, producers sourcing their inputs from the spot market may face low ex ante control intensity. Surveying potential suppliers, ascertaining the quality of the inputs, comparing prices, transporting the products, and assuring quantity and volume all entail transaction costs. Opportunism and asymmetric information can lead to contracting problems. In the wholesale market both producer and trader face opportunism and contractual problems; it would be costly to ensure that specified quantity and quality can be provided and delivered.

As defined earlier, when transactions involve idiosyncratic investments, exchange standards cannot be defined beforehand so that only relational contracting, or trust, can be used to coordinate the relationship. Firms that employ transaction-specific assets are bound to face "hold-up" or "lock-in" problems (Klein, 1996). In the absence of reliable contractual relations, a buyer of specialized inputs may renege on an agreement to have long-term relationship with a supplier with asset-specificity. This puts the owners of the specific assets at risk, and the supply chain would fail to realize gains for all of its members and undermine the overall effectiveness of the chain. Uncertainty of transactions can also impinge on the workings of a supply chain when product quality and quantity cannot be ensured and risks of default abound.

Governance Structures and the Coordinated Supply Chain

Adopting the message of the transaction-cost economics literature, this paper adopts the framework that as transaction costs increase along the traditional supply chain, reliance on the spot market will not be satisfactory to realize efficiency gains. Hence, a governance structure that economizes on transaction costs is called for. The shift from a traditional supply chain to a coordinated one can be seen as a response to minimize the friction in the market and to raise overall efficiency. When Williamson (1985) quoted Richardson (1972), he could have been describing a coordinated supply chain as a governance structure:

What confronts us is a continuum passing from transactions, such as those organized commodity markets, where the cooperation element is minimal, through intermediate areas in which there are linkages of traditional connection and good will, and finally to

those complex and interlocking clusters, groups and alliances which represent cooperation fully and formally developed. (p. 887)

V. The Framework

Relating the concepts of transaction cost economics to the workings of a coordinated supply chain brings us to the development of a framework for analysis (Figure 1). At the heart of the framework is the relationship of transaction costs and governance structures. Following Williamson's hypothesis, the choice of governance structure depends on the attributes of a transaction cost in a discriminating way. When the asset specificity, uncertainty, and frequency of transactions are high, transaction costs are bound to be high. Institutional factors such as property rights, social mechanisms and embeddedness also affect transactions. Well-defined property rights and social mechanisms facilitate the conduct of transactions and help better enforce contracts and exchanges.

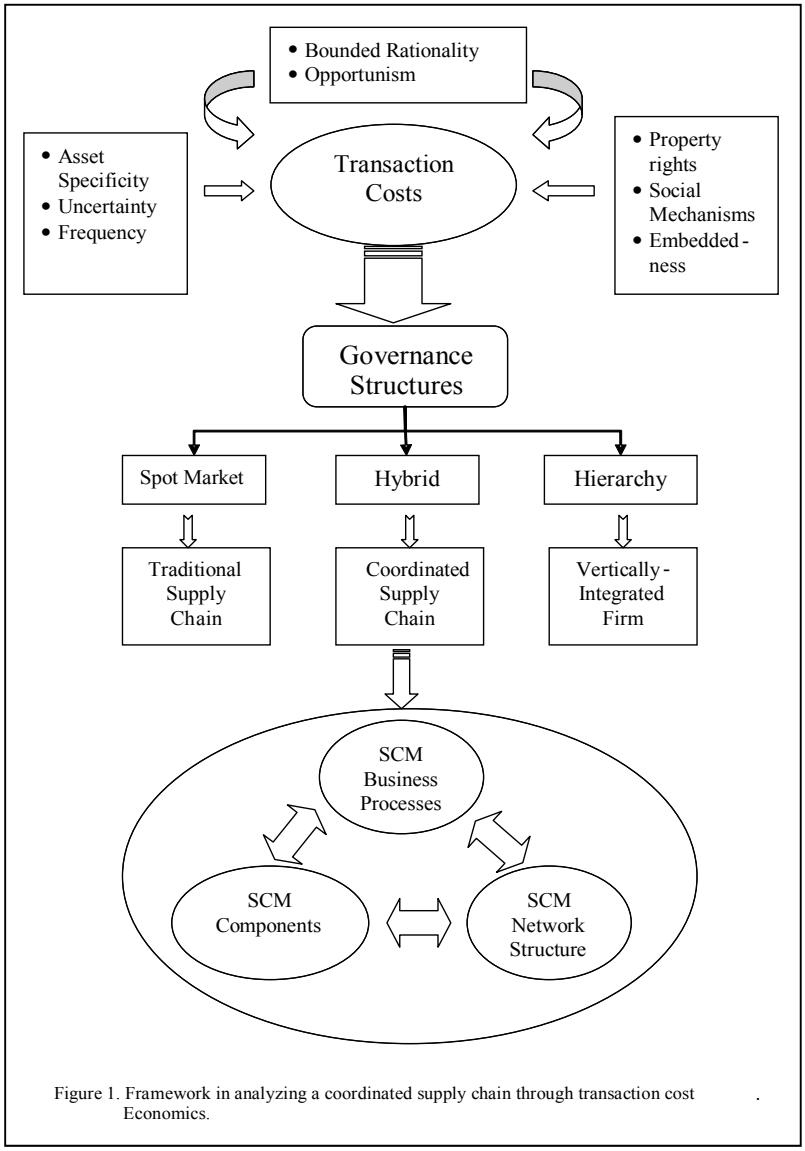

Figure 1. Framework in analyzing a coordinated supply chain through transaction cost Economics.

The impacts of all these factors and attributes on transaction costs would reverberate in the choice of governance structures. In a frictionless world where transaction costs are nil, the parties to an exchange can rely on the spot market. Parties can trade impersonally, and the volume and quality of inputs of products, as well as timing and delivery, are assured and known to all. At the other end, the hierarchy as a governance structure is preferred when transaction costs are prohibitive due to high degrees of asset specificity, uncertainty, and frequency of transactions. In this case full vertical integration is resorted to as ownership which is seen as a way to internalize transaction costs. In between these two extremes is what Williamson referred to as hybrids. Here, no full ownership of the entire exchange process

is implied, but rather involves various forms of long-term contracting.

The bottom half of the framework tries to relate the governance structure-transaction costs relation to the issue of supply-chain management. When the spot market is used, we can infer that a traditional supply chain is in force. Here, firms and business use the market entirely for trading in volume and quantity. Exchange is impersonal, and no long-term relationships among the firms are present. Movement of products from production to consumption through market channels happen where agents trade impersonally without much regard to interdependence and assured repeated dealings.

At the other end, however, is the vertically integrated firm. In this mode, the entire supply-chain is owned by a single entity. Transaction costs are high and the threat of opportunism and costly contracting are severe enough that it necessitates one large firm internalizing all the transaction costs. The hybrid type of governance structure in the framework corresponds to the coordinated supply chain defined earlier. Activity is done in the middle range: no full reliance on the market and no full ownership is created. Firms and businesses maintain long-term relations and trade among them is more personal. Contracting is done effectively and interdependence is prevalent. Repeated transactions help enforce contracts. Information-sharing and decision-making are made more efficient throughout the chain than if the market mechanism is used.

The choice of the coordinated supply chain as a governance structure eventually impacts on the supply-chain management concept. The inter-firm process efficiency of the supply chain is then enhanced through the standard relationships of SCM business processes, the SCM components, and the network structure. At this level the efficiency of the chain is concerned with logistics management, running the network alliance, and implementing standard business processes.

VI. Some Case Studies

This section tries to see how the concepts discussed in the framework can be applied in some case studies found in the literature.

Marketing Channel for Fresh Produce in the Netherlands

Bijman's (2006) study is an excellent case of how the choice of governance structures can lead to a more efficient supply chain. The study focused on four marketing channels of fruits and vegetables in the Netherlands (Figure 2). The first channel (I) involves an individual seller directly selling to the retailer. The second channel (II) involves a wholesaler who buys the produce from the grower and sells to the retailer. In the third channel (III) the growers delegate the collection and marketing function to the grower-owned cooperative, but it does not deal directly with retailers. In the fourth channel (IV), the entire wholesale function is carried out by the grower-owned cooperative that directly sells to the retailers.

The dominant mode in the Netherlands for a long time is said to be Mode III. Growers bring their products to a cooperative auction where they are sold to wholesalers and some retailers. The cooperative functions as an organized marketplace for the growers to sell their products. Its services include: the running of an "auction clock" for price determination; sales administration on behalf of the sellers; logistic services (short-term warehousing); and quality classification and inspection. The author said that for almost a century, the cooperative auction was the most popular marketing channel for fresh produce in the Netherlands.

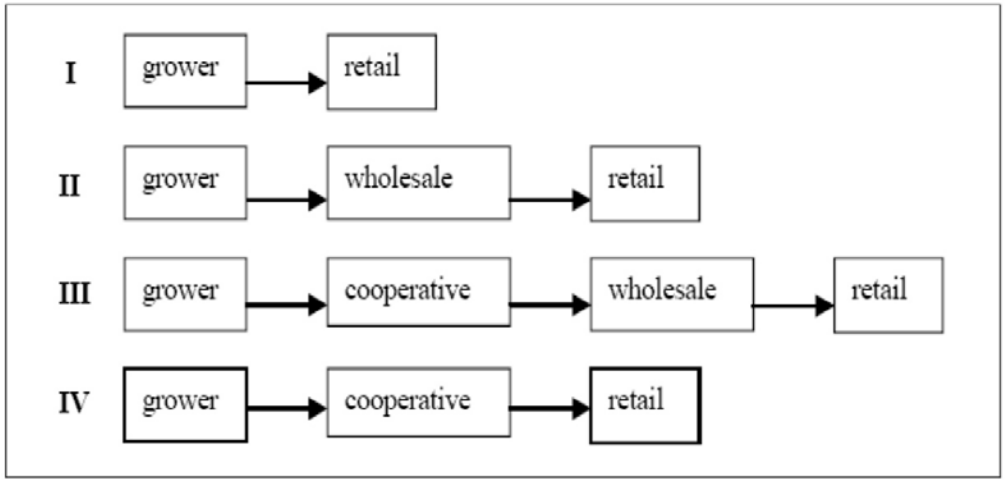

Figure 2. Marketing Channels for Fresh Produce in the Netherlands. (Source: Bijman, 2006)

How can this be explained by the framework? In the days before the auction, growers in the cities sold their products directly to retailers and local traders, and those in the remote areas sold their products to traders. However, when trading is done in spot markets, issues of information asymmetry (especially on prices), agency problems with sales personnel, and high logistics costs became prevalent. Traces of asset specificity were also evident: temporal asset specificity due to perishability of products and site specificity when transport costs are high. There is a high frequency of transactions because harvested products need to be sold immediately. At the other extreme, however, hierarchical governance is not an efficient option since individual growers do not have the capacity to carry out the wholesale function and the traders do not have knowledge of production conditions. In time, the cooperative auction came out as the efficient governance structure to curb these transaction costs. In this method, information costs are low because of transparency in auctioning: buyers come to the auction and the auction clock determines the price. There were no agency problems since monitoring and control within the auction is relatively easy. The auction rules also guarantee compliance and order. As transactions were repeated in the auctions many times, reputation effects came to work.

Eventually, the auction was replaced in many areas in The Netherlands. The Mode III channel was replaced by Mode IV since growers no longer sold to wholesalers but vertically integrated into wholesaling. This downstream vertical integration was a result of changing market structure, public policies, and technology. Consumers have demanded more quality and better safety guarantees, the government imposed stricter environmental and food safety regulations, and there was a prevalence of new technologies (such as information technology and biotechnology) which affected production and marketing processes. These developments have increased uncertainty, asset specificity and interdependence; hence, governance structures leading to vertical integration had increasingly become popular. In this case, the changing attributes of transactions determined the choice of governance structures to improve efficiency of the supply chain, consistent with our framework.

Supply Chain of Agricultural Commodities in the Philippines

Some applications of the framework can also be seen in the results of a series of PCAARRD research projects (see PCAARRD, 2011) which documented the supply chains of various agricultural products in the Philippines. These projects studied five commodities (abaca or manila hemp, goat, organic fertilizer, bamboo, and fresh vegetables) and covered large areas of the three major island groups of the country. For each commodity, a study traced the flow of products, payments, and information in each supply chain and identified problems pertaining to chain efficiency and effectiveness. Given the diversity of local conditions, several supply chains for each product were almost always identified, each exposing idiosyncratic problems along a chain.

It was found that the usual logistics problems dominated the supply chains: roads are in poor conditions, transportation systems are outmoded, and credit facilities are inadequate. From the view of transaction cost economics, however, the problems go beyond logistics. Using our framework, we can pinpoint at least two cases which showed how supply chains are organized differently to economize on transaction costs.

The first case involves the marketing of local fresh vegetables industry in the southern island of Mindanao. The research was able to document two major supply chains: the "formal chain" and the "informal chain" (Figure 3).

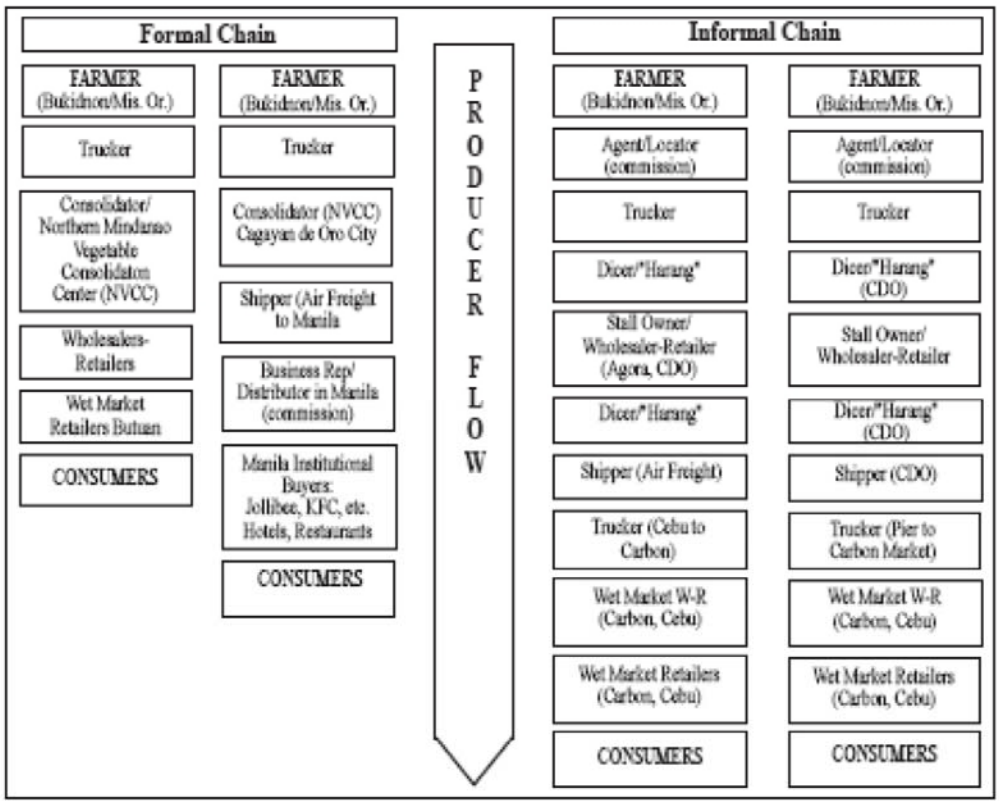

Figure 3. Product Flow of the Vegetable Supply Chain in Northern Mindanao, 2008, Philippines.

(Source: PCAARRD, 2011)

Both chains are characterized by dense layers of middlemen that try to intermediate between vegetable farmers (whose farms are located in remote areas) and buyers. These buyers are located principally in and around the town centers where final consumers converge. In the informal supply chain, middlemen act as "agents" or "locators" between farmers and the truckers. Then, spot trading is done where growers bring their produce to a drop-off center where various middlemen buy the farmers' produce then channel the items to vegetable store owners in wet markets. There is a very interesting practice by one group of middlemen in the informal supply chain. In the drop-off point, a first group of middlemen (called *buayas*, the local term for crocodiles) wait for delivery trucks to arrive, then use their pens to mark the sacks of vegetables in the trucks as "reserved". They do this even without any formal contract with the farmer on the price or volume, but expect the "reserved" vegetables to be their buy. These *buayas* then go to potential buyers (usually store owners or other traders) and ask for the selling price. When the *buayas* return to the owners of the marked vegetable sacks, they offer a price far below the quoted price of the potential buyer. Further, the farmers are paid the agreed price only when all the vegetables have been sold in the store. Clearly, farmers are placed at the mercy of these middlemen, since they are usually unaware of prevailing market prices and the perishability of their product renders them vulnerable to opportunism. Thus, transaction costs brought about by asset specificity, opportunism, and frequency abound.

A formal supply chain eliminated some of these transaction costs. Farmers in this chain have organized themselves into a formal organization that manages the Northern Mindanao Vegetable Consolidation Center (NVCC). Under this chain, member-farmers bring their produce directly to the NVCC which acts as a consolidator and market facilitator, linking the farmers to end buyers at pre-determined prices, volume and quality. Layers of middlemen are eliminated in this mode, and farmers receive higher prices. Necessarily, all transactions, including production plans for volume and quality, are covered by contracts. Transaction costs are eliminated in this hybrid-type coordinated supply chain based on our framework.

The second illustration is more extreme, covering the bamboo industry in northern Philippines. Bamboo poles are made into furniture (such as beds and chairs) and small handicrafts. Usually, bamboo is regarded as a secondary crop, for which farmers hardly apply production and harvesting technologies. Primary crops planted were rice, corn, tobacco and vegetables. Bamboo is planted along marginal areas of these crop farms and are rarely tended to, except near harvest time. Furniture manufacturers seek out bamboo poles as inputs to their business. The research identified two supply chain forms: the "indirectly linked" and "fully-integrated" supply chains (Figures 4a and 4b).

Using the framework, the indirectly linked supply chain is akin to placing transactions in the spot market, which bear out transaction costs. In this chain, furniture manufacturers incur considerable search costs to source bamboo poles of the right quality and volume at the right time since the bamboo stands were situated in marginal areas and farmers do not assemble the poles to meet the desired buyer specifications. These transaction costs disappear when the directly linked supply chain is viewed as a fully integrated supply chain. In one special chain surveyed in the study, the furniture manufacturer owned a well-maintained bamboo plantation from which he sourced the bamboo poles. Here, transaction costs related to search for desired inputs at the right time become nil. This illustrates the extreme case in the framework in which a hierarchy is set up, with one firm owning the entire supply chain to economize on transaction costs.

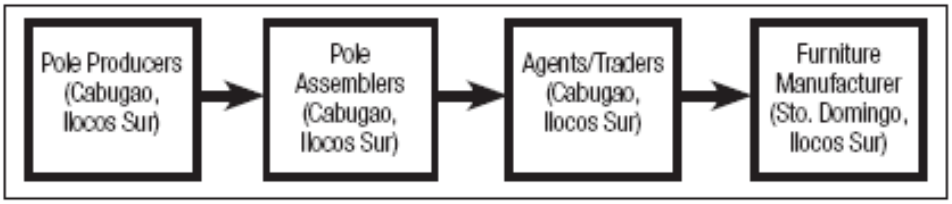

Figure 4a. Bamboo supply chain with indirect linkage between producer and manufacturer in Ilocos Sur and Pangasinan provinces, Philippines. (Source: PCAARRD, 2011)

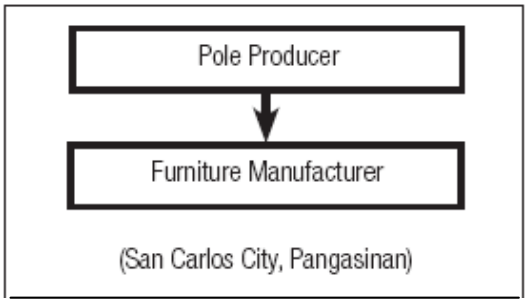

Figure 4b. Fully-integrated bamboo supply chain, Tarlac province, Philippines. (Source: PCAARRD, 2011)

VII. Concluding Remarks

This paper attempted to view supply-chain management using a framework showing how governance structures are formed to economize on transaction costs. We showed that a coordinated supply chain belongs to a middle category of these structures, with the market on one end and a single hierarchical organization on the other. Case studies affirmed that a dominant governance structure in the form of either a coordinated or a fully integrated supply chain would evolve to minimize transaction costs.

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An Analysis of The Transaction Sector of the Philippine Economy

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ABSTRACT

As a follow-up to the pioneering work of Wallis and North (1986), this study attempts to measure the level of transaction sector output in the Philippine economy by dividing the industries between transaction industries and transformation industries. The transaction sector output, the sum of the outputs of the transaction industries, was computed by using the national income accounts. This paper also measures the changes in the relative sizes of the transformation and transaction sector output by using the theoretical concept constructed by Datta et al. (2004) called the support ratio. The support ratio shows how much of the transformation sector output is supported by one peso spent in the transaction sector. The results show that the transaction sector has been increasing over time but the support ratio has been generally declining. The possible reasons for the increase of transaction sector output are increases in specialization brought by market expansion, development in technology, and government privatization and deregulation policies. Other reasons for the declining support ratio, such as shifts of non-market goods in the market, negative role of institutions, changes in the consumers' preferences, and market imperfections, are all highly possible in the Philippine context.

I. Introduction

Transaction cost can be defined as the price paid by consumers not received by sellers or price faced by sellers but not paid by consumers (Wallis and North, 1946). Transaction cost is treated just like any other production cost; thus, it is a limiting factor in productivity. However, unlike a production cost which is only within the market system, transaction cost includes non-market costs, making it impossible to measure this accurately. Thus, most economic theories ignore this concept and assume that the society runs on zero transaction costs in empirical estimations. Literature about transaction costs may have substantially increased in recent years, but most of them focused on the theory rather than empirical study. Wallis and North observed the paucity of empirical research on the concept and pioneered a

macroeconomic empirical estimate of transaction costs which they called the transaction sector. The transaction sector does not estimate the actual transaction costs but the level of transaction costs in a country.

Wallis and North defined the transaction sector output as the sum of the outputs of all transaction industries, whereas the transformation sector output is the sum of the outputs of all transformation industries. Transaction function services basically facilitate an exchange while transformation function services are the ones that transform inputs into outputs. The transaction sector output is the representation of the total expenditures for enabling and facilitating the exchange process and thus helps in capturing the gains from specialization and division of labor.

Datta et al. (2004) extended the concept of transaction function and transformation function of Wallis and North. They developed a new theoretical construct called the support ratio, which is the ratio of transformation sector output to the transaction sector output. They proposed that if the support ratio is maximized, i.e., transaction costs are minimized; the support ratio can be a measure of economic welfare. Therefore, the society should desire to increase the support ratio, or at least maintain it at the given output level.

Studies have shown that in general, transaction sector output increased by an average of 50% over time. The size of a transaction sector can be related to the economic development in general since developed countries devote at least 60% of their GDP to the transaction sector (Chobanov et al., 2007). By minimizing transaction costs, the transformation sector can be more productive. Transaction costs can be minimized if transaction services are efficient. Thus, resources must be allocated correctly to develop institutions that provide transaction services (i.e., banks).

Little work has been done in the Philippines about its transaction sector. This study tries to fill that dearth by attempting to determine the level of transaction sector output in the Philippines using the Wallis and North framework. Specifically, it analyzes the trend of the transaction sector in relation to the economic growth of the country and computes the support ratio. The study also analyzes the trend of the support ratio in the Philippine economy over the period of 1946 to 2010 with the aim of understanding the current state of the country from the lens of the transaction sector framework.

The paper is structured as follows: the next section gives a brief review of literature followed by the analytical framework. Section IV discusses the results. The last section concludes the paper.

II. Review of Related Literature

Wallis and North (1986) are the pioneers in measuring economy-wide transaction costs. They measured the level of transaction services in the American economy for the years 1870-1970 by constructing a conceptual framework wherein the economy is divided into two sectors based on their function; one as the transaction sector, which is the sum of all transaction function services, and the other as the transformation sector, which is the sum of all transformation function services. Since the transaction sector is an estimate of the level of transaction costs, one is reminded that transaction costs are incurred in performing the transaction function.

Wallis and North stressed two points in their definition of transaction costs. First, transaction costs are like any other cost and thus follow the simple price theory. The behavior of transaction costs and transformation costs are similar; that is, the costs are only incurred if the expected benefits of doing transaction services outweigh the expected costs of doing so. Second, not all transaction costs are incurred in a market activity (e.g., time spent looking for alternative prices) thus, these costs are not measurable. The observable element of transaction costs, i.e., transaction costs that pass in the market (e.g., hiring a realtor) is captured in purchasing transaction services. Therefore, the transaction sector, as the sum of all transaction services, captures only a part of transaction costs which is in market activities.

Using their framework, Wallis and North found that the transaction sector in the American economy increased by roughly 25% from the years 1870 to 1900, while from the years 1900 to 1970, the transaction sector grew by about 50%. Their study also showed that the transaction sector grew from one-quarter of GNP to one-half of GNP over the span of 100 years.

Dollery and Leong (1998) measured the level of transaction services in Australia for the years 1911 to 1991 using the Wallis and North framework. The private and public transaction sectors both increased by 50% from 1911 to 1991. Similarities to the results of Wallis and North were observed. One is that the majority of the transaction sector is within the private transaction industry of both countries. Another is that the transaction sector increased by around 50% in both economies.

Sulejewicz and Graca (2005) followed in measuring the transaction sector in the Polish economy. In contrast to the studies in America and Australia, measuring the transaction sector of the polish economy was limited by the unavailability of long term data. The measurement of the Polish transaction sector was limited to 7 years, which was from 1996 to 2002. The transaction services in proportion to GDP increased from 49% to 67.25%. Private transaction sector bears more of the share of transaction cost in GDP in contrast to the public transaction sector. The patterns of results are similar for America and Australia. First, the transaction sector, both private and public, is generally on an increasing trend. Second, the dominant sector for the three countries is the private sector and the public sector had a generally smaller share in GDP that is roughly 10%.

Datta et al. (2004) measured the transaction sector using the outputs of the transaction services instead of inputs as originally used by Wallis and North. They said that one should not only look at what is being put in the transaction sector but also at what is obtained from it. They used a new theoretical construct called the support ratio. The support ratio is the ratio of transformation sector output to the transaction sector output. Furthermore, they claimed that the support ratio can be a measure of welfare if the society desires to maximize the level of the support ratio. They hypothesized a two-way relationship between transformation sector output and transaction sector output. First is the 'development via shortage' and second is, 'development via excess capacity'. In the first hypothesis, the growth of the transaction sector is brought about by a pressure to supply the demands of the increasing transformation sector. The second hypothesis explains that the growth of the transformation sector is caused by the growth of the transaction sector since a growth in the latter will facilitate the economy to be more productive. The two hypotheses were tested and they found that the growth of the transaction sector is caused by the growth of the transformation sector or the 'development via shortage'. From the results of their study, the authors found that both transaction sector and transformation sector outputs increased from 1950-2003 but the support ratio constantly declined over time.

Aside from the Wallis and North framework, there were other attempts to measure transaction costs. Wang (2003) provided a summary of different attempts in measuring transaction costs. In financial economics, transaction cost is generally understood as the cost of investing in financial markets. In Williamsonian transaction cost economics, the transaction costs are not directly measured. Instead, alternative variables, such as uncertainty, transaction frequency, asset specificity and opportunism, are used to estimate transaction costs. De Soto (1989) pioneered a study in measuring non-market transaction costs. His study emphasized the cost of entry into the market; such costs are registration requirements, rules on sales, export and import regulations, taxes, and etc. Transaction cost is also measured in environmental/ecological economics, where the focus of the empirical analysis is on the role of transaction cost in emission trading and environmental protection. Transaction cost is also

measured by using the cost of institutional inefficiency or poor governance as a proxy measurement of transaction cost. Another measurement is on agent-specific transaction costs, where transaction costs differ among different identities of economic actors within the same business.

Wallis and North (1986) defined transaction services basically as intermediaries and transformation services as the actual manufacturers of the goods and services. Figure 3.1 shows the transaction function activities in a simple production activity of a firm and in a simple buyer-seller situation.

III. Analytical Framework

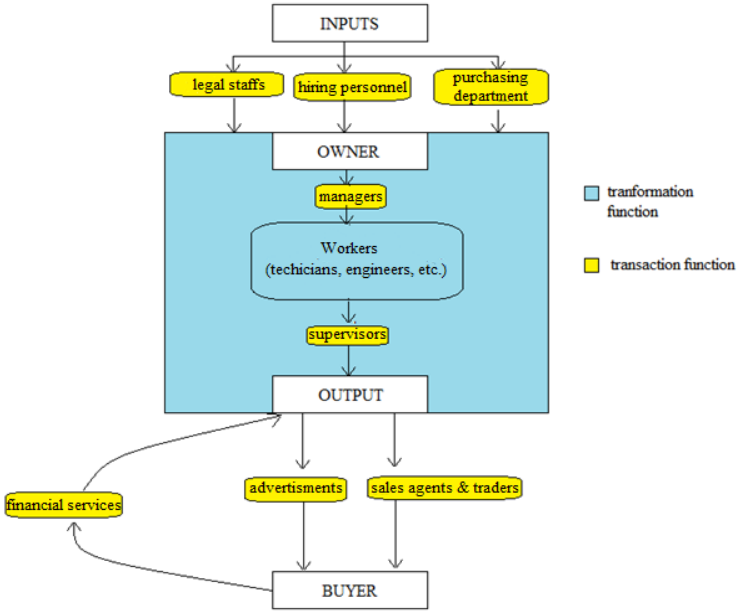

Figure 3.1. Transaction and Transformation Services in a Simple Market Activity

This study followed this definition of the transaction and transformation functions in classifying the industries enumerated by the Philippine Standard Industrial Classification (PSIC). Table 3.1 shows the classification of Philippine industries.

Wholesale and retail traders serve as an intermediary in market activities. They facilitate the transfer of ownership of the good to the buyer. Wholesale and retail traders do not provide the good; they do not transform inputs into outputs and therefore are classified under transaction function.

In contrast to other studies of the transaction sector, transportation and storage in this study will be considered as transaction functions. The key element in defining transaction cost is that it is the price paid by the buyer that is not received by the producer. For example, in purchasing a commodity in a distant store, the fare paid by the buyer for transportation is part of his cost that is not received by the store. Conversely, if the store delivers the commodity to the buyer, the cost of transportation shouldered by the buyer is not essentially part in producing the commodity. In both cases, the transportation is an intermediary in the exchange.

Table 3.1. Classification of Industries Based on their Functions

Transformation	**Transaction**
Agriculture, Fishery, Forestry	Wholesale and Retail Trade
Mining and Quarrying	Transportation and Storage
Manufacturing	Information and Communication
Electricity ,Gas, Water, Waste Management	Finance and Insurance Activities
Construction	Real Estate Activities
Food Services	Administrative and Support Services
Professional, Scientific, and Technical Services	Public Administration and Defense
Education	
Health and Social Work	
Other Services	

Public administration and defense is considered a transaction service since it is assumed that the main role of government is to direct the public and to reallocate resources. The costs that would be incurred by governing would be the "cost of enforcing contracts" and costs of protecting property rights on a larger scale. However, not all government activities are transaction services in nature. In the earlier example on the enforcement of property rights, spending on defense to protect property rights may not involve an exchange. Also, some of the government's income redistribution activities merely redistribute income between individuals where there is no exchange. Due to the impossibility to segregate transaction activities from other government activities, public administration and defense would be treated as a transaction service.

Figure 3.2 illustrates the Wallis and North framework as applied to the industries found in the Philippines. The level of the transaction sector output is the sum of outputs of the industries classified under transaction services. The difference of the GDP and the transaction sector is the size of transformation sector. The ratio of the transformation sector and transaction sector is the support ratio.

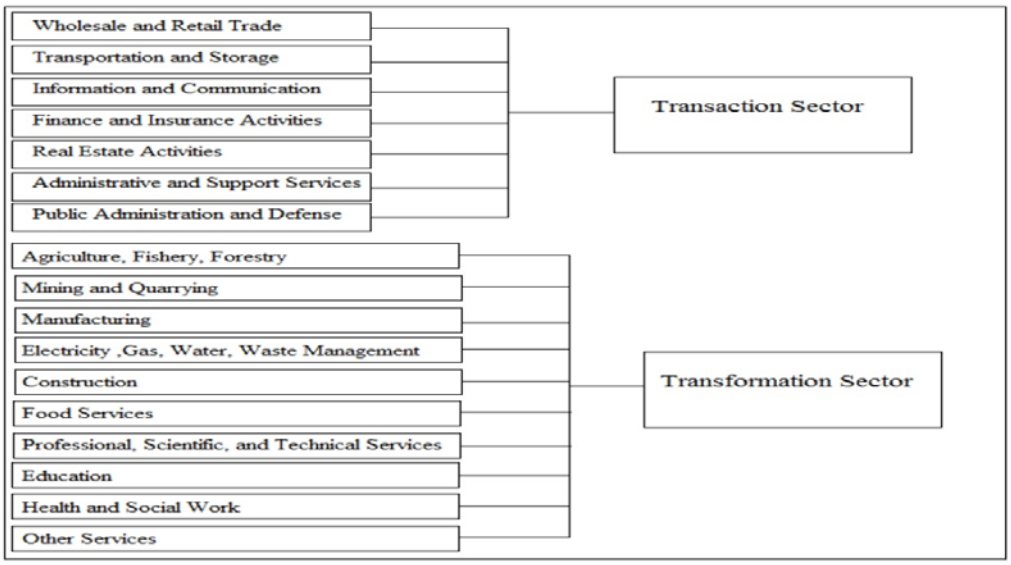

Figure 3.2. Composition of Transaction and Transformation Sectors

V. Results and Discussion

The growth of the transaction sector output and the transformation sector output in the economy from 1946 to 2010 is shown in Figure 5.1.

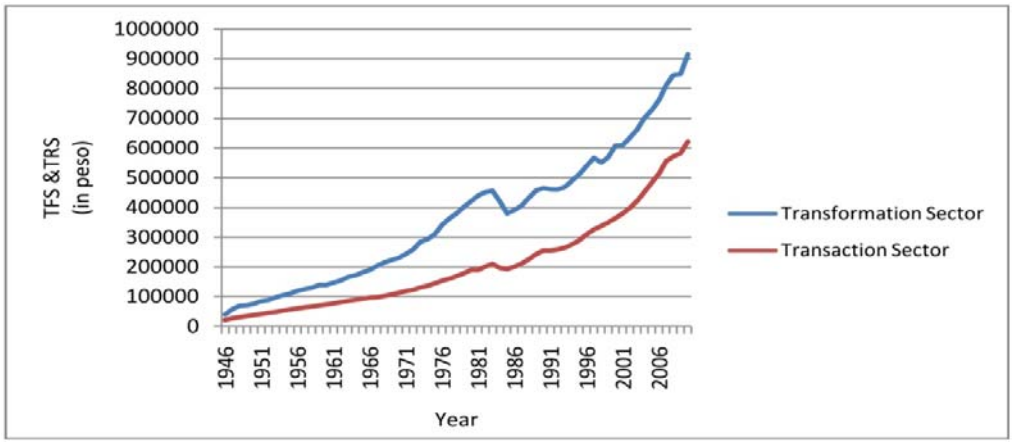

Figure 5.1. Growth of Transformation (TFS) and Transaction (TRS) Sectors

The transformation sector and transaction sector outputs have been increasing over the years. The transformation sector increased from 39.5 billion pesos to 915.1 billion pesos from 1946 to 2010 while the transaction sector increased from 21.5 billion pesos to 621.9 billion pesos. The political and financial crises are the main contributors for the sharp decline of the transformation sector during 1984 to 1986. Among the subsector trends, as seen in Figures 5.2 and 5.3, trade has the largest increase and government services have the least growth among transaction industries while the manufacturing sector has the highest growth and mining

and quarrying has the least increase among transformation industries.

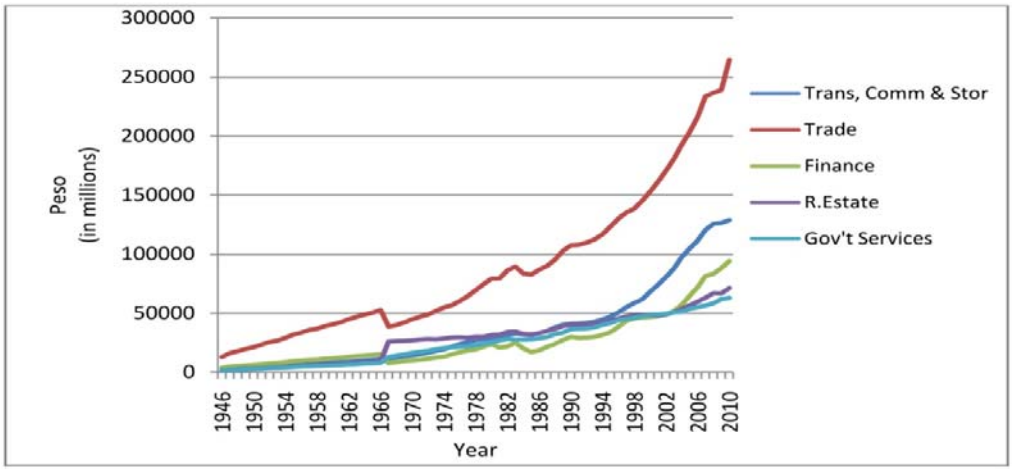

Figure 5.2. Growth Trends of Transaction Industries

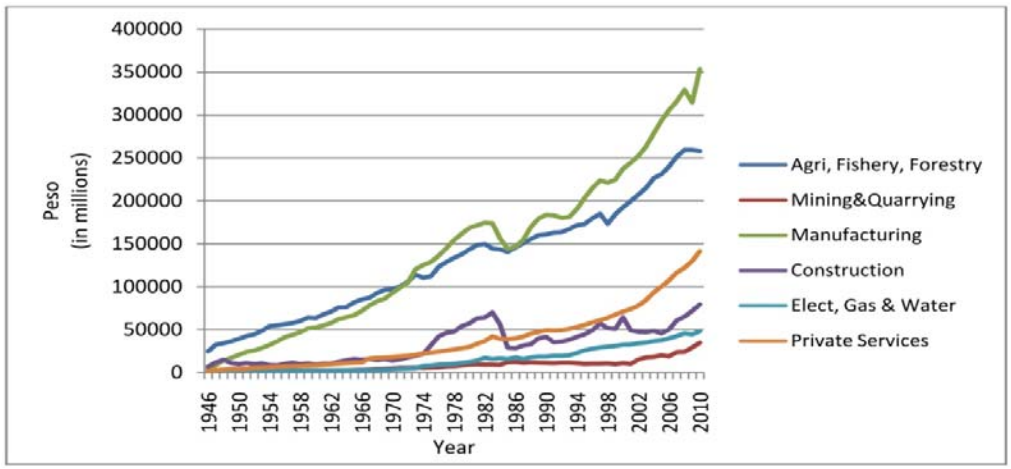

Figure 5.3. Growth Trends of Transformation Industries

Figure 5.4 presents the GDP shares of the two sectors. The GDP share of transaction output increased from 35.3% to 40.5% while the GDP share of transformation output decreased from 64.7% to 59.5%.

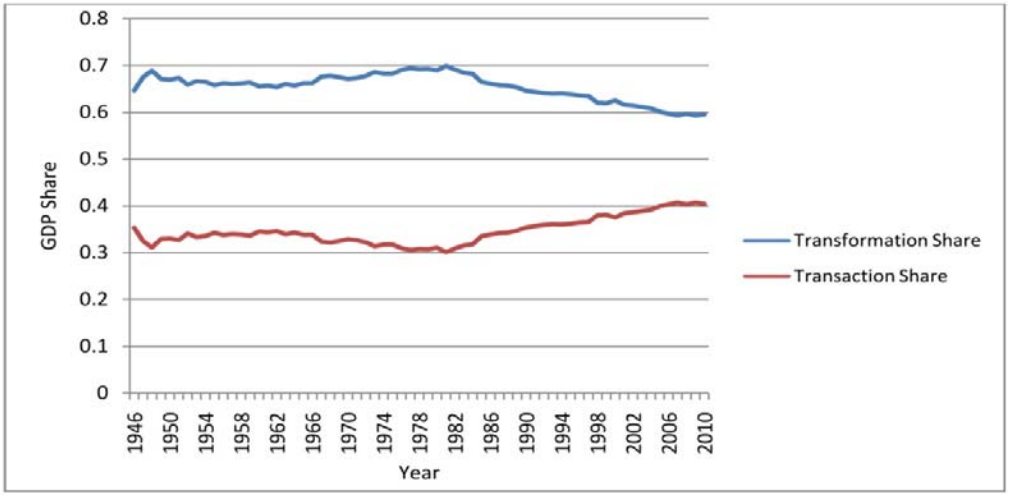

Figure 5.4. GDP Shares of Transaction Sector and Transformation Sector

The growth of the transaction sector over the years implies that the economy has to increase the allocation of resources to transaction services to capture the gains from trade in a growing market. Chobanov, Egbert and Giuredzheklieva (2007) stated that the increase in the GDP share of the transaction sector implies that more of GDP must be devoted to transaction services to make markets work.

Wallis and North (1986) hypothesized three general reasons for the increase of the transaction sector over time in the American economy. These are: (1) increased specialization and division of labor, (2) technological change in production, and (3) increased role of the government in relationship to the private sector. These reasons are rationalized under the American setting and thus the plausibility of these under the Philippine situation must be analyzed.

First, there was an increase in specialization and division of labor brought about by the expansion of the market and the growing urbanization of the country. Wallis and North explain that the expansion of the market would increase the importance of specifying and enforcing of contracts, thus this would bring higher transaction costs. As the market expands and becomes more specialized, impersonal exchanges are carried out between individuals, i.e., individuals who engage in an exchange who do not have long-standing relations with each other. This is in contrast to a personal exchange wherein individuals have repeated dealings resulting in an increase in knowledge of the other party. It is argued that impersonal exchanges result in higher transaction costs due to higher costs required in specification of contracts and enforcement mechanisms. These personal exchanges can be commonly found in small rural areas. Personal exchanges in the Philippine market are seen through the *suki* system. The Filipino word *suki* is an informal exchange relationship between the buyer and the seller. It means "loyal costumer" and develops when a buyer patronizes a specific seller. In the *suki* system, the seller provides the costumer discounted and quality goods. Thus, the system reduces the risk of cheating and opportunistic behavior in a business. On both sides, there are reduced search, negotiation and monitoring costs because the *suki* lives up to the norms and values of reciprocity and comes close to becoming part of the family mindset (Boquiren and Idrovo, 2010). The *suki* system in the Philippines is also observable in the urban areas, though less evident as compared to the rural areas. As the market expands and becomes more specialized, the *suki* system is formed less since people tend to look for alternative sellers who would provide lower prices and better

quality of goods, thus both buyers and sellers would incur higher search, negotiation and monitoring costs. Therefore, expansion of the market may be a plausible cause for the increase in transaction sector output in the Philippines.

Second, there were advancements in technology that resulted in an increase in output levels. The high levels of output required a consistent flow of inputs and a system to distribute the output. Organizations within the firm that secure inputs through formation of contracts and distribution of outputs often provide transaction services. North (1993) stated that the increase of transformation sector output was the result of the new technologies that increased the output of the capital-intensive productions. However, new technology requires specialization and division of labor, thus increasing the number of exchanges. Therefore, to capture the gains from the technology, resources were invested in transaction services, thereby increasing the transaction sector output. If this would hold true, then the growth of the manufacturing industry would bring an increase in the trade industry. Simple correlation analysis shows that the growth in the manufacturing industry has a very strong positive relationship with the trade industry (Figure 5.5). This gives a hint that the increase in the output of the manufacturing industry may be a possible reason for the increase in the trade industry and ultimately in the transaction sector output. However, correlation analysis does not give a causal relationship. Though this argument may be plausible in the Philippines, further econometric analysis is needed to confirm this hypothesis.

Third, an increase in the role of the government in relation to the private sector would impose transaction costs on the rest of the economy. The breakdown of the Madisonian system in the United States increased the role of the government and imposed transaction costs on the rest of the American economy. In the Philippines, the 1986 Aquino administration marked a series of privatization and deregulation of industries (de Dios, 2002). The principle in deregulation of industries is to encourage new entrants and promote investments through competition (de Dios). For example, the deregulation of telecommunications in 1992 resulted in massive expansion and in developed programs with the entry of competition (Figure 5.2). In contrast to the United States, the Philippine government has a relatively lesser role due to privatization policies. However, due to privatization and deregulation policies, the transaction sector output of the country has increased, as well as the transformation sector output.

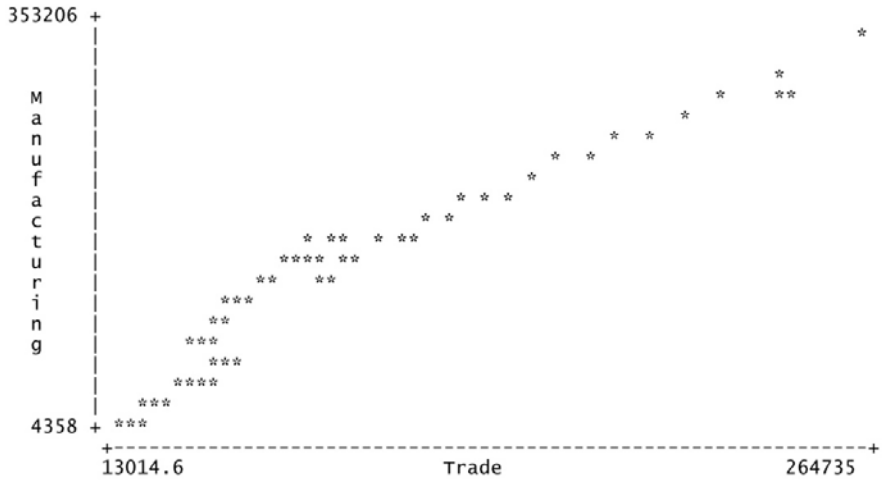

Figure 5.5. Linear Relationship of Manufacturing and Trade Industries

Comparing relative growth, the transaction sector has been increasing at a faster rate than the transformation sector. The relative sizes of the sectors are captured by the support ratio. Figure 5.6 shows the behavior of the support ratio from 1946 to 2010.

The support ratio is defined as the ratio of the transformation sector output to the transaction sector output (Datta et al., 2004). It indicates how much of the transformation sector output is supported by one peso from transaction services. If the society desires the maximum productivity of transformation services through the support of a given transaction service, then the support ratio is desired to be increasing as output increases, or at least be maintained at a given level.

From 1946 to 1951, the support ratio increased from 1.8 to 2.1. From 1952 to 1962, there was a small decline from 1.9 to 1.8. From 1963 to 1981, it increased from 1.9 to 2.32. Then, since 1981, the support ratio decreased continuously to 1.5 in 2010.

The support ratio only increased during the post-war period and mostly during the Marcos regime. The post-war period is an era of reconstruction and rehabilitation which mainly focused on the manufacturing and agricultural sectors (see Figure 5.3). Agoncillo (1990) stated that the years 1946 to 1956 showed improvements in mineral and agricultural production. This may be a reason for the increase in support ratio during the period. The increase of support ratio during the Marcos regime can be strongly attributed to the sharp increase in the construction industry. Agoncillo also stated that the Marcos administration initiated a community development program which consisted of a series of public works projects, such as roads, bridges, health centers, schools, irrigation facilities and urban beautifications. Also, the administration continued the land and agrarian reforms started by the previous administrations that led to a higher increase in the agricultural sector output (see Figure 5.3).

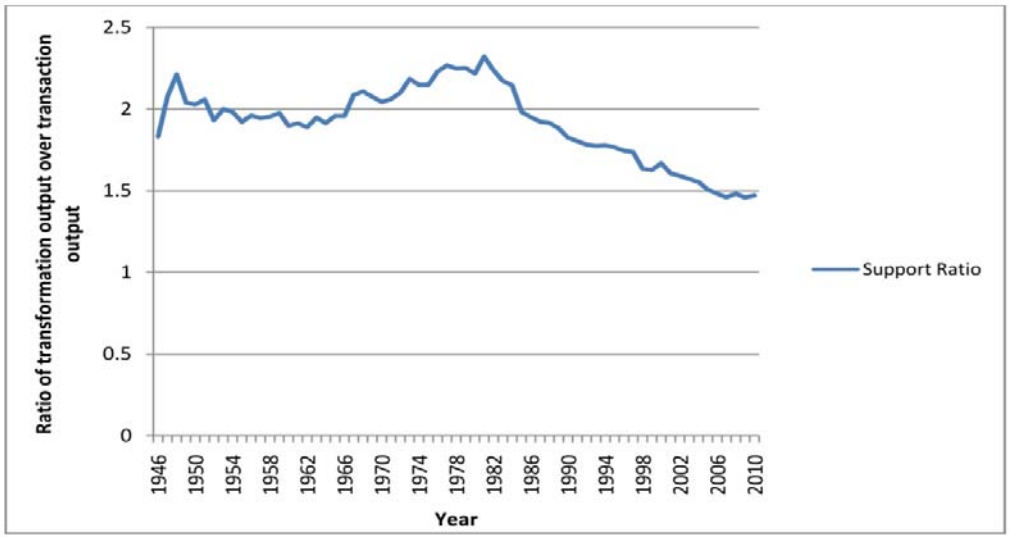

Figure 5.6. Behavior of the Support Ratio over the Period 1946 to 2010

Though the support ratio has increased in some periods, it is generally declining. The faster rate of increase of the transaction sector than of the transformation sector means that the economy is relatively spending more on transacting to capture the potential gains from the increase in productivity. The increase in the transaction sector, as an effect of increasing complexity and number of exchange processes, outweighs the increase in the production potential as an effect of new technology.

Datta et al. (2004) proposed four possible reasons that are not necessarily mutually exclusive to explain the decline in the support ratio. This study examines if the hypotheses are applicable to the Philippines.

First is the shift of non-market to market transaction services. Non-market transaction services are unobserved and therefore excluded in the transaction sector. However, as the economy develops, non-market goods and services will enter the market. Though the entry of new goods and services can either increase the transaction or transformation sector, depending on the type of commodity, it may decrease the support ratio if the bulk of the entering commodities are transaction related. For example, when financial services were less developed, people borrowed money from an informal lender which is a non-market service. When credit services were developed, such as the Agricultural Credit Policy Council (ACPC) in 1987, people shifted to a formal lender which increased the financial sector output (Figure 5.2). It can also be argued that if the transformation sector outputs have always been under market activities, thus considered a constant, then a shift of transaction industries from non-market to market activities would definitely lower the support ratio.

Second is the negative role of government and institutional framework. It is accepted that the dominant influence in the functioning of all institutions is the government. Datta et al. argued that excessive regulations by the government stifle productivity and increase transaction costs. As commonly observed in the Philippines, government red tape often limits, if not decreases, productivity and increases the costs incurred in the transaction. Corruption and failure of a smooth system may also be a factor that increases the transaction costs. In addition, Wallis and North (1986), as cited by Datta et al., said that the government increases the transaction sector at an increasing rate over time. Competition forces private sectors to function with the least cost possible, but this is not applicable for

the government. A monopoly, like the government, has no pressures coming from the market to force cost-cutting measures. Also, easy access to tax revenues further discourages the government to cut costs in providing goods and services. This hypothesis, though, runs on speculations since the subsector trends do not show that government corruption and bureaucracy slow down productivity. However, the evident presence of corruption in the Philippines and the negative role of the government cannot be ignored for contributing transaction costs in the economy.

Third is the change in consumers' tastes and preferences. North (1993), as stated by Datta et al., observed that there is an increase in the service sectors of economies as consumers become richer. This is also observable in the Philippines where people would consume conspicuous goods, which are relatively more complex in nature, as their income increases. Most goods that are relatively more expensive are generally more complex goods. Goods are defined complex in the sense that they require more steps in production and exchange and thus require higher transaction expenditures. For instance, purchasing a simple good such as food would require lower transaction services, whereas purchasing a more complex commodity, such as a house, would require higher transaction services. In other words, there is a tendency for the consumers to shift to transaction intensive services as income increases.

The last possible reasons are factor and product market imperfections. Similar to the negative role of government and institutional framework, a factor market imperfection, such as being a monopoly, discourages the firm to do cost-cutting measures. Lack of cost minimization may increase expenditure on transaction services. A product market imperfection which gives a firm pricing power can pass the part of the burden of increased expenditure on transaction services to the consumer.

The third and fourth hypotheses run on economic theories about consumer and market behavior. Thus, both are plausible reasons for the decline of the support ratio in the Philippine setting.

V. Summary and Conclusion

This study measured the level of transaction sector output using the Wallis and North framework and attempted to explain its behavior by contextualizing to the Philippine setting the hypotheses made by Wallis and North (1986). This study also measured the changes in the relative sizes of the transformation sector output and transaction sector output using the concept of a support ratio. Likewise, the behavior of the support ratio was also explained using the hypotheses made by Datta et al. (2004) as applied in the Philippine context.

The results of this study do not differ with the previous studies about the transaction sector. Similar to the industrialized countries, the transaction sector output in the Philippine economy increased significantly over time. Also, the GDP share of the transaction sector output increased to 40%, which is again similar to the trend in other countries. Wallis and North (1986) cited three possible reasons for the increase in transaction sector output: (1) increased specialization and division of labor, (2) technological development, and (3) increased role of government in relationship to the private sector. While the first two hypotheses are feasible in the Philippine situation, the third one needs further investigation. Philippine history showed that the increase in transaction industries has been brought about by the apparent decline in the role of government through privatization and deregulation policies. However, the result was the same as the transaction sector still increased.

The support ratio found in the Philippines is generally not different from the support ratio in the Indian economy. Though, in contrast to the Indian economy, the support ratio in the Philippines showed an increasing trend at some point, but in general, a decreasing trend was observed. The support ratio in the Philippine economy was found to be increasing in the years 1946-1951 and 1963-1981. A short decline happened during 1952-1962, and from 1981 up until 2010, the support ratio declined continuously. Datta et al. (2004) proposed four explanations for the declining

trend of the support ratio. (1) Shift of non-market transaction services to the market, (2) negative role of institutional framework, (3) change in consumers' tastes and preferences, and (4) factor and product market imperfections. All hypotheses are most likely plausible causes for the decline of the support ratio in the Philippines.

The results of the study showed that a developing country like the Philippines also exhibits an increasing trend for the transaction sector. However, there is a slow increase of GDP share of the transaction sector, which was only a 5% increase from 1946 to 2010. This may imply that the transaction sector may still be increased, even up to 60%, as stated by Chobanov et al. (2007), to reach the full potential of the market. The transformation sector output must also be further developed to avoid the decline in the support ratio. Policies that would remove productivity drags, such as a decrease in regulations, and those that would correct market imperfections can be appropriate to increase the support ratio. Devoting resources to monitor the quality of output or performance of the agents may be another reason for the behavior of the transaction sector. There may be some other reasons but the noticeable trend is that most firms and individuals find it necessary to devote more resources to coordinating, monitoring, and enforcing exchanges as the economy develops.

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The Influence of the Selection of Korean Tourist Destinations on Behavior Intention with Visitors to Major Spas in Chungcheong Area as the Central Figure

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Keywords: Destination Attributes, Behavior Intention, Revisit Intention, Tourist Satisfaction, Selection of Tourist Destination, Intention of Recommendation, Spa Destination

ABSTRACT

This study was carried out targeting the Chungnam area in Korea, a major spa zone, in order to figure out the influence of the selection of tourist destinations on tourist satisfaction, revisit intention and intention of recommendation. On the authority of many advanced research, we have created 20 questions of selected attributes and classified them into 5 categories as follows: Facilities of spa destination, Qualification of spa waters, Surrounding facilities of spa destination, Cleanliness & hospitality and Recreation & Sports facilities.

According to the result drawn up from above 5 factors as well as the multiple regression analysis on satisfaction, 3 factors, including F2 (Qualification of spa water), F3 (Surrounding facilities of spa destination) and F4 (Cleanliness & hospitality, are found to show significance on tourist satisfaction.

According to the result drawn up from above 5 factors as well as the multiple regression analysis on revisit intention, the following 4 factors are found to be exercising influence on this.: F1(Facilities of Spa destination), F2 (Qualification of spa water), F3 (Surrounding facilities of spa destination) and F5 (Recreation & Sports facilities)

According to the result drawn up from above 5 factors as well as the multiple regression analysis on the intention of recommendation, the following 2 factors are found to be wielding influence over the intention of recommendation.: F2 (Qualification of spa water), F3 (Surrounding facilities of spa destination).

The result of the multiple regression analysis proved the positive influence of tourist satisfaction on revisit intention and the intention of recommendation.

Upon the result of this study, we came up with the following 3 solutions for the invigoration of spa destinations: (1) the controlling of spa water-purity and cleanliness, (2) the management & development of spa destination and food that can bring a positive word of mouth effect and (3) the promotional strategy that can induce the visit of tourists.

I. Introduction

If you take a look at the trends in the recent forms of tourism, it has definitely moved from a simple sightseeing to a tour for recuperation. This is largely due to the change in the perception of tourism. In the past, people regarded it as seeing a beautiful features and landscapes, but now it is regarded as the means of well-being through which people try to escape from their ordinary lives and pursue recuperation and the relief of stresses. To reflect this trend, the interest in spa destination is showing a great upsurge.

However, not many spa facilities could meet the need of their customers as they were all built in a very standardized form where the accommodation and bathing houses are packed together.

In this study, we have setup the following as the research purpose so we would be able to figure out not only the selected attribute of spa destination targeting people who have visited the major spa destination in Chungnam province but also the influence of the attribute on tourist satisfaction, revisit intention and intention of recommendation.

First, we determine the selected attribute as well as the standard of analysis for tourist satisfaction, revisit intention and the intention of recommendation through a preliminary study on spa destination.

Second, we classify the selected attribute of spa destination per factor and verify the study model by setting up the hypothesis on finding out its influence on tourist satisfaction, revisit intention and the intention of recommendation.

Third, we suggest the strategic marketing orientation based upon the selected attribute of spa destination visitors that might stimulate the demand for spas.

II. Theoretical Background & Advanced Research

1. The Definition of Spa

Spa refers to the underground water that naturally rises to the surface of the earth or has been drilled intentionally, and its temperature must be higher than either the average temperature for the year or the temperature of the underground water in the region. Korea and some other countries, including Japan and South Africa, set its minimum temperature at 25°C, whereas the UK, Germany and France set it at 20°C and the US at 21.1°C (Korea Hotspring Association, 2012).

The present condition of major spas in the Chungnam province and information regarding the annual visitors are defined in Table 2-1.

<Table 2-1> The Present Condition of Major Spas in the Chungnam Province and Information on Annual Visitors in 2009

Province	Name of Spa	Location	Present Condition of Spa				Number of Facilities	Annual Visitors (thousand)
			Ingredients		Temperature (℃)	Depth (M)		
1	Onyang	Onyang 1 dong, Asan-si	Neutral Ph	Na-HCO3	42~59	124~303	47	2,865
2	Dogo	Kikog-ri Dogo-myeon, Asan-si	Organosulfur	Na-HCO3	25~35.4	200~700	10	1,183
5	Asan	Sinsu-ri, Eumbong-myeon, Asan-si	Alkalinity	Na-HCO3	27~35	600~700	30	1,423

Source : Recomposited upon the data of (M0PAS, 2012)

Three major spas of the Chungnam province were selected as the objects of this study and their temperatures and annual visitors are as follows: Onyang spring, 42-59°C with 2,865,000 annual visitors; Dogo spring, 25-35.4°C with 1,183,000 annual visitors; and Asan spring, 27-35°C with 1,423,000 annual visitors.

2. Selected Attributes of Spa Destinations

Attribute generally refers to the tangible and intangible features of a product or service and Product refers to a group of these attributes (Kotler, Bowen and Makens, 1996). Selected attribute refers to figuring out how the attitude is formed on the features of products that evoke the difference between the preference and actual purchase and how these features of products can be distinguished from other features (Day 1990).

Also, the importance of an attribute is a factor that has influence on the customer's satisfaction (Cadott & Turgeon, 1998), therefore it is a feature that customer puts the most emphasis on (Filiatrault & Ritchie, 1988). The importance of an attribute plays a major role in determining the customer's attitude.

In this study, facility related sources such as bathing facilities, atmosphere of hot spring bath, its cleanliness, cleanliness of accommodation, entertainment facilities, recreational facilities, shopping and amenities are applied as selected attributes, (Gartner, 1989, Muller, 1991, Deng, 2007) and surrounding conditions of a spa destination such as parks, natural landscape, cultural heritage, transportation, temperature and water quality of spring water, efficacy, quantity, ingredients and price are also utilized as selected attributes (Haahti, 1986, Kim Si-Joong, 2009, Oh Jae-Kyung, 2003). Moreover, attributes related to the hospitality and service of hot spring facility employees and local residents are utilized in this study (Deng 2005, Kim Su-Jin, 2004).

To sum up, 3 types of selected attributes were adopted as variables in this study. They include: (1) spa water, hot spring & additional facilities and cost for using hot spring in direct relationship with the hot spring itself; (2) entertainment facilities and sports facilities having relations with surrounding conditions; and (3) service and hospitality of hot spring facility employees and local residents. After sorting out the redundancy factors, we came up with final 20 selected attributes and applied them in this study.

3. Behavior Intention

Behavior Intention refers to a comprehensive term for tourist satisfaction, revisit intention and intention of recommendation. Satisfaction is the subjective assessment of a customer on the satisfactory need induced from the consumption or acquirement of the offered product or service (Czipeil & Rosenberg, 1974).

The concept of satisfaction has been defined by many scholars. Oliver (1981) defined the satisfaction as the feeling induced by the mismatch between the customer expectation and the actual experience. Noe (1987) said physical features of a tourist destination, social and cultural features, rest, transportation, commercial service/safety facilities, conviction, situations related to leisure activity and intangible products are exerting influence on tourist satisfaction.

Tourist satisfaction is an important concept being regarded as the ultimate objective of tourism activity and it can also be referred to as the response to the difference between the expectation and the actual experience that a tourist had through the offered product. Hence, tourist satisfaction can be defined as the consumer sentiment that appears on the process of matching the expectation before the visit and the assessment made after the actual visit (Park Chang-Gyu, Um Seo-Ho, 1998)

Tourist satisfaction with a high level of satisfaction is likely to draw more potential tourists. In this sense, tourist satisfaction might play an important role in planning both tourism products and services (Yoon & Uysal, 2003).

Repurchase intention in consumer behavior means there is a high possibility of repurchasing or availability on a certain service or product and when it is adapted to tourism, it can be reinterpreted as visitors having high possibility of revisit. Hence the revisit intention can be referred to as a factor predicting the behavior and a core factor in connection to marketing. Moreover, it can be explained as the will and conviction of an individual having an influence on attitude development and future behavior determination. (Boulding, Staelin, Kalra & Zeihaml, 1993)

Likewise, the assessment of a tourist will have a great influence on the revisit intention. A positive comment will lead to greater revisit intention. In other words, revisit intention refers to the degree of desire for

revisiting the destination ground on the prior experience related to the tourist destination attribute (Ko Dong-Woo, 1998).

Dissatisfied tourists are less likely to make a return to the destination than those who are satisfied (Newman & Webel, 1973), and there's no motivation for dissatisfied customers to make an active repurchase. The influence of satisfaction created after the purchase on repurchase is very clear. Already, many studies have proven this using various kinds of methods (Kim Young-Woo, 2006)

Intention of recommendation refers to a type of repurchase intention where a customer expressed his/her will to use a certain product or service again in the near future. Perarce (1980) highlighted the active role of tourist satisfaction on revisit intention and intention of recommendation. In his study, he insisted that satisfied tourists are more likely to revisit the destination and highly recommend it to others while those dissatisfied would not.

We have taken a look at various cases of advanced studies on tourism satisfaction having influence on revisitation. Their results proved that there is a close correlation between the two and those satisfied experiences are often handed down in word of mouth form.

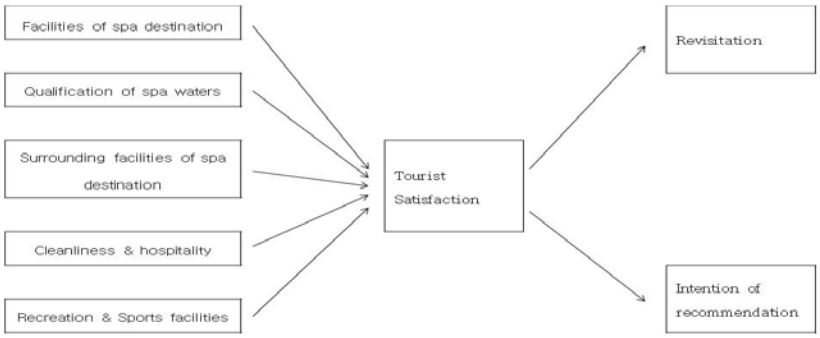
In this study, we will carry out our research targeting the visitors to a spa destination in view of the proven facts that the tourist site selection attributes will have an impact on the satisfaction, and the tourist satisfaction is proportional to the chances of revisitation and the intention of recommendation.

III. Study Model & Analysis Method

1. Study Model

In this study, we have classified factors into 20 different selection attributes based on the advanced studies. We have defined the following 5 factors as the operant variables: Facilities of spa destination, Qualification of spa waters, Surrounding facilities of spa destination, Cleanliness and hospitality/Recreation and Sports facilities. All these factors have an impact on the overall satisfaction and verify the significant influence of tourist satisfaction on revisitation and intention of recommendation. We have set up a study model as shown in Figure 3-1.

<Figure 3-1> Study Model



Followings are research hypothesis for the verification of the study model

Hypothesis 1 : The selected attributes of spa destination will have a positive impact on the overall satisfaction

Hypothesis 2 : The selected attribute of spa destination will have a positive impact on the revisit intention

Hypothesis 3 : The selected attribute of spa destination will have a positive

impact on the intention of recommendation

Hypothesis 4 : A greater tourist satisfaction will have a positive impact on the revisit intention

Hypothesis 5 : A greater tourist satisfaction will have a positive impact on the intention of recommendation

2. Analysis Method

The sample of this study is targeting those who have visited the spa destination. Among 280 survey samples, 266 valid samples were applied in the actual analysis after excluding 14 samples who showed insincerity as participants of this study.

The survey was carried out for 8 days from January 15 to January 22, 2012, and the statistical treatment on the collected data was implemented using SPSS18 for Windows after the data coding process.

Frequency Analysis, Reliability Analysis, Factorial Analysis for the actual analysis, Multiple Regression Analysis for the hypothesis testing on the fall season tourist site selection factor and Simple Regression Analysis for the hypothesis testing on the intention of recommendation were carried out.

IV. Actual Analysis

1. General Properties of the Sample

The results of the frequency analysis on demographic characteristics of 266 respondents are shown in Table 4-1. The representative of sample was found for females (74.8%) to be between the age of 20-29 (39.1%) with an academic ability of high school graduates (55.6%).

Housewives (26.7%) for the occupation and married women (66.2%) as for the marital status are found to be representative of the sample.

<Table 4-1> The Demographic Characteristics of the Sample Unit: Person %

Classification		Frequency	Vaild Percent
Gender	Male	67	25.2
	Female	199	74.8
Age	Below 19	23	8.6
	20～29 yr	104	39.1
	30～39 yr	54	20.3
	40～49 yr	51	19.2
	More than 50	34	12.8
Academic ability	Middle School graduate	18	6.8
	High School graduate	148	55.6
	College graduate	86	32.3
	Master's or Ph.d degrees	14	5.3
Occupation	Administrative/Office job(Company staff, civil servant)	52	19.5
	Self-employed/individual business	32	12.0
	Student	41	15.4
	Specialized job(Doctor, Professor, Lawyer, Accountant)	23	8.6
	Housewives	71	26.7
	Etc	47	17.7
Marital status	Single	90	33.8
	Married	176	66.2
	Total	266	100.0

2. Factorial Analysis & Reliability Analysis

In this study, we have verified both validity and the degree of confidence regarding the definition of survey questionnaire selection and measurement concept and the result is shown in Table 4-2. As the value of KMO appears to be .778 and 1424.055 for Barlett's Test of

sphericity indicating the suitability of factorial analysis, a factorial analysis with a significance level of .000 should be applied. Moreover, for the relational analysis, the principle component analysis and Varimax rotation that would condense the number of factors into the minimum level are used for both 5 factor samples of confidence verification and Cronbach Alpha values are suggested as the result. The result of the Cronbach Alpha coefficient, showing the reliability of the data, turned out to be as follows: F1 : .798 for Facilities of spa destination, F2 : .741 for Qualification of spa waters, F3 : .710 for Surrounding facilities of spa destination, F4 : .654 for Cleanliness & hospitality and F5 : .668 for Recreation & Sports facilities. If its value is higher than .60, it is regarded as significant and as all values in this study appears to be ranged between .654-.798, they are regarded as having high reliability.

<Table 4-2> Factorial Analysis

Decision domains	Items	Factor loadings	Variance explained(%)	Eigen value	Cronbach's α
F1: Facilities of spa destination	Bath facilities	.707	16.003	2.721	.798
	Business hours	.591			
	Transportation	.652			
	Cost for using spa	.727			
	Additional facilities	.743			
F2: Qualification of spa waters	Ingredient	.558	14.289	2.429	.741
	Temperature	.775			
	Quantity	.752			
	Efficacy	.704			
F3: Surrounding facilities of spa destination	Surrounding tourism facility	.723	12.370	2.103	.710
	Surrounding restaurant	.806			
	Surrounding accommodation	.727			
F4: Cleanliness & hospitality	Hospitality of local resident	.770	11.055	1.879	.654
	Hospitality of employees	.745			
	Cleanliness of spa	.696			
F5: Recreation & Sports facilities	Recreation & entertainment facility	.872	9.325	1.585	.668
	Other sports facility	.804			
Total variance explained (%)		63.042			
KMO		.778			
Bartlett's Test of sphericity		1424.055 (p<.000)			

3. Regression Analysis for the Verification of Study Model

Hypothesis 1 : The selected attribute of spa destination will have a positive impact on the overall satisfaction

In order to prove the significance of a selected attribute on tourist satisfaction, we have selected tourist satisfaction as the dependent variable and 5 factors of selected attributes (Facilities of spa destination, Qualification of spa waters, Surrounding facilities of spa destination, Cleanliness and hospitality, and Recreation and Sports facilities) as the independent variables. The result of the multiple regression analysis regarding the influence of those factors on the tourist satisfaction is shown in Table 4-3.

The R^2 value of 0.113 represents 11.3% of the impact on satisfaction. Three factors including F2 (Qualification of spa waters), F3 (Surrounding facilities of spa destination), and F4 (Cleanliness & hospitality) are regarded as having a significant effect on tourist satisfaction.

<Talbe 4-3> The Influence of Spa Destination Selected Attributes on Tourist Satisfaction

Independent Variable : Overall Satisfaction					
Dependent variable	B	Std. Error	Beta	t	Sig
F1: Facilities of spa destination	.064	.092	.051	.695	.488
F2: Qualification of spa waters	.300	.086	.247	3.511	.001***
F3: Surrounding facilities of spa destination	.234	.082	.182	2.842	.005***
F4: Cleanliness & hospitality	-.166	.068	-.153	-2.420	.016**
F5: Recreation & Sports facilities	-.004	.054	-.005	-.081	.935
Constant	1.750	.389		4.493	.000
R2	.121				
Adjusted R Square	.104				

*p<0.1, **p<0.05, ***p<0.01

Hypothesis 2 : The selected attribute of spa destination will have a positive impact on the revisit intention

In order to prove the significance of a selected attribute on the revisit intention, we have selected revisit intention as the dependent variable and 5 factors of selected attributes (Facilities of spa destination, Qualification of spa waters, Surrounding facilities of spa destination, Cleanliness and hospitality, and Recreation and Sports facilities) as the independent variables. The result of the multiple regression analysis regarding the influence of those factors on the revisit intention is shown in Table 4-4.

The R^2 value of 0.174 represents 17.4% of the impact on revisitation. Four factors including F1 (Facilities of spa destination) F2 (Qualification of spa waters), F3 (Surrounding facilities of spa destination), and F5 (Recreation & Sports facilities) are regarded as having a significant effect on revisit intention.

<Table 4-4> The Influence of Spa Destination Selected Attributes on Revisit Intention

Independent variable : Revisitation					
Dependent variable	B	Std. Error	Beta	t	Sig
F1: Facilities of spa destination	.274	.082	.237	3.359	.001***
F2: Qualification of spa waters	.175	.076	.158	2.312	.022**
F3: Surrounding facilities of spa destination	.192	.073	.163	2.631	.009***
F4: Cleanliness & hospitality	-.038	.061	-.039	-.636	.525
F5: Recreation & Sports facilities	-.127	.048	-.154	-2.638	.009***
Constant	1.527	.345		4.432	.000
R2	.174				
Adjusted R Square	.158				

*p<0.1, **p<0.05, ***p<0.01

Hypothesis 3 : The selected attribute of spa destination will have a positive impact on the intention of recommendation

In order to prove the significance of selected attribute on the intention of recommendation, we have selected the intention of recommendation as the dependent variable and 5 factors of selected attributes (Facilities of spa destination, Qualification of spa waters, Surrounding facilities of spa destination, Cleanliness and hospitality, and Recreation and Sports facilities) as

the independent variables. The result of the multiple regression analysis regarding the influence of those factors on the intention of recommendation is shown in Table 4-5.

The R^2 value of 0.113 represents 11.3% of the impact on the intention of recommendation. Two factors including F2 (Qualification of spa waters) and F3 (Surrounding facilities of spa destination), are found to have a significant effect on the intention of recommendation

<Table 4-5> The Influence of Spa Destination Selected Attributes on Intention of Recommendation

Independent Variable : Intention of Recommendation					
Dependent variable	**B**	**Std. Error**	**Beta**	**t**	**Sig**
F1: Facilities of spa destination	.089	.088	.074	1.011	.313
F2: Qualification of spa waters	.171	.082	.148	2.094	.037**
F3: Surrounding facilities of spa destination	.275	.079	.225	3.496	.001***
F4: Cleanliness & hospitality	-.010	.065	-.010	-.150	.881
F5: Recreation & Sports facilities	-.052	.052	-.061	-1.003	.317
Constant	1.703	.372		4.575	.000
R^2	.113				
Adjusted R Square	.096				

*p<0.1, **p<0.05, ***p<0.01

Hypothesis 4 : A greater tourist satisfaction will have a positive impact on the revisit intention

In order to verify our study model assuming the greater tourist satisfaction will have a positive impact on the revisit intention, we have selected the overall satisfaction of a tourist as the dependent variable and the revisit intention as the independent variable. The result of the simple regression analysis is shown in Table 4-6.

The R^2 value of 0.316 represents 31.6% of the relevance between satisfaction and revisit intention. This figure proves the significance of the tourist satisfaction on revisit intention.

<Table 4-6 > The Influence of Tourist Satisfaction on Revisit Intention

Independent Variable: Revisitation					
Dependent variable	B	Std. Error	Beta	t	Sig
Satisfaction	513	.046	.562	11.041	.000***
Constant	1.746	.166		10.498	.000
R^2	.316				
Adjusted R Square	.313				

Hypothesis 5 : A greater tourist satisfaction will have a positive impact on the intention of recommendation

In order to verify our study model assuming greater tourist satisfaction will have a positive impact on the intention of recommendation, we have selected the overall satisfaction of a tourist as the dependent variable and the intention of recommendation as the independent variable. The result of the simple regression analysis is shown in Table 4-7.

The R2 value of 0.239 represents 23.9% of the relevance between satisfaction and intention of recommendation. This figure proves the significance of tourist satisfaction on the intention of recommendation.

<Table 4-7> The Influence of Tourist Satisfaction on the Intention of Recommendation

Independent Variable : Intention of Recommendation					
Dependent variable	B	Std. Error	Beta	t	Sig
Satisfaction	.466	.051	.489	9.117	.000***
Constant	1.975	.183		10.802	.000
R^2	.239				
Adjusted R Square	.237				

V. Conclusion

In this study, we have drawn factors regarding the selection attributes of spa destinations via existing advanced studies and have verified those factors through hypotheses assuming that there will be positive effects between the following factors: Factors regarding the selection attributes for the overall satisfaction and the overall satisfaction to the chances of revisitation and the intention of recommendation.

We have classified the tourist site selection attributes defined in the advanced studies into the following 5 categories: Facilities of spa destination, Qualification of spa waters, Surrounding facilities of spa destination, Cleanliness and hospitality, and Recreation and Sports facilities. The result of factorial analysis shows that all the variables used in this study are consistent as the value of Cronbach α lies between 0.654 ~ 0.798

For the result of multiple regression analysis on the 5 drawn factors and the overall satisfaction, 3 factors including F2 (Qualification of spa waters), F3 (Surrounding facilities of spa destination) and F4 (Cleanliness & hospitality) turned out to be having a positive effect on the overall satisfaction

For the result of multiple regression analysis on the 5 drawn factors and the revisit intention, 4 factors including F1 (Facilities of spa destination), F2 (Qualification of spa waters), F3 (Surrounding facilities of spa destination) and F5 (Recreation & Sports facilities.) turned out to be having a positive effect on the revisit intention

For the result of multiple regression analysis on the 5 drawn factors and the intention of recommendation, 2 factors including F2 (Qualification of spa waters) and F3 (Surrounding facilities of spa destination) turned out to be having a positive effect on the intention of recommendation.

For the result of the simple regression analysis regarding the influence of the overall satisfaction on the chances of revisitation and the intention of recommendation, higher satisfaction is connected to the higher chances of revisitation and intention of recommendation. As we have seen from the advanced studies, higher satisfaction will create higher chances of revisitation and as the positive word of mouth effect occurs, it will eventually lead to higher chances of intention of recommendation.

Upon the result of the actual analysis above, we suggest the following marketing strategies.

1> The satisfaction of tourists at spa destinations are found to be highly dependent on the quality of spa water and cleanliness of a spa destination. Hence, for the invigoration of those spa destinations, controlling spa water-purity and cleanliness will be essential.

2> For a positive word of mouth effect, it is highly recommended to pay close attention to fostering surrounding accommodation facilities and restaurants.

3> The development of an effective promotional strategy is highly recommended for the invigoration of the spa destination.

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Exploiting Demographic Dividends through Sustainable Savings and Investments: Is the Philippines Ready?

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ABSTRACT

As a once in a lifetime experience, demographic dividends present themselves as an opportunity for the country to further economic growth. Benefits of demographic shifts, however, are not automatic and must be accompanied with a host of enabling factors such as high rates of savings and investment. Hence, this study looked at the savings and investment performance of the Philippines and evaluated the trends relative to the experiences of other East Asian economies undergoing demographic transition. Circumstantial evidence was presented as to why the Philippines might have missed the demographic window of opportunity.

I. Introduction

The United Nations Economic Commission for Asia and the Pacific (UNESCAP) reported in 2007 that Asia Pacific economies are facing a "once in a life time opportunity" to gain from high a proportion of economically active individuals to total population or risk high unemployment and waste human resources.

Several studies and surveys have pointed out that since the 1970s, the Asia Pacific region has been experiencing significant increases in the share of economically active or the working age population, particularly in the economies of East and North East Asia, where the working age group is being expected to reach 72% of the population by 2010 from about 57 % in the 1970s. Same observations were also noted and expected for North, Central Asia, and the Pacific region. In South East Asia and South Asia, the statistical bulge is being projected to peak in 2025. UNESCAP (2007) conveyed that the bulging is now fairly advanced for Thailand, peaking in Vietnam, while the peak will be much later for the Philippines.

As a once in a lifetime opportunity, potential benefits of having a high proportion of working age population have to be harnessed. This is especially important for the Philippines, which is struggling to catch up with the pace of economic growth achieved by other economies in the region. In addition, it has been a

prominent and imperative policy prescription for the Philippines to achieve sustainable economic growth to jump-start many development programs.

Demographers have pointed out that demographic dividends, while necessary for economic growth, are not automatic. According to Mason (2002), the demographic bonuses experienced by countries, particularly East Asian economies, capitalized on (i) strong human resource base; (ii) success at employment growth; and (iii) high rates of savings and investment. This observation highlights the role of policy interventions in essential areas like health, family planning, education and economic policies promoting labor-market flexibility, openness to trade, investments, and savings to exploit the economic and social benefits of demographic transition.

With these in mind, the study looked at the relative success (or failure) of the Philippines in preparing the investment and savings environment for the demographic dividends to come into fruition. While looking at the savings and investment environment alone provides an incomplete picture of the relative preparedness of the country in harnessing demographic dividends, it gives a clear reckoning of whether or not the Philippines stands a chance in exploiting this once in a lifetime opportunity.

II. Demographic Dividends

Mason (2002; 2005; and 2007) refers to demographic dividends as a one-time feature of the demographic transition. Fertility decline produces a period during which the working-age population grows much more rapidly than the child population. Thus, a larger share of the population becomes concentrated in the highly productive working ages. Populations with heavy concentrations at working ages are have advantages in producing high levels of per capita income. Increased per capita income can be likened to a two-edge sword; it can increase per capita consumption leading to improved current living standards and increase per capita savings leading to enhanced future living standards. Mason refers to this as the first demographic dividend. However, rapid fertility and mortality decline will eventually lead to rapid aging. The imminence of the aging population is an important point because as aging occurs the first demographic dividend will disappear.

The second dividend arises to the extent that consumers and policy-makers are forward-looking and respond effectively to the demographic changes that are coming. With a rise of the elderly dependent population on the horizon, consumption in the future can be maintained only through the accumulation of wealth in some form. If reallocations to old age are accomplished via expansion of transfer programs of the government, there will be no second demographic dividend. If reallocations to old age are accomplished via increased savings and investment, the economy grows more rapidly, yielding a second demographic dividend.

Formally, the dynamics of demographic dividends can be represented as follows: the effective number of consumers is given by the equation: $N(t) = \sum_a \alpha(t) P(a,t)$

and the effective number of producers: $L(t) = \sum_a \gamma(t) P(a,t)$

where α(a) = vector of consumption weights; γ(a) = vector of production weights and P(a,t) = population. The output per effective consumer therefore is equal to:

$$\frac{Y(t)}{N(t)} = \frac{L(t)}{N(t)} + \frac{Y(t)}{L(t)}$$

and differentiating with respect to time (t), the growth rate of output per effective consumer will be equal to: $\dot{y}(t) = \left[\dot{L}(t) - \dot{N}(t)\right] + \dot{y}^{l}(t)$; which is the sum of $\left[\dot{L}(t) - \dot{N}(t)\right]$ or the growth rate of support ratio (the first dividend) and the $\dot{y}^{l}(t)$ which is the growth rate of labor productivity or the output per effective worker (the second dividend).

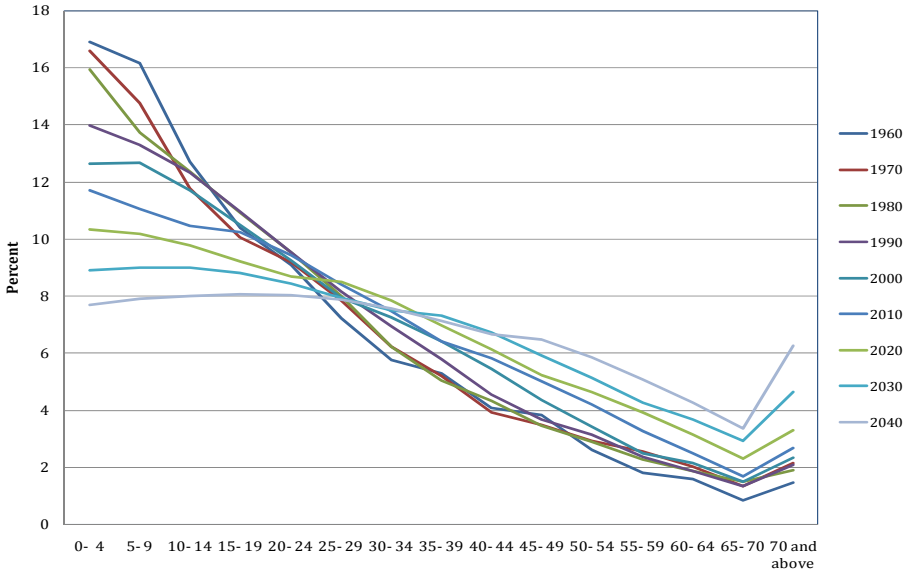
According to Mason (2005), the first dividend is inherently transitory. When large cohorts of prime age

adults pass into their retirement years, the first dividend ends. Nonetheless, the first dividend can have a lasting effect on economic growth if the gains in per capita income are used to create human capital by investing in health and education; to accumulate physical capital; to support technological innovation, to create growth-inducing institutions among others. The second dividend, on the other hand, is permanent in nature because it is driven by the rising share of the elderly in the populations.

The succeeding discussion looks at the Philippine case. Figure 1 shows the demographic transition of the Philippines from 1960 to 2040 (medium growth projection). In 1960, about 52 percent of the population were in the working are group (15 – 64 years old). That share of the population pie expanded to 59 percent in 2000 and is expected to reach 67 percent by 2040. Those in the working age group will have a decreasing proportion of young to care for; starting from about 46 percent of the total population in 1960, it went down to 37 percent by 2000 and is anticipated to slide further to 24 percent by the year 2040. The age distribution from 1960 to 2040 suggests that the demographic window of opportunity is opening up for the Philippines. Guest and McDonald (2004) and Mason and Kinugasa (2004) forwarded that within the aforementioned projection period to 2045, the Philippines faces a significant period during which the support ratio is increasing and peaking or the first dividend (Figure 2), the phase achieved by Japan and Thailand at a much earlier period. The increase in the support ratio is being expected for almost 40 years for the Philippines.

The growth of output per effective worker or the second dividends for the Philippines is represented by Figure 3; assuming that the ratio of capital to income grows at the same rate as the ratio of life-cycle wealth to income. It is perceivable that the growth of output per effective worker is increasing and expected to increase further as demographic shifts take place.

Figure 1. Philippine Age Distribution, 1960 – 2040.



(Medium series; In thousands)
Source: National Statistics Office. Technical Working Group (TWG) on Population Projection.

Figure 2. The First Dividend: Annual Growth Rates of the Support Group, in Percent for the Five-Year Period Beginning in 1950 to 2045.

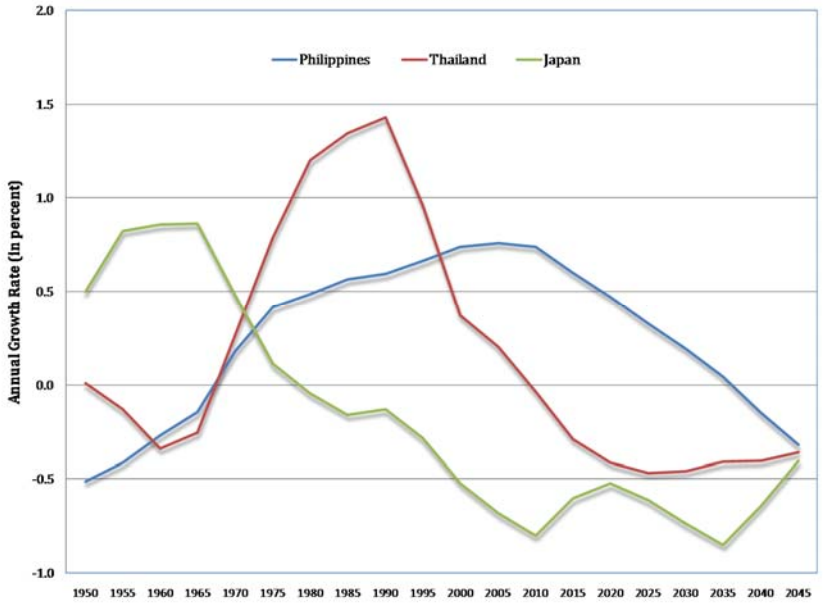
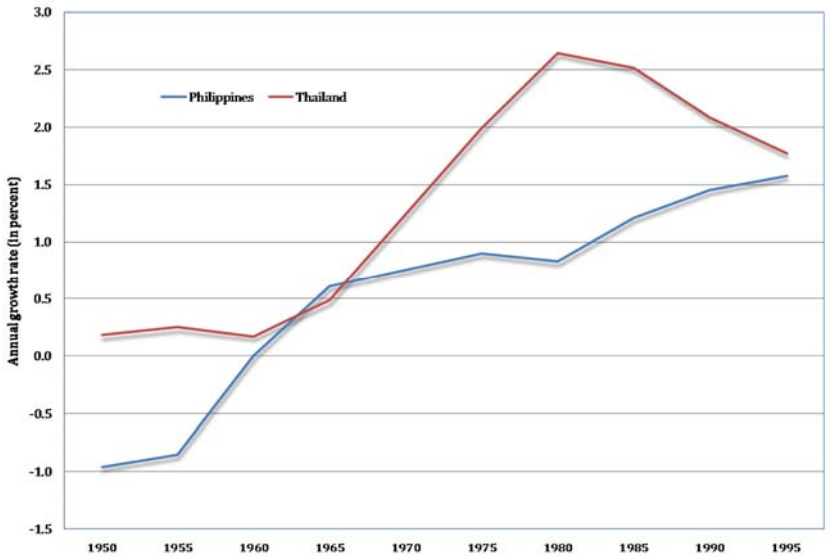


Figure 3. The Second Dividend: Annual Growth Rates in Percent for the Five-Year Period Beginning in 1950 to 1995.



Source: Mason and Kinugasa (2004).

III. Savings and Investment

Using the simple Keynesian equilibrium output condition: $I = (T - G) + (X - M) = S$ where $I =$ investment; $(T - G) =$ fiscal balance; $(X - M) =$ trade balance; and $S =$ savings. This equilibrium condition can be rewritten as: $I = S + (G - T) + (M - X)$ where total investments expenditure in the country is financed by S, the savings of households and the private and government corporations; $(G - T)$ by the government savings; and $(M - X)$ by the foreign savings. Each of these terms is a significant source of finance needed to fuel economic growth in general and to prepare the necessary institutions required to support and provide for the needs of the changing population age structure in particular. Note that foreign savings are relied upon to augment deficits in domestic savings; however, foreign savings are unsustainable and increase the country's vulnerability to international capital flight. The sustainable expansion of domestic savings therefore is a necessary condition to boost capital formation and achieve sustained economic growth.

Domestic Savings Performance

The historical domestic savings trend of the Philippines from 1946 to 2008 is reflected by Figures 4 and 5. Given that savings and income are positively related, Figure 2 shows that apparent frailty of this relationship for the country. Real national savings of the Philippines, although increasing through the years, is ostensibly left behind by the rate at which the GDP expanded for more than 6 decades. A simple OLS of savings with the real GDP by decade reveals that the marginal propensity to save (mps) is about 0.518 in the 1940s, down to 0.119 and 0.049 in the 50s and 60s respectively. The strong economic performance of the Philippines in the 1970s translated into a higher mps of about 0.227, which was eroded to 0.075 by a series of economic and political crisis experienced by the country in the 1980s. By the 1990s, mps moderately increased to 0.152 to an average 0.180 at the turn of the millennia. Although the real GDP increased dramatically since the 1990s, the pace of expansion was much slower relative to ASEAN and East Asian countries. Studies showed that the country's inability to accelerate its saving rate is caused primarily by the slow growth of overall output and low levels of income (Ravalo, 1997).

Figure 4. Real Gross Domestic Product and National Savings (in billion pesos), Philippines, 1946 – 2008 (1985 = 100).

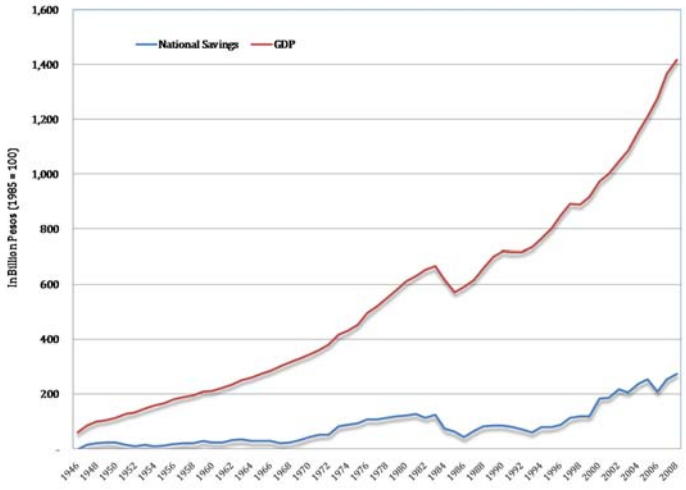


Figure 5. Real National Savings as a Proportion of GDP, Philippines, 1946 – 2008.

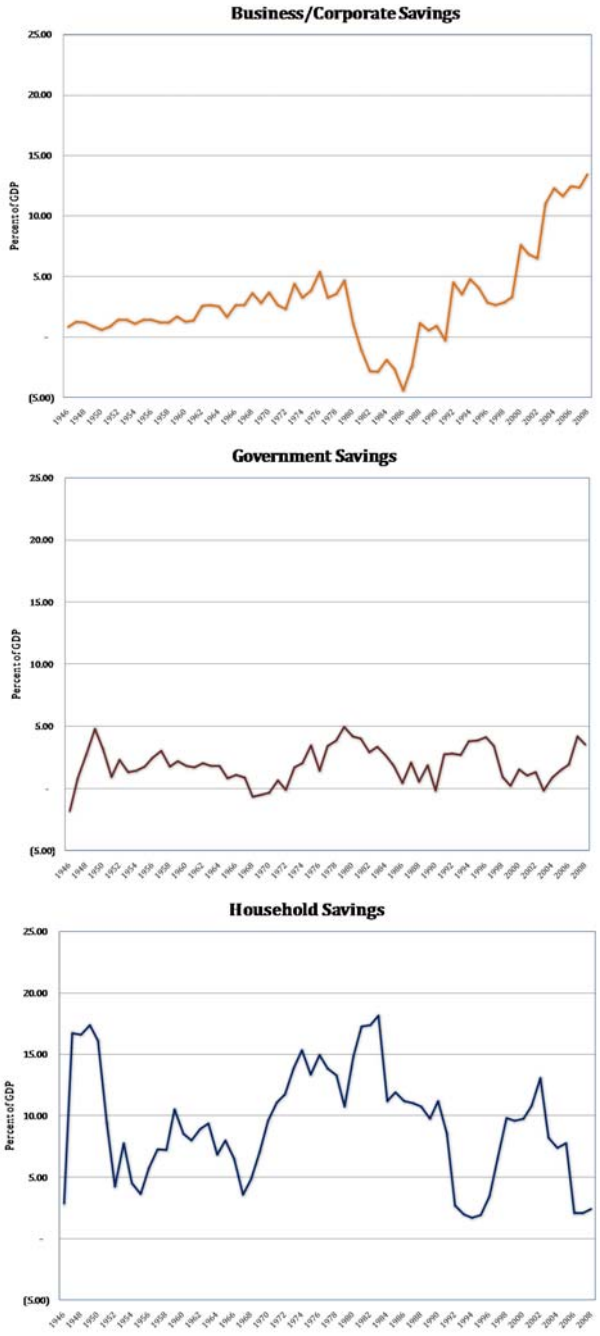
Source of Data: National Income Accounts, NSCB (2009).

The evolution of the national savings ratio (see Figure 5) is consistent with the trend of mps. Domestic savings as a proportion of GDP seemed to be following the economic and political swings during the decade. In fact, Edwards (1996) concluded in his study of Latin American countries that slow growth rates of income and political instability depressed saving rates. The Philippines is apparently not exempt from this observation.

On the average, the national savings ratio is about 16.1 percent in post-war Philippines, and went down to 10.7 percent in the 1960s. Again, the economic expansion of the country in the 1970s registered an impressive 18.7 percent of the national savings ratio, the highest in the last 4 decades. Crisis in the 1980s took its toll and pulled down the national savings ratio to an average of 14.3 percent. A deterioration in the terms of trade in the late 1970s and the rise in interest rates in the early 1980s constrained that growth. As foreign creditor banks refused to roll over short-term credit or extend new loans following the political crisis in late 1983, the government had to adopt restrictive and contractionary fiscal and monetary policies. This stance was mainly responsible for the sharp drop in the national savings ratio during the 1980s (Nam, 1989).

Dissecting the sources of national domestic savings performance, Figure 6 shows the relative savings performances of the different domestic saving units. From 1946 to 2008, the government is the smallest contributor to national savings. On the average, it contributed approximately 14 percent of the national savings annually or about 5 percent of the country's annual GDP. The major source of national savings is households; from the 1940s to the 1990s, household savings account for about 80 to 90 percent of the national savings and this is approximately 14 percent of GDP. The Family Income and Expenditure Survey (FIES) for 1985 to 1997 reported that households from the 4th to the 7th income deciles contributed positively to this savings performance with households from 8th to the 10th deciles saving even more than the national average (about 16 to 34 percent of household income). By the year 2000 onwards, the share of household savings to total savings declined to about 36 percent. The FIES for 2000 to 2006 shows that households belonging to the lowest 3 income deciles have actually increased their dissaving propensities while the rest of income groups reduced their savings propensities [see Table 1].

Figure 6. Sources and Trends of Domestic Savings (as percentage of GDP), Philippines, 1946 – 2008.



Source: National Income Accounts, NSCB (2009)

The decline in household savings from the year 2000 onwards, however, was compensated by the increase in the savings of private/government corporations and businesses. Average total share to national savings of business and corporations from 1946 to 1980 was only 2.26 percent of GDP. The economic and political crises during the 1980s derailed the savings performances of businesses that averaged savings (or dissavings) during the period registered at about negative 1.53 of the GDP. By 1990s to the early years of the 2000, businesses revived their savings behavior and held average savings rate of 4.13 percent of GDP. The best savings performance of the business sector since 1946 was drawn out from 2002 onwards. The savings rate dramatically increased to an average of 12.24 percent of GDP and reached 13.5 percent by 2008, the highest ever recorded for the sector.

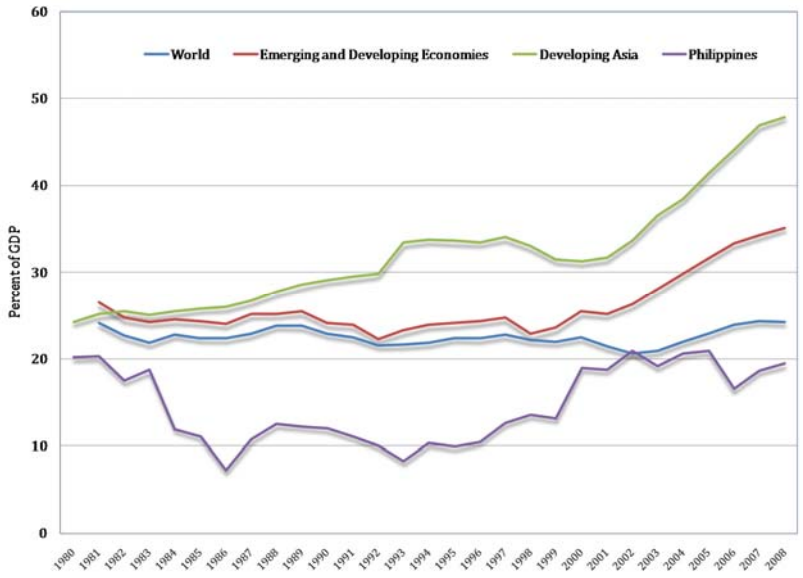
Table 1. Total Household Savings as a Proportion of Total Household Income by Income Group, 1985 – 2006.

Income Group	Survey Year							
	1985	1988	1991	1994	1997	2000	2003	2006
Philippines	13.48	19.52	20.24	18.64	19.19	18.08	16.36	14.79
First Decile	(15.02)	(10.45)	(10.97)	(6.77)	(11.60)	(8.29)	(9.38)	(9.21)
Second Decile	(2.95)	0.13	2.32	2.89	(1.20)	(1.58)	(1.64)	(3.07)
Third Decile	(0.58)	4.70	5.96	5.91	2.25	2.26	1.66	(0.57)
Fourth Decile	2.78	8.28	10.44	9.67	6.49	5.84	4.51	2.26
Fifth Decile	4.69	10.53	10.97	11.53	8.58	8.77	6.95	4.52
Sixth Decile	7.87	12.65	13.42	12.56	11.26	11.69	9.66	6.24
Seventh Decile	8.53	15.17	17.03	15.33	14.58	13.68	11.78	8.34
Eighth Decile	11.34	17.20	17.18	17.91	18.13	17.63	14.52	11.60
Ninth Decile	14.48	20.94	21.47	20.96	20.96	20.45	17.46	16.23
Tenth Decile	26.65	33.53	32.34	28.97	30.85	28.62	29.42	26.08

Source of Basic Data: FIES, various years

Relative to the rest of the world, the savings performance of the Philippines is apparently lagging behind everyone else. In Figure 7, the savings performance of the Philippines and the world, the emerging and developing economies and the developing Asia from 1980s onwards can be seen. It is indisputably evident that the country is saving less than the average of everyone else in the world and even in Asia. The period average for the Philippines is about 15 percent of GDP, the savings average of the world, emerging economies, and developing Asia are 22.5, 26.0, and 32 percent of the GDP.

Figure 7. Comparative National Savings Performance (as percent of GDP) of the Philippines and the Rest of the World, 1980 – 2008.



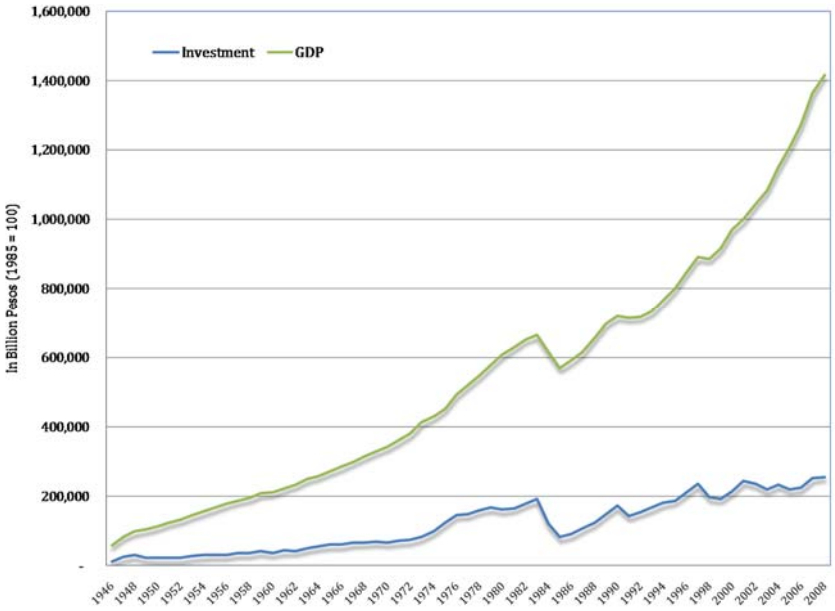
Source: National Income Accounts, NSCB (2009)

Investment Performance

Investment in an economy plays a dual role, affecting short-run output though its impact on aggregate demand and influencing long-run output growth through the impact on capital formation on potential output and aggregate demand consequently promoting economic growth. To elucidate, the real gross domestic capital formation or the investment spending of domestic agents in the Philippines is shown by Figures 8 and 9. In Figure 8, investment has been growing from 1946 to present, yet its expansion reflected the trajectory presented by the national savings trend in Figure 4, growing yet sluggish. In fact by 2008, total real investment is only about 9 times the 1946 size, growing at an annual average of 4.5%, which is similar to the historical annual growth rate of the Philippine GDP.

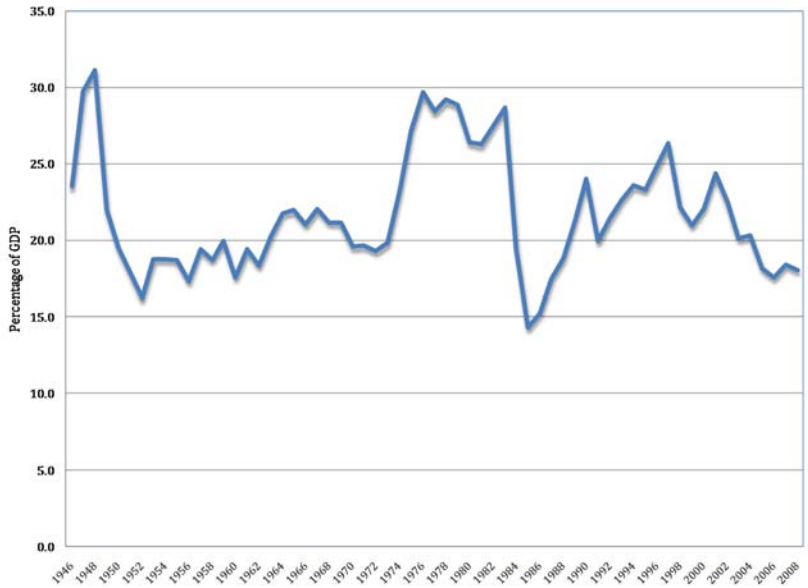
As a component of national income, the share of investments for the aforementioned period is approximately 22 percent of GDP (see Figure 9). Noticeable investments heave during the boom years of the late 70s and early 80s when its share registered at an average of 29 percent of GDP, coinciding with the range of years when national savings were also highest. However, from the 1990s to date, investment as a proportion of GDP is declining. While total value of domestic investments is determined by the amount of savings generated in the economy and the net lending from the rest of the world, investors also respond to the state of business cycle in the country. The boom-bust cycle of the Philippine growth trajectory allowed for the accelerator principle of investment to play in. The absence of sustained increasing economic growth pattern transcended to the investment performance of the private sector. In addition, investors also respond inversely to the cost of investment (as determined by domestic interest rates and tax policy) and expectations.

Figure 8. Real Gross Domestic Product and Investment (in billion pesos), Philippines, 1946 – 2008 (1985 = 100).



Source: National Income Accounts, NSCB (2009)

Figure 9. Real Investments as a Proportion of GDP, Philippines, 1946 – 2008.



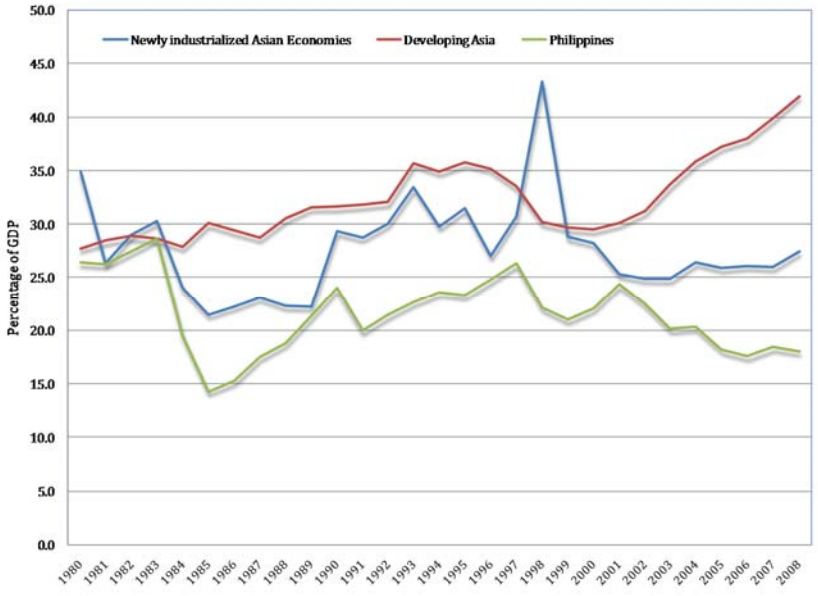
Source: National Income Accounts, NSCB (2009)

However, according to Diokno (2005), investors see the country as poorly governed and a "high-risk' investment destination. This might partly explain why investments in the country remained low, if not declining.

Comparing the investment performance of the Philippines with the newly industrialized Asian economies (the Asian Tigers) and the rest of the developing countries in Asia (see Figure 10), the trend is similar to the earlier savings pattern. Average investment effort in the country from 1980 to 2008 (about 21 percent of GDP) is lower than what was achieved by the Asian Tigers (28 percent) and the rest of the developing countries in Asia (32 percent).

With the apparent lack of domestic savings to finance investment, the foreign capital market can be an alternative source of investment finance or investments in general. However, according to Edmonds and Fujimora (2005), Philippine efforts to propel the country's economy forward by attracting foreign direct investment (FDI) face the globalizing world's harsh reality that it must compete against other developing economies in Asia (most notably China) and worldwide. In this regard, the authors furthered that the Philippines seems to be losing production bases to China and Thailand, among others. Industrial parks constructed in southern Luzon (Laguna, Cavite, and Batangas) to attract foreign manufactures are reportedly not filling available facilities as quickly as the government hoped despite tax incentives and other government concessions given to investors. Industrialists cite less than satisfactory transport infrastructures and broader problems stemming from poor governance as premier reasons for not locating in the aforementioned areas [Edmonds and Fujimora (2005)].

Figure 10. Comparative Real Investments as a Proportion of GDP of the Philippines, Newly Industrialized Asian Economies, and Developing Asia, 1980 – 2008.



Source: National Income Accounts, NSCB (2009)

IV. Is The Philippines Ready?

Is the Country Saving and Investing Enough?

In the work of Guest and McDonald (2004), a socially optimal national savings rate was introduced given a demographic transition. The authors estimated the socially optimal national savings rate using the Ramsey Model of optimal savings model. Maximizing the social welfare function implies that consumption is smoothed; consumption per person grows at a fairly constant rate and the optimal proportion of GDP saved is influenced by prospective demographic change.

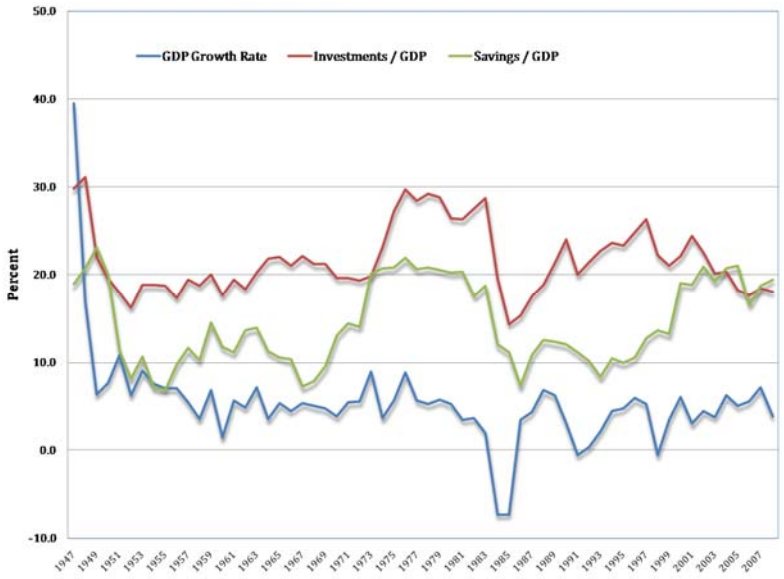
With the "window of opportunity" opening up for the Philippines in the next 40 years, the optimal plan is to reduce current consumption levels with a high savings rate. Guest and McDonald (2004) estimated the range 27% to 33% of GDP as the socially optimal national savings rate for the Philippines. Comparing these figures with the trend in national savings (see Figures 4 and 5); the historical trend is below the socially optimal range. Deviation from the socially optimal and declining trend in savings is being expected from the Philippines until 2018 due to its expanding population base (Guest and McDonald, 2004).

Relative to the miracle economies of Asia that have gone or are going through their demographic transition such as Malaysia, Hong Kong, Singapore, South Korea, and Taiwan, their actual national savings rate exceeded their respective socially optimal levels. Guest and McDonald (2004) even recommended that some of them should "*dissave*", a condition that is already being practiced in the country even if not advised to do so.

The above discussions warrant the underlying reasons why the Philippines has not been accumulating the optimal value of savings. First, Nam (1989) reported that the major factor responsible for the large swings in the aggregate savings ratio in the Philippines and South Korea was the changes in growth performance. The household savings-income ratio for the two countries has been significantly dependent not only on the growth rate of income but also on the income level.

In Figure 11, one can see that savings and investment performance of the Philippines has been tracking the cycle of GDP growth. If the Philippines were to continue to sustain its boom-bust cycle of economic growth as it enters the demographic transition, the country might find it increasingly difficult to accumulate the optimal savings and investments.

Figure 11. Real GDP Growth Rate and the Savings and Investment Trends of the Philippines, 1946 - 2008.



Source: National Income Accounts, NSO, 2009.

Second, Mapa and Briones (2009) and Mapa, Bersales, and Briones (2008), using savings data from FIES, forwarded that population dynamics played an important role in determining the savings rate. Particularly, rapid population growth and a population distribution that has a big bulge in the lower portion resulted in a higher percentage of young dependents relative to the support group. The slow demographic transition of the Philippines contributed to the low savings rate of households.

Third, Giovannini (1985) and Fry (1986) found that foreign savings had a significant negative impact on national saving. The macroeconomic identity presented in the saving-investment section suggests that any deficit in the national savings to finance investment is shouldered by foreign savings. It appears that for the Philippines, the transfer component of foreign savings has most likely substituted for domestic savings. The availability of foreign capital may have exerted a significant effect on corporate and government spending policy. Consequently, tapping foreign capital market further reduces savings and limits the investments since borrowed foreign capital would have to be repaid. Philippine debt servicing policies continue to figure prominently into the national government budget. The debt servicing average is about 35% of total government expenditures and about the same size as the spending on social services.

Is the Public Sector Preparing?

The preparation of the public sector or the government to exploit potential demographic dividends can be deduced from its expenditure performance. Public expenditure may be regarded as the relative effort of the government that is directed towards preparing the people, critical support institutions and infrastructure for the future while providing for the consumption and other needs of the current generation. Total government expenditure has been contracting from 2001 to 2008 (see Table 2). What is even more alarming from such a trend is that the contraction comes from the economic and social services. This spending

pattern is not in favor of serving an expanding population and is insensitive to the needs of a country undergoing demographic transition.

With the proportion of youth to population reaching above 30% until about 2020, their potential contributions to economic growth through productive employment, asset creation and investment will be abridged if they do not have the optimal level of human capital. As forewarned by ADB (2008), developing Asian countries may fail to reap the demographic dividend if they do not invest in education and training systems to make the population more relevant to the demands of their rapidly modernizing economies.

Table 2. Total Government Expenditures as a Proportion of Real GDP, 2001 – 2008.

PARTICULARS	**YEAR**							
	2001	**2002**	**2003**	**2004**	**2005**	**2006**	**2007**	**2008**
Economic Services	**4.26**	**4.01**	**3.76**	**3.20**	**3.21**	**3.27**	**4.41**	**4.03**
Agriculture & Agrarian Reform	0.84	0.73	0.67	0.52	0.73	0.46	0.90	0.58
Natural Resources & Environment	0.21	0.21	0.19	0.14	0.13	0.13	0.14	0.14
Trade and Industry	0.08	0.08	0.07	0.06	0.06	0.05	0.09	0.06
Power and Energy	0.05	0.03	0.05	0.04	0.03	0.04	0.09	0.07
Water Resources, Development & Flood Control	0.20	0.16	0.16	0.13	0.12	0.14	0.21	0.18
Communications, Roads and Other Transport	1.68	1.42	1.32	1.13	1.06	1.19	1.90	1.63
Others	1.21	1.38	1.30	1.19	1.07	1.27	1.08	1.37
Social Services	**5.84**	**5.88**	**5.52**	**5.10**	**4.72**	**4.87**	**4.82**	**5.09**
Education, Culture and Manpower Development	3.19	3.21	3.01	2.74	2.42	2.43	2.52	2.51
Health	0.35	0.36	0.32	0.27	0.26	0.22	0.27	0.39
Social Security, Welfare and Employment	0.96	0.85	0.78	0.79	0.85	0.97	0.78	0.94
Housing and Community Development	0.05	0.05	0.04	0.05	0.06	0.05	0.12	0.07
Others	1.29	1.42	1.36	1.25	1.13	1.20	1.12	1.18
Defense	0.98	1.04	0.94	0.90	0.88	0.87	0.94	0.82
General Public Services	3.30	3.24	3.11	2.83	3.12	2.68	3.04	2.79
Net Lending	0.11	0.19	0.13	0.11	0.03	0.14	0.15	0.16
Debt Service (Interest)	4.76	4.77	5.17	5.59	5.53	5.64	4.03	3.64
Total	**19.25**	**19.14**	**18.63**	**17.73**	**17.49**	**17.46**	**17.38**	**16.53**

Source: DBM (2008)

Government spending on education and manpower development has been declining (see Table 2). As the economy and population expands, underinvestment in education constrains the country from boosting the relevance and quality of public school curricula, providing support for vocational training, helping kick-start job schemes that impart useful skills and in improving the higher education systems, which, according to ADB (2008), are critical ingredients to redeem demographic dividends. On the other hand, the account of public health expenditures is even more depressing; national government spending on health remained below 1 percent of GDP. The apparent public under-investment in human capital (health and education) suggests that the country might find it relatively difficult as it goes through demographic

transition to increase the labor productivity of the future support group (first dividend) and to accumulate savings for old age (second dividend).

A Missing Critical Tool?

Population growth pessimists have long pointed out the negative consequences of fast growing population to socio-economic growth and development. Several studies have already pointed out a significant negative correlation of income growth and fertility. Todaro and Smith (2003) also argued that rapid population growth promotes varying problems in a country. Fast growing population creates an increase in the numbers of the dependent populations and the government must foresee and allocate its constrained budget in terms of at least providing basic social services. Demographers and economists in the Philippines have long pointed out that achieving a slower rate of population growth should be an explicit development objective of the country (e.g. Mapa and Briones, 2009). With the imminent change in the population structure and the potential of demographic dividends to conjure economic growth for the Philippines, it is high time for the government to realize this and take a strong stance in instituting strong population growth control policy amidst strong efforts from different stakeholders to dilute the government's population programs.

V. Concluding Remark

Mason (2004) pointed out that high savings and investments and the policies that induce them are critical to harnessing demographic dividends, alongside having a strong human resource base and success in employment growth. Given the discussions above, the capacity of the Philippines to exploit this once in a lifetime opportunity appears to be weakened by the low savings and investments relative to its optimal levels as well as the levels achieved by the Asian Tigers.

Timing is critical for harnessing the demographic dividend. Lundberg (2007) said that countries like China, Brazil, and Vietnam have "missed the demographic window of opportunity," as the relative numbers of youth are now decreasing and dependency ratios are increasing. However, for the Philippines, the window is still open. The time and opportunity to save and invest, particularly on youth, is still unprecedented, but it must be done soon and radically. Maintaining the status quo for the coming critical period will improve the chances of the Philippines in missing the window of opportunity.

The opportunities associated with the demographic transition are real and can provide stimulus for additional income growth and national development through the demographic dividend. The imperative actions to make it work for the country must not be overlooked.

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