

Economic outcomes of international public relations:

A time-series analysis at the country level

by

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DEDICATION

*“So do not fear, for I am with you;
do not be dismayed, for I am your God.
I will strengthen you and help you;
I will uphold you with my righteous right hand.”*

(Isiah 41:10)

This thesis is dedicated to my God, who always guides me to the path of righteousness. I would like to thank my wife, Miyeun, who has devoted hours taking care of our precious daughter, Irene. I am also grateful for my daughter's good health. I offer my love to my parents and my mother-in-law who have always been patient and encouraging throughout my journey.

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ABSTRACT

This study examines the causal relationship between international public relations expenditure and its economic returns at the country level. In order to overcome the limitations of previous studies that have attempted to quantify the outcomes of public relations efforts and investments using correlations, this study conducted a more rigorous causality test by measuring the relationship between data series using time-series analysis.

International public relations expenditure data were collected from the semi-annual reports of the Foreign Agency Registration Act (FARA), from 1996 to 2009. The economic outcomes analyzed include US imports from the client countries and US foreign direct investment toward the client countries. Four countries (Japan, Colombia, Belgium, and the Philippines) were selected to constitute the sample. Based on the results of the unit-root test and the co-integration test, the relationship was analyzed using three models of the Granger causality test: (1) the simple Autoregressive Distributed Lag Model, (2) the Vector Error Correction Model, and (3) the Toda and Yamamoto version of the Granger non-causality test.

The results show that past public relations expenditure holds power in forecasting the economic outcomes for Japan, Belgium, and the Philippines. This was not the case, however, for Colombia, whose historically strong economic and cultural ties with the US may have shifted the direction of causation from economic outcome to PR expenditure.

CHAPTER 1

INTRODUCTION

The United States government archives its international public relations contracts with foreign clients as part of the Foreign Agency Registration Act (FARA) enacted in 1938.¹ According to the US Department of Justice, “FARA is a disclosure statute that requires persons acting as agents of foreign principals in a political or quasi-political capacity to make periodic public disclosure of their relationship with the foreign principal, as well as activities, receipts and disbursements in support of those activities” (n.d., para. 1).

In 2010, FARA records show that there were 378 active public relations contracts with 557 foreign clients from 137 countries. From 1997 to 2003, 661 foreign clients from 150 countries spent US\$4.2 million dollars on average for public relations purposes in the US (Lee, 2006; Lee & Yoon, 2010). Foreign clients enter into these contracts to attract American tourists, to encourage US consumers to buy their products, and to draw American investments into their home countries (Lee & Yoon, 2010; Wang, 2006). Do these investments in international public relations in a target country (such as the US) generate tangible economic outcomes?

¹ The FARA Registration Unit of the Counterespionage Section (CES) of the National Security Division (NSD), US Department of Justice, is responsible for the administration and enforcement of the Act.

Scholars have long been interested in the bottom line effect of public relations, but the outcomes of such efforts are, by nature, intangible and difficult to measure in dollar terms. The demand for more concrete evidence for the contribution of public relations to organizations and nations becomes even more pronounced during periods of economic downturn when organizations and nations are in search of all means to reduce cost. Grunig, Grunig and Ehling (1992) argue that no matter the bottom line, public relations do contribute to organizational goals in two important ways: “First, it helps the organization to enact an environment...[that] constrains or enhances its ability to meet its goals. Second, [it] can increase effectiveness if it develops communication programs that build quality relationships with strategic publics” (pp. 84-85). Ehling (1992) showed that through cost-benefit analyses, public relations’ contribution in attaining, maintaining, or enhancing accord between an organization and its environment can be examined.

Largely due to methodological difficulties, only a few studies have so far offered empirical evidence of the economic results and benefits of PR efforts (Ehling, 1992). Kim (2000) tested several models from advertising and found a positive relationship between an organization’s reputation and its revenue. Similarly, Kim (2001) found a positive association between public relations expenditures and revenue as mediated by company reputation. Lee and Yoon (2010) tested the bottom line effect of international public relations at the country level and found that the number of PR contracts in the US is positively related to American direct investments in a client’s host country, the number of in-bound US tourists, and the volume of US imports.

Time is always critical in ascertaining communication effects. PR scholars have long assumed that public relations effects are long-term rather than short-term (Dozier & Ehling, 1992; Grunig et al., 1992; Signitzer & Coombs, 1992). The limited numbers of studies (e.g., Lee & Yoon, 2010) that have attempted to examine the economic returns of PR efforts based on cross-sectional data have reported limited ability in establishing causality and causal order. Despite such recognition, few have attempted to test the economic outcome of public relations over time. This study aims to fill this research gap by applying time-series analysis in determining the economic consequences of PR efforts.

CHAPTER 2

LITERATURE REVIEW

This study adopts a longitudinal perspective to examine the economic returns of PR efforts by employing a time-series analysis. Such an analysis is grounded on the recognition of the main functions of international public relations and how returns on investments in PR have been measured.

International public relations and public diplomacy

Today, countries are so interconnected that a single event in one part of the world influences events in other countries throughout the globe in some kind of a domino effect. For example, the economic crisis in Greece had profound repercussions not just in Europe, but also in the US. The world closely monitored the recent pro-democracy movements in Egypt, Tunisia, and Libya because instabilities in the Middle East and North Africa are not confined in those regions, but may have an impact on other parts of the world. It is generally acknowledged that international events (e.g., oil price hikes) affect domestic politics and the local economy. Golan, Johnson, and Wanta (2010) describe this phenomenon as the “falling of barriers” due mainly to advances in communication technology. Today, people, goods, and information easily cross national boundaries, affecting national policies and priorities. A government’s diplomatic initiatives tend to show influences beyond that of the target country (Graffy, 2009; Kunczik, 1997; Manheim & Albritton, 1984; Signitzer & Coombs, 1992). Because of the global ramifications of individual discrete events, communication strategists are now focusing on communication effects that transcend national borders.

Thus, public relations studies have increasingly considered the foreign publics, including foreign governments, as target audiences (e.g., Signitzer & Coombs, 1992; Grunig, 1993; Sriramesh & Vercic, 2003; Botan & Hazleton, 2006; Grunig, Grunig & Dozier, 2006). Such a focus calls for PR practitioners with multicultural and global perspectives, able to understand the intricacies of globalization and economic interdependencies (Sriramesh & Vercic, 2003).

The skills globalization demands have spawned two approaches in international communication studies that are differentiated by their underlying theoretical bases—public diplomacy and international public relations. According to Signitzer and Coombs (1992), public diplomacy is largely based on theories in political science and international relations, whereas international PR capitalizes on the theories of public relations and communication. People tend to equate international public relations with multinational corporations' strategies to gain favorable evaluations by foreign publics, while public diplomacy is often seen as synonymous with governments' diplomatic strategies (Signitzer & Coombs, 1992). Public diplomacy and international public relations both aim to influence public opinion for the benefit of clients, regardless of whether the client is a government or an organization, state or non-state (Signitzer & Coombs, 1992; Kunczik, 2003). An examination of the theoretical foundations of both approaches reveals similarities.

Some political scientists admit they have somehow overlooked the influence of domestic politics in international relations. This factor seems to play a minor role in their most popular theoretical formulations with respect to bilateral and multilateral relations.

One of the dominant international relations theories, neo-realism, assumes that the main goal of the state is self-preservation (Mearsheimer, 2001). States strive to do so through internal efforts (which often entails increasing economic and military strength), and by external efforts (which often entails strengthening their alliances or weakening the influence of those opposes them) (Waltz, 1979). Neo-realists equate economic surplus with resources to improve military capability (Keohane, 1986; Mearsheimer, 2001).

Institutionalism, also called neo-liberalism, is another dominant theory, which argues that states, as rational actors, can cooperate through institutions. Such a strategy reduces the cost of uncertainty, allowing states to get the “absolute gain” (Keohane & Martin, 1995; Oye, 1985). According to neo-liberalists, the need to cooperate is based on a payoff structure they call the “chicken run” and “stag-hunt” models² (Oye, 1985). In short, neo-liberalists evaluate state behavior based on economic returns, while neo-realists do so based on security concerns. Thus, both schools of thought in international relations focus on the so-called “hard power” (Nye, 2004) the primarily interest of which is material gains.

Recently, international relations scholars have started to examine the role of non-state (and often transnational) actors (e.g., Nye, 1999; Nye & Keohane, 1971) and domestic political coalitions (e.g., Gourevitch, 1978) in deploying what is now known as

² The chicken run and stag-hunt pay off matrices shown below illustrate why states tend to cooperate rather than work against each other.

	Cooperate	Defect
Cooperate	3, 3	-1, 4
Defect	4, -1	- ¥, - ¥

Pay off matrix for chicken run

	Cooperate	Defect
Cooperate	2, 2	0, 1
Defect	1, 0	1, 1

Pay off matrix for stag-hunt

“soft power.” Nye (2004) defines soft power as the ability to get “others to want the outcomes you want by co-opting target countries rather than coercing them” (p. 5). It suggests that states’ behavior or policy can be changed not by force, but by persuasion (Kunczik, 1997; Signitzer & Coombs, 1992). According to Nye (2004), soft power primarily depends on three resources: (1) culture, (2) political values, and (3) foreign policies.

Public diplomacy and international public relations both attempt to build a positive image of the home country or other clients among foreign publics. Zhang and Swartz (2009) see public diplomacy as involving the following activities: (1) cultivating a positive image, (2) promoting mutual understanding, (3) advocacy of national interests, and (4) promoting the global public good by, for example, championing global norms and ethics. Signitzer and Coombs (1992) and Signitzer and Wamser (2006) divide public diplomacy strategies into two areas: (1) political information, which refers to political advocacy, and (2) cultural communication, which has the goal of developing mutual understanding between a home country and its foreign publics, including the target government. “The essence of diplomatic activities has always been to develop and cultivate favorable perceptions and attitudes between the involved countries” (Wang & Chang, 2004, p. 13). Based on this, public diplomacy can be defined as communication among countries mediated not only by diplomats but also by image, reputation, culture, notions of the public good, and media portrayals, among others.

Similar to public diplomacy, country-level public relations studies also have investigated the relationship between public relations investment and national reputation.

Manheim and Albritton (1984) argue that a common purpose of international public relations efforts in the US is to improve the client nation's coverage and portrayal in the US media. Lippmann (1922) was perhaps one of the first to assert that the media are among the most powerful information sources that can shape people's perceptions of issues, objects and events; hence, by extension, the valence of media reports about a client country can have a bearing on the country's reputation. Thus, international public relations scholars have analyzed changes in news coverage resulting from PR efforts. These studies reveal that PR efforts positively influence the valence of coverage as well as the visibility of a country in the target nation's media (Lee, 2006; Manheim & Albritton, 1984).

Manheim and Albritton (1984), conducting a time-series analysis, confirmed that the number and valence of articles published in the *New York Times* over time is associated with having a public relations contract in the US. The authors found that the signing or rejection of a contract affected both the visibility of the client country and the valence of news articles published about that client country. This happened for Indonesia whose contract moved national visibility ($\beta = .09$) and valence ($\beta = 12.95$) in a positive direction. On the other hand, the rejection of a contract negatively affected Mexico's visibility ($\beta = 6.11$) and valence ($\beta = -3.87$) in the American press. Similarly, Lee (2007) found a positive relationship between the number of public relations contracts and the amount of news coverage after controlling for multiple national traits and social significance predictors affecting news coverage.

In summary, public diplomacy and public relations attempt to cultivate better relationships between and among countries through image management. These two approaches, therefore, supplement each other (Grunig, 1993; Signitzer & Coombs, 1992). According to Signitzer and Coombs (1992), “nation-states pushing foreign policy is not the same as a multi-national corporations peddling an image” (p. 145). Therefore, international public relations involve managing soft power toward a foreign country, which is a function of governments and corporations.

Although it has been shown that investments in international public relations positively influence news coverage about a foreign client, “it is questionable whether members of strategic publics expose themselves to the information or are merely affected by it” (Grunig, 1993, p. 155). It is therefore pertinent to ask: What exactly are the tangible results of international public relations?

Returns on investments in international public relations

Scholars have argued that PR influences the organization’s bottom line, which translates to making or saving money, by building and maintaining positive relationships with its publics (Broom, Casey & Ritchey, 1997; Campbell, 1993; Grunig et al., 1992; Grunig et al., 2006; Haywood, 2005; Hon, 1997; Kim, 2000 & 2001). Building good relationships helps an organization attain its goals (Broom et al., 1997; Grunig et al., 1992; Grunig et al., 2006). The impact on the bottom line has already been identified. PR helps make money by establishing positive attitudes among investors, shareholders, and customers (Dozier & Ehling, 1992; Grunig et al., 1992; Grunig et al., 2006; Haywood, 2005). PR helps save money by deflecting pressure from activist groups, government

regulations, litigation, and consumer boycotts and other negative reactions (Grunig et al., 1992; Grunig et al., 2006; Hon, 1997). There are, of course, other returns on public relations investments (ROI), that have been measured in different ways.

Grunig (2006) and Hon (1997) observe that the returns to PR efforts are often based on intangible factors, such as attitudes, reputation, brand image, corporate or state identity and intention. For example, Dozier and Ehling (1992) say that the effectiveness of public relations can be measured in terms of the reduction of disagreement between organizations and their publics. This echoes Haywood (2005), who suggested changes in public attitudes toward a company and/or issues as indicative of PR effectiveness. Reduced disagreements and more favorable public attitudes may affect the bottom line, but these are insufficient to show tangible PR outcomes.

To assist in this task, how the adjacent fields of advertising and marketing define ROI was examined. Advertising and marketing specialists measure ROI in terms of sales, profits, and shareholder value (Danaher & Rust, 1996; Young & Aitken, 2007; Rust et al., 2004a; Rust, Lemon & Zeithaml, 2004b) because corporations always want to confirm that marketing actions resulted in financial gain (Rust et al., 2004b). Marketing studies also measure ROI in terms of the efficiency of the marketing budget (Young & Aitken, 2007; Rust et al., 2004a), noting the importance of being able to distinguish between short-term from long-term efficiency. The rationale is that short-term effectiveness may damage long-term returns. Marketing experts refer to short-term results as those achieved within six to eight weeks, medium-term results are those observed in two to twelve months, and long term results are typically seen over 12

months (Young & Aitken, 2007). ROI is also measured in marketing circles as returns on marketing assets such as brand equity and customer equity, market position or market share, and profitability (Rust et al., 2004a). In short, the advertising and marketing fields consider intangible and tangible outcomes when measuring ROI.

Although public relations primarily aim to generate better relationships with various publics, scholars also think that PR efforts affect the bottom line, and there is growing evidence to support this contention. David, Kline and Dai (2005) found a positive relationship between corporate social responsibility and purchase intention. Because purchase intention determines actual purchase, the authors claim that organizational reputation increased sales. Studies also have shown a positive relationship between PR investments and some economic outcomes (David et al., 2005; Grunig et al., 2006; Haywood, 2005; Hutton et al., 2001; Pratt, 2006; Stacks & Watson, 2007). For example, Hauss (1993) observes that PR efforts affected media coverage of products and services that, in turn, generated inquiries and improved actual sales. Kim (2000) and Kim (2001) found a positive association between PR expenditure and revenue changes mediated by positive reputation.

This empirical support notwithstanding, executives and managers remain unconvinced about the bottom line economic impacts of public relations (Campbell, 1993; Hon, 2007). Dozier and Ehling (1992) found that organizations often perform PR functions without any apparent purpose. Because PR is often a part of corporate capital expenditures (Gordon & Iyengar, 1996), more solid evidence is necessary to demonstrate

the economic benefits resulting from PR investments. To address this need, the present study focuses on actual economic outcomes.

Hon (1997) says that the impact of public relations may be observed in four levels: (1) individual, (2) program, (3) organizational, and (4) societal. Effects at the individual level deal with how PR performance satisfies practitioners and/or CEOs. Program level effects are concerned with whether the PR program is relevant to the attainment of corporate goals and whether the program does so in a cost-efficient manner. Organizational level effectiveness looks at the program's contribution to general organizational goals. Societal level effects cover the role of public relations in the broader society, such as the degree to which PR fosters democratic decision-making. The effects of international public relations efforts are not subsumed in this typology.

Gourevitch (1978) and Signitzer and Wamser (2006) explain that domestic coalition patterns affect a state's action in the international arena, which suggests that government and non-government organizations and corporations can affect foreign policy. Thus, contemporary international relations address not only the relationship between countries, but also the relationship between organizations and domestic as well as foreign governments. In short, the scope of corporate level public relations is no longer limited within the domestic sphere.³ Thus, the current study examines the ROI in international public relations efforts at the country level, which includes the activities of both government and private organizations.

³ Linking public relations with public diplomacy, Signitzer and Wamser (2006) assert that a holistic approach is required in studies of international PR effects. This approach considers the distinct and combined contributions of organizations and governments in global public diplomacy..

The growing attention paid to international PR can be attributed to the increasing recognition of its contribution to “the building of coalitions and alliances, the achievement of international political objectives, the need to influence perceptions and purchase decisions, and attract foreign investment or in-bound tourism” (Wang, 2006, p. 92). Indeed, scholars have asserted a positive relationship between international PR investments and national reputation (Kunczik, 1997, 2002 & 2003; Manheim & Albritton, 1984; Sriramesh & Vercic, 2003; Taylor & Kent, 2006; Wang, 2006; Wang & Chang, 2004). As in the case of corporations, however, countries are finding it difficult to attach specific economic outcomes to national PR outlays. Lee and Yoon (2010) are among the few who found such a relationship by considering the number and dollar value of US public relations contracts with 97 foreign countries as measures of international PR investments in the US. The results showed that the number of public relations contracts was positively related to the number of US tourists ($\beta = .51$) visiting the client country, the amount of US imports ($\beta = .49$), and US direct investments ($\beta = .17$) after controlling for the economic size (GDP) of the client country.

This study seeks to determine the economic returns on international PR at the country level, which includes the contributions of governments and corporations in the investment portfolio. Considering the foregoing literature, this study asks:

RQ1: To what extent do investments in international public relations efforts produce economic outcomes?

The lagged effect of international public relations

Scholars have argued for the possibility of a time lag between people's exposure to a message and the behaviors or actions they take as a result of that exposure. In advertising, such actions may include repetitive purchase of products and services. Dozier and Ehling (1992) assert that public relations' effect on behavior is preceded by a sequence of knowledge and attitude changes in some kind of a hierarchical fashion. That is, some "lower level criteria are easier to achieve than higher level criteria such as getting people to engage in and repeat desired behaviors" (p. 168). This observation suggests a time lag between the initiation of public relations activities and when the desired outcomes are detected.

Economists have already examined the lagged effect of some factors or causes. Fisher (1925), for example, explains that profits tend to increase when producers face higher production costs. This is because total current expenditures also include expenses incurred before the prices went up. Profits are defined as "the excess of receipts over expenses" (Fisher, 1925, p. 180); lesser expenses at an earlier point in time tend to generate larger differences between receipts and expenses compared to those in the current period. These lags in expenses, therefore, are distributed over time. According to Nerlove (1958), "any economic cause (e.g., a price change or an income change) produces its effect on, for example, the demand for goods...which is not only felt all at once at a single point of time, but is distributed over a period of time" (p. 306).

In marketing studies, the lagged effect⁴ has been shown to be an indicator of changes in the current time period (Guo, Kumar & Jiraporn, 2004; Young & Aitken, 2007). Guo et al. (2004) found that the indicator for lagged satisfaction⁵ has a positive relationship with current satisfaction, and lagged sales is positively related to current sales. They also found that a company's ability to satisfy customers in the past positively affects current returns on assets. Their findings point to the possibility of lagged effects in investment returns.

The concept of distributed lags is also detected in advertising studies. Jastram (1955) maintains that "the effect of a given advertising expenditure on sales revenue is distributed over time" (p. 36). Based on the concept of distributed lags, Jastram introduced the idea of "cumulative effect." In his study, the effect of an advertising expenditure on sales revenue at a given time point accumulates or is combined with the current expenditure's effect on current sales and the previous expenditure's lagged effect on current sales. Figure 1 shows these hypothesized lagged effect as well as cumulative effect. In this figure, the vertical axis indicates sales changes. The effect of each intervention continues to three time points, and each lagged effect is decreased from 4 to 3, and to 1. At time point 2, intervention 2 produces a change in sales whose effects can be seen until time point 4. Thus the sales changes at time point 2 is 7. Similarly, the sales changes at time point 3 is 8, representing the sum of the current effect of intervention 3, the lag 1 effect of intervention 2, and the lag 2 effect of intervention 1.

⁴ The lagged effect can defined as the impact of the previous time point's intervention on the succeeding time point's result.

⁵ Guo et al. (2004) designated lagged satisfaction as the preceding time points' satisfaction.

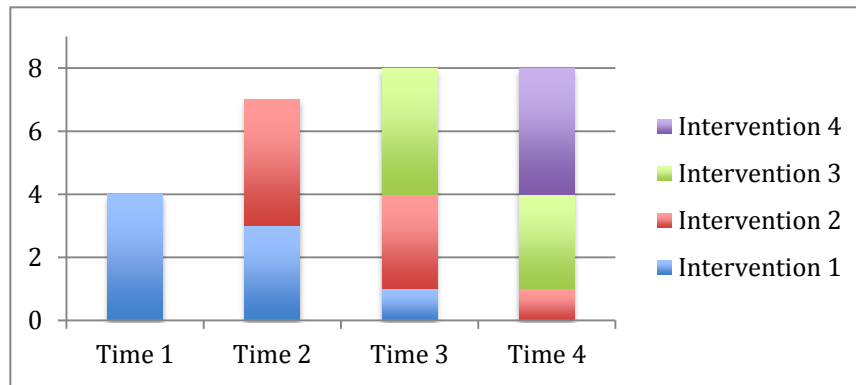


Figure 1. The cumulative and distributed lag effect of advertising expenditure on sales figures over time (adapted from Jastram, 1955)

Researchers who examine such cumulative lagged effects attempt to determine (1) how long the current expenditure's effects are lagged, (2) to what extent the current expenditure affects current results, and (3) to what extent the current expenditure influences each lag. Palda (1965) tested various advertising models to find the one that best predicts product sales in the case of the Lydia E. Pinkham Company from 1907 to 1960. He found that Koyck's model, which includes the effects of distributed lags, gave the most accurate predictions. This finding indicates that lagged effects can explain the relationship between advertising expenditure and sales.

However, lagged effects in public relations may be explained differently from those found in marketing and advertising. If the effect of expenditure is lagged and cumulated, significant changes in outcome may be detected after a certain period of time. Theoretically, there is a time difference between the initiation or implementation of PR activities and public behavior changes because the latter should be often preceded by changes in audience members' knowledge and attitude following the conventional

hierarchy of mass communication effects (Dozier & Ehling, 1992). As it is argued above, differently from other fields such as advertising and marketing, which can detect actual variation in sales immediately, public relations can detect its significant changes in economic return relatively long after its investment is introduced (Dozier & Ehling, 1992). Thus, it is more appropriate for PR studies to predict how long it takes to show significant outcomes or changes after the public relations investment. This study focuses on the lag-difference between a public relations initiative and its economic outcomes. Here, the actual time point that shows significantly different outcomes is also considered an indicator of the lagged effect.

Tull (1965) constructed and tested a repeat purchase model to show the existence of the lagged effect (Figure 2). The model is a function of the surviving rate of buyers and the actual purchase rate of repeat buyers attributable to the advertising expenditure. He initially increased advertising expenditure at regular intervals up to a certain point in time (Time 6); then he gradually decreased expenditure until it dropped to zero. The resulting sales figures are shown in Figure 2.

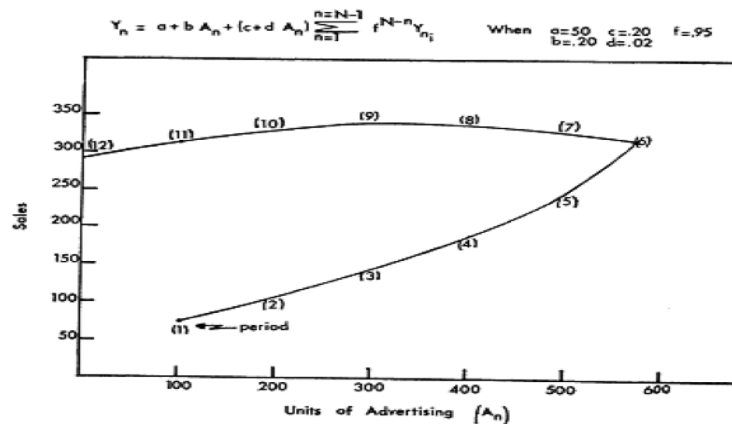


Figure 2. Tull's (1965) repeat purchase model

As Figure 2 shows, sales increased with advertising expenditure, suggesting a time-difference between investment and tangible outcome. This study, however, fails to account for changes in knowledge and attitude. Nonetheless, the results of the model's application indicate that "advertising impressions may cumulate over time to build up brand awareness and finally to persuade the buyer to purchase the brand" (p. 53).

This study examines variations in the economic effects of international public relations efforts over time. It attempts to detect lagged effects and the lag-difference to provide evidence for the economic returns to international public relations investments.

This study asks:

RQ2: To what extent do lag-differences appear in the economic returns to international public relations investments?

CHAPTER 3

METHODS

The purpose of this study is to analyze the economic outcomes of international public relations investments. To answer the research questions, secondary data from a number of government sources will be re-analyzed.

Measures of international public relations investment

As explained on the introduction, the FARA report is a unique record maintained by the US government. The US is a target country in this study. Because the Department of Justice's data values contained in the FARA report cannot satisfy the assumption of homoscedasticity, or values that are scattered, or spread out, to about the same extent, an arbitrary sampling method was necessary. This study selected four countries based on the mean dollar value of public relations expenditure and GDP per capita. The second annual FARA reports for 1996, 2002, and 2009 were selected to calculate the mean dollar value of public relations expenditure for 189 countries. Countries with mean PR expenditure value under \$30,000 were eliminated because they can produce a low variance in the time-series model. After the elimination, 74 countries were remained. The remaining countries were assigned to either the high or the low expenditure group based on the computed mean dollar value. Among the 74 countries, the median was Angola and the \$1,789,507.74 was the calculated mean dollar value. Above the median were assigned to high expenditure group and below the median were assigned to low expenditure group.

The GDP per capita was considered to determine the possible effect of economic size on the economic relationship between countries. GDP per capita figures in 2011 were obtained from the World Bank, which shows that among countries belonging to the Organization for Economic Cooperation and Development (OECD), the standard was \$42,220. Two countries were selected from the high income group, and another two countries were selected from the upper middle (\$7,325) to lower middle income (\$1,882) group.

The countries analyzed are listed in Table 1. Japan was selected to represent the high public relations expenditure and high GDP per capita group. Colombia was selected to represent the high public relations expenditure and low GDP per capita group. Belgium was selected to represent the low public relations expenditure and high GDP per capita group. The Philippines was selected to represent the low public relations expenditure and low GDP per capita group.

Table 1.

The client countries analyzed based on their public relations expenditure in the US and GDP per capita

Country	PR expenditure		GDP per capita (2011)	
	Rank	Mean (US thousand dollars)	Rank	GDP per capita (US dollar)
Japan	1	81,053	19	45,902.67
Colombia	15	6,399	79	7,104.03
Belgium	53	698	17	46,662.53
Philippines	49	803	128	2,369.52

The unit of analysis of the present study is four countries' semi-annually reported PR expenditure in dollar amount, which is reported to the FARA archive. This study analyzed the data from 1996 to 2009, and the total time points were 28.

Measures of economic outcomes

There are two dimensions of economic outcomes, which are the study's dependent variables. These are (1) imports from the client country, and (2) foreign direct investments to the client country.

Imports from the client country are collected from foreign trade data available from the US Census Bureau. These data, which include government and non-government shipments of goods, were collected from the documents of the US Customs and Border Protection Agency of the Department of Homeland Security. The dataset "reflects the total arrivals of merchandise from foreign countries that immediately enters the consumption channels, warehouses, or Foreign Trade Zones" (US Census Bureau, 2012). Although these datasets contain reporting and data capture errors, these errors can be treated as random (US Census Bureau, 2012). This study collected data that the US imports data were collected for the four countries selected for analysis: Japan, Colombia, Belgium, and the Philippines.

Foreign direct investment data were collected from the Bureau of Economic Analysis of the US Department of Commerce. These quarterly collected data measured financial outflows resulting from transactions and positions between US parent companies and their foreign affiliates. They were measured positively by increases in US assets or decreases in US liabilities. Otherwise, they were measured as a negative

number by the decreases in US assets or increases in US liabilities (US Department of Commerce, 2012).

Foreign affiliates are enterprises located in a foreign country in which the US controls 10% or more of the voting stock. Thus, this is a valid measure of economic outcome because growth in the number of foreign affiliates is related to the growth of local business. Indeed, a number of studies (e.g., Magnus & Fosu, 2008; Majagaiya & Gu, 2010) have found that foreign direct investment produces economic growth.

To analyze the causal relationship between PR expenditure and the US imports, all data series were transformed by natural logarithm. In this study, LPR stands for a client country's public relations expenditure in the US (in US\$); LIMP stands for US imports from a client country (in US\$). To analyze the causal relationship between PR expenditure and foreign direct investment, the data series were not transformed. The notation PR represents the public relations expenditure of a client country in the US; FDI stands for US direct investments in a client country.

Treatment of missing values

The FARA reports contain considerable missing data, especially those related to the contracts' dollar value, which specifies PR expenditures. As such, deleting these missing data from the dataset biases the results. According to Cohen et al. (2003), the method for handling missing values should be chosen based on the extent of the missing values problem, and sample size, among other factors.

To handle the missing values for public relations expenditure, this study used the mean substitution method and the multiple imputation (MI) method. Two steps were

taken to create the data matrix. The first step was to estimate a single contract's missing dollar amount in order to get all the dollar amount of the contracts for every six-month period. The second step was to estimate the missing values after the data matrix has been constructed.

The semi-annual FARA data usually provide the dollar amount of the public relations contracts per country. The total dollar amount of all public relations contracts per country for each six-month period was computed. A few contracts, however, did not report its dollar amount. For example, Country A may have 15 public relations contracts during the first six months of 2001. Among these 15 contracts, only 13 provided the dollar amount. The mean value of the other 13 contracts was then used to substitute for the two missing values. The sum of the 15 contracts' dollar amount is entered as Country A's PR expenditure for the first half of 2001. This step, which involves mean substitution, constitutes the first phase of treating missing values.

However, Country B may have had few public relations contracts (e.g., only one or two contracts during a particular six-month period) the dollar amount of which were not reported. Because there is no dollar amount with which to calculate the mean for the particular period, they are left as a missing value when creating the semi-annual public relations expenditure data. As Table 2 shows, only one case fell under this condition. There were four public relations contracts by the Philippines during the second half of 2007, all of which did not report the dollar amount of the contracts. Therefore, the cases remained missing.

Table 2.
The data matrix of the study

	Japan			Colombia			Belgium			Philippines		
	PR	IMP	FDI	PR	IMP	FDI	PR	IMP	FDI	PR	IMP	FDI
1996_1	O	O	O	O	O	O	O	O	O	O	O	O
1996_2	O	O	O	O	O	O	O	O	O	O	O	O
1997_1	O	O	O	O	O	O	O	O	O	O	O	O
1997_2	O	O	O	O	O	O	O	O	O	O	O	O
1998_1	O	O	O	O	O	O	O	O	O	O	O	O
1998_2	O	O	O	O	O	O	O	O	O	O	O	O
1999_1	O	O	O	O	O	O	O	O	O	O	O	O
1999_2	O	O	O	O	O	O	O	O	O	O	O	O
2000_1	O	O	O	O	O	O	O	O	O	O	O	O
2000_2	O	O	O	O	O	O	O	O	O	O	O	O
2001_1	O	O	O	O	O	O	O	O	O	O	O	O
2001_2	O	O	O	O	O	O	O	O	O	O	O	O
2002_1	O	O	O	O	O	O	O	O	O	O	O	O
2002_2	O	O	O	O	O	O	O	O	O	O	O	O
2003_1	O	O	O	O	O	O	O	O	O	O	O	O
2003_2	O	O	O	O	O	O	O	O	O	O	O	O
2004_1	O	O	O	O	O	O	O	O	O	O	O	O
2004_2	O	O	O	O	O	O	O	O	O	O	O	O
2005_1	O	O	O	O	O	O	O	O	O	O	O	O
2005_2	O	O	O	O	O	O	O	O	O	O	O	O
2006_1	O	O	O	O	O	O	O	O	O	O	O	O

Note: “O” indicates there is a value, and “X” indicates missing value.

Table 2. (Continued)

	Japan			Colombia			Belgium			Philippines		
	PR	IMP	FDI	PR	IMP	FDI	PR	IMP	FDI	PR	IMP	FDI
2006_2	O	O	O	O	O	O	O	O	O	O	O	O
2007_1	O	O	O	O	O	O	O	O	O	O	O	O
2007_2	O	O	O	O	O	O	O	O	O	X	O	O
2008_1	O	O	O	O	O	O	O	O	O	O	O	O
2008_2	O	O	O	O	O	O	O	O	O	O	O	O
2009_1	O	O	O	O	O	O	O	O	O	O	O	O
2009_2	O	O	O	O	O	O	O	O	O	O	O	O

In order to estimate the missing value of the Philippines' PR expenditure in the second half of 2007, this study conducted the multiple imputation (MI). The MI estimates missing values based on an unbiased estimator calculated from the maximum likelihood estimation (MLE) method (Graham, Olchowski, & Gilreath, 2007). In order to keep variability of the data series, this study conducted the MI using PROC MI in the SAS statistical package to stand for the missing value in the Philippines' PR expenditure. The mean of the MI was \$1,148,113 with a 95% confidence limit between \$797,245 and \$1,498,982. This procedure constitutes the second step in the treatment of missing values.

Analysis

In multivariate time-series analysis, the possible cross relationships among the series should be considered (Box et al., 2008). Initially considering a random vector $X_t = \{X_{1t}, X_{2t}, \dots, X_{kt}\}$, then a subset of the component of X_t will be interrelated to another subset of the component of X_t (Box et al., 2008, p. 552; Granger, 1969, p. 426).

In other words, if there is an interrelationship between two series, then both series are the subsets of a random vector, and this interrelationship between two time-series, that is, a vector, should be detected “contemporaneously and across time lags” (Box et al., 2008, p. 552). Because it deals with the relationship between two time series, the basic time-series model for multivariate time-series analysis is a vector autoregressive-moving average (VARMA) model, which considers both autoregressive (AR) order and the moving average (MA) order of the model. However, like most econometric studies (e.g., Blood & Phillips, 1995; Granger, 1969, 1988; Granger & Newbold, 1974; Hacker & Hatemi-J, 2006; Majagaiya & Gu, 2010; Magnus & Fosu, 2008; Toda & Yamamoto, 1995), this study uses a vector autoregressive (VAR) model, which only considers the AR order to estimate the relationship between two series.

When constructing a VAR model, the stationarity of the series is strictly required. A series assumed to be stationary under two conditions: that (1) $E[z_t] = \mu$ (fixed constant for all t), and (2) that the autocovariances depend only on the time difference or time lag k for all t . That is, $\text{cov}[z_t, z_{t+k}] = \text{cov}[z_s, z_{s+k}]$ (Box et al., 2008). In other words, the time-series data are assumed to be stationary if the series can be forecast based on time (Box, Jenkins, & Reinsel, 2008). Otherwise, the series is considered non-stationary. Several unit-root tests, such as the Phillips & Perron test and the augmented Dickey-Fuller test, are able to detect the stationarity of the series. A non-stationary series can be transformed into a stationary series by the process called *difference* (Box et al., 2008). A stationary series without the transformation is denoted by $I(0)$. If the 1st order *differenced* series are stationary, it is denoted by $I(1)$ or ∇X_t . If

the 2nd order *differenced* series are stationary, it is denoted by $I(2)$ or $\nabla^2 X_t$ (Box et al., 2008).

This study made use of the augmented Dickey-Fuller (ADF) as the unit-root test to examine whether each time-series is stationary or non-stationary. The SAS commands, *DIF* (Variable) and *DIF2* (Variable) transform the non-stationary series to 1st order and 2nd order *difference* of the series (SAS Institution, 2012).

In general, to select the optimal lag length for a VAR model, several criteria, such as the Akaike Information Criterion (AIC), the Schwarz-Bayes Information Criterion (SBC), and the Hanna-Quinn Information Criterion (HQI), have been widely used. All give a specific value for every lag added in the model; that is, this specific value gives information for the optimal lag length of the VAR model. The optimal lag length in the model yields the smallest value for a criterion. This study used the AIC to select the optimal lag length in constructing the VAR models.

Granger (1969) defines a causality test in this way: “If series Y contains information in past terms that helps in the prediction of X, and if this information is contained in no other series used in the predictor, then Y is said to cause X” (p. 430). This concept of causality is grounded on the idea that information about the past term cannot be caused by current and future terms (Hacker & Hatemi-J, 2006; Magnus & Fosu, 2008).

Models for the analysis

The following models were used in analyze causality:

The Simple Autoregressive Distributed Lag (ADL) Model.

1. Granger's (1969) causality test can be implemented by the following regression model: If both series X_t and Y_t are assumed to be stationary, and the optimal lag length of the VAR model is two, the following regression models, which test null hypothesis $H_0: \gamma_1 = \gamma_2 = 0$ can be applied:

$$\text{Unrestricted model: } Y_t = \alpha + \beta_1 Y_{t-1} + \beta_2 Y_{t-2} + \gamma_1 X_{t-1} + \gamma_2 X_{t-2}$$

$$\text{Restricted model: } Y_t = \alpha + \beta_1 Y_{t-1} + \beta_2 Y_{t-2}$$

Here, γ_1 and γ_2 are measures of the influence of X_{t-1} and X_{t-2} on Y_t . If $\gamma_1 = \gamma_2 = 0$ is failed to reject, then, one can say that X does not Granger cause Y, otherwise X Granger-cause Y. However, Granger (1988) argued that the result is only valid for a stationary series. Therefore, only when the both series are stationary can this model be applied. In this study, the VAR models for the PR and FDI relations of Belgium and the Philippines fall under this case.

The Vector Error Correction Model (VECM) Granger causality test.

2. If the non-stationary series are on the same order of *difference* so that, for example, all time-series variables of interest are $I(1)$, the vector error correction model (VECM) can be used. This method is performed by using an error correction term, which indicates a long-running relationship between two series (Box et al., 2008; Mehrara, 2007). In other words, the coefficient of error correction term indicates whether the long-running causal relationship is significant or not. The error correction

term is the error terms, which is lagged by one, of the original VAR model for all t . The VECM Granger causality test in this study was conducted by using following VAR model:

From PR to Import:

$$\nabla LIMP_t = \alpha + \beta_{1i} ECT y_{t-1} + \sum_{i=1}^k \gamma_{1i} \nabla LPR_{t-i} + \sum_{i=1}^k \delta_{1i} \nabla LIMP_{t-i} + \varepsilon_{1it}$$

From Import to PR:

$$\nabla LPR_t = \alpha + \beta_{2i} ECT x_{t-1} + \sum_{i=1}^k \gamma_{2i} \nabla LPR_{t-i} + \sum_{i=1}^k \delta_{2i} \nabla LIMP_{t-i} + \varepsilon_{2it}$$

where k is the optimal lag order of the VAR model and ECT is the error correction term that refers to the long-run causality between two variables.

The VECM Granger causality tests the null hypothesis for a short-run causality between two variables testing $\sum_{i=1}^k \gamma_{1i} = 0$ or $\sum_{i=1}^k \delta_{2i} = 0$ for all i ; for a long-run causality between two variables testing $\beta_{1i} = 0$ or $\beta_{2i} = 0$ for all i ; and for a strong causality between two variables jointly testing $\sum_{i=1}^k \gamma_{1i} = \beta_{1i} = 0$ or $\sum_{i=1}^k \delta_{2i} = \beta_{2i} = 0$ for all i . In this study, the relationship between LPR and LIMP of the VAR models for Japan and the Philippines come under this case.

The shortcoming of this model is that it requires the same order of *difference*. As Granger and Newbold (1974) indicated, the estimated results can be spurious if the order of *difference* is different or if there is no co-integration between two series. Co-integration indicates “common trends” in two or more non-stationary series (Box et al., 2008, p. 571). This study conducts the Johansen co-integration test with the statement, COINTTEST = (JOHANSEN), in the PROC VARMAX of the SAS command.

The Toda and Yamamoto version of the Granger non-causality test.

3. Another way to handle the problem is to use the Toda and Yamamoto test (hereafter referred to as the T-Y test), which offers several advantages. First, it analyzes with original series even though it is stationary or non-stationary. In other words, it does not require the unit-root test as well as *differencing*. Toda and Yamamoto (1995) explained that previously introduced unit root tests are known to have the high possibility of falsely rejecting the null hypothesis. Also, since the T-Y test does not *difference* the data, it is more likely to keep the long term information in the series than the *differenced* series. Second, the T-Y test does not require a co-integration test, which the authors do not consider very reliable for the sample sizes. The authors mentioned that the results of the co-integration test vary depending on the sample size (Toda & Yamamoto, 1995).

The T-Y test procedure uses the augmented VAR ($k+d_{\max}$) model, where k is the optimal lag length in the original VAR system, and d_{\max} is the maximal order of integration of the variables in the VAR system (Magnus & Fosu, 2008). For example, if $I(0)$ and $I(1)$ time-series data are assumed, the maximal order of integration is one, and if $I(0)$ and $I(2)$ are assumed, the maximal order of integration is two. The following VAR models are estimated in this study for the T-Y test.

From PR to Import:

$$LIMP_t = \alpha_0 + \sum_{i=1}^{k+d_{\max}} \beta_{2i} LPR_{t-i} + \sum_{i=1}^{k+d_{\max}} \gamma_{2i} LIMP_{t-i} + \varepsilon_{2t}$$

From Import to PR:

$$LPR_t = \alpha_0 + \sum_{i=1}^{k+d_{\max}} \beta_{1i} LPR_{t-i} + \sum_{i=1}^{k+d_{\max}} \gamma_{1i} LIMP_{t-i} + \varepsilon_{1t}$$

where k is the optimal lag order of the VAR system and d_{\max} is the maximal order of integration of the variables.

The T-Y test is similar to the simple ADL model of the Granger causality test, but this procedure constructs a restricted regression model only with the optimal lag order of the original VAR model. For example, if the optimal lag order is two and the maximal integration order is one, then the T-Y test estimates using the following unrestricted/restricted regression model.

$$\text{Unrestricted model: } Y_t = \alpha + \beta_1 Y_{t-1} + \beta_2 Y_{t-2} + \beta_3 Y_{t-3} + \gamma_1 X_{t-1} + \gamma_2 X_{t-2} + \gamma_3 X_{t-3}$$

$$\text{Restricted model: } Y_t = \alpha + \beta_1 Y_{t-1} + \beta_2 Y_{t-2}$$

In this case, the T-Y Granger non-causality model tests the null hypothesis H_0 : $\beta_3 = \gamma_1 = \gamma_2 = \gamma_3 = 0$. Therefore, if it rejects the null hypothesis, one can say X Granger-cause Y. If it fails to reject the null, one can say X does not Granger-cause Y.

Although the T-Y test has several advantages, Toda and Yamamoto (1995) emphasized that “it should rather be regarded as complementing the pretesting method that may suffer [from] serious biases in some cases” (p. 246). Therefore, the present study uses the simple ADL model and the VECM Granger causality test for countries that satisfy the pretesting results. The T-Y test results for all relationships are also shown to be able to compare the results.

Figure 3 diagrams the sequence of analysis based on the result of pretest results.

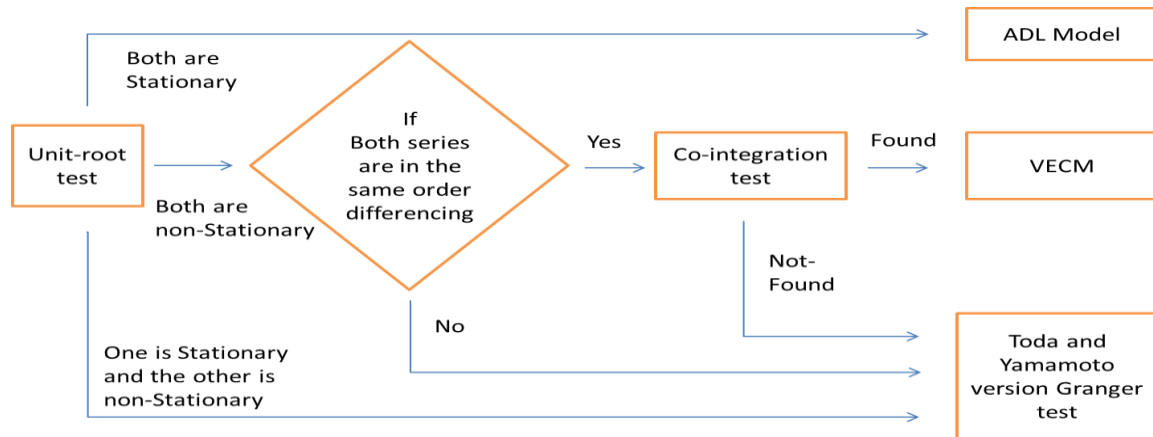


Figure 3. Analysis of the causality test based on pretest results

CHAPTER 4

RESULTS

Public relations expenditure and imports feature

Based on the result of the augmented Dickey-Fuller test, this study applied first order difference to both series of LPR and LIMP for the VAR models of the four sample countries. Table 3 shows the result of the unit root test for each series.

Table 3.
Augmented Dickey-Fuller unit root test

Country	Augmented Dickey-Fuller for $I(0)$				1 st order differenced ADF value for $I(1)$			
	Lag length	LPR	Lag length	LIMP	Lag length	VLPR	Lag length	VLIMP
Japan	2	-3.22	1	-2.09	1	-3.77**	0	-5.34**
Colombia	1	-2.53	1	-3.22	1	-6.44**	0	-4.51**
Belgium	0	-3.55*	1	-3.15	1	-6.29**	1	-5.35**
Philippines	3	-2.07	1	-2.75	2	-3.96**	2	-4.11**

Note: Tau (τ) statistics are displayed for the Augmented Dickey-Fuller unit root test.

* Pr < Tau at 10%; ** Pr < Tau at 5%

The white noise for the residuals was checked after the model was constructed (Box et al., 2008; Brocklebank & Dickey, 2003). This specification tests if errors in the VAR model are normally distributed, showing whether the VAR model is linear or not. It was assumed that the errors in the VAR models for Japan, Colombia, and Belgium were normally distributed. However, the VAR model for the Philippines showed significant autocorrelations in error terms from 18 to 24 lags. Figure 4 shows the

specification failure of the VAR models for the Philippines. Thus, the estimation of the VAR model for Philippines may contain bias.

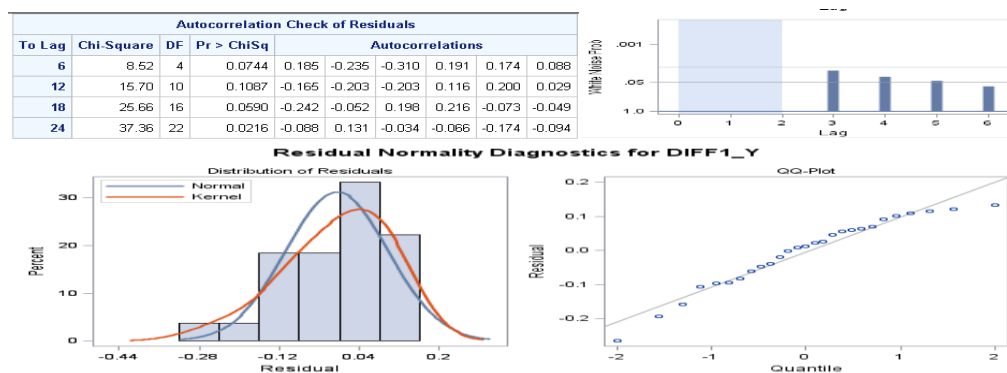


Figure 4. Model specification failure for the Philippines

The result of the AIC to select the optimal lag length for each VAR model is shown in Table 4. Moreover, Table 5 shows the result of the Johansen's co-integration test.

Table 4.
Akaike Information Criterion (AIC) to determine the optimal lag length

Country	Lags			
	1	2	3	4
Japan	-8.46114 [^]	-8.25625	-8.08892	-7.83351
Colombia	-3.97926 [^]	-3.94998	-3.68993	-3.74281
Belgium	-6.30688	-6.29326	-6.21720	-7.17927 [^]
Philippines	-4.38592	-5.31285 [^]	-5.20578	-5.06290

Note: The minimum AIC indicates the optimal lag order for the VAR model when PR and Imports are considered in each country.

[^] indicates the optimal lag order.

Table 5.
The Johansen co-integration test

Country	Null hypothesis	Trace statistics	5% critical value	Cointegration
Japan	None	13.8639	12.21	Found
	At most one	0.8506	4.14	
Colombia	None	7.5196	12.21	Not-Found
	At most one	2.4413	4.14	
Belgium	None	10.8912	12.21	Not-Found
	At most one	2.2908	4.14	
Philippines	None	15.5723	12.21	Found
	At most one	0.1663	4.14	

Based on the pretests of the variables, this study conducts the VECM Granger causality test for Japan and the Philippines. VECM Granger causality test cannot be applied to Colombia and Belgium because there was no co-integration between LPR and LIMP. The result of the VECM Granger causality test is presented in Table 6.

The results show that the import figures for Japan, which reported substantial PR expenditure and is highly ranked in terms of GDP per capita, was significantly Granger-caused by PR expenditure. For Japan, which is optimized with VAR (1) model, the short-run causality (also called the Granger weak causality) showed that PR expenditure significantly influenced the US imports ($p < .05$). The long-run Granger causality, which tested the error correction term, also showed a significant causal relationship between PR expenditure and US imports ($p < .05$). The Granger strong causality test for Japan,

which jointly tested the long-term and short-term regressors' coefficient, was also significant following the same direction ($p < .05$). There was no significant causal relationship in the opposite direction.

For the Philippines, which optimized with VAR (2) model, showed significant Granger strong causality from imports to PR expenditure ($p < .05$). No causal relationships, direction from PR to imports, were found in the VAR model for this country. The estimations for the Philippines may contain bias because of the model specification.

Table 6.

Results of the Vector Error Correction Model Granger causality test

Relationship	Short-run (Granger weak)	Long-run (Error Correction term)	Joint (Granger strong)
Japan			
with VAR (1) model			
LPR → LIMP	4.53** (0.0220)	4.26** (0.0267)	19.42*** (0.0002)
LIMP → LPR	0.27 (0.7625)	0.48 (0.6237)	1.21 (0.2828)
Philippines			
with VAR (2) model			
LPR → LIMP	0.71 (0.5541)	0.22 (0.9227)	1.68 (0.2090)
LIMP → LPR	0.09 (0.9650)	1.28 (0.3081)	4.06** (0.0309)

Note: F-statistics are displayed with probability values in parentheses.

** $p < .05$ *** $p < .01$

In order to determine if there is a causal relationship between LPR and LIMP for Colombia and Belgium, the T-Y test was performed. The results of the T-Y test for other countries were also displayed for comparison purposes. To select the optimal lag length for the original VAR model, the Akaike Information Criterion (AIC) was again checked with the original VAR model. The results of the AIC for the original VAR model are shown in Table 7.

Table 7.
Akaike Information Criterion (AIC) to determine the optimal lag length for the original VAR model

Country	Lags			
	1	2	3	4
Japan	-8.08753	-8.42990 [^]	-8.09239	-7.96679
Colombia	-4.06113 [^]	-3.88372	-4.01780	-4.04040
Belgium	-6.63317 [^]	-6.38537	-6.33404	-6.33767
Philippines	-4.71935	-4.67716	-5.11640 [^]	-5.02873

Note: The minimum AIC indicates the optimal lag order for the VAR model.
[^] indicates the optimal lag order.

Because this study also wanted to find that when the causal effect occurred and how long it lasted, the T-Y tests for the optimal lag was conducted and the results were analyzed at lags from one to four. Table 8 shows the results of the T-Y test from lags one through four.

Table 8.
Results of the Toda and Yamamoto causality test for the four countries

Relationship	Lags			
	1	2	3	4
Japan				
LPR → LIMP	12.41*** (0.0017)	5.42** ^ (0.0118)	3.78** (0.0259)	4.64*** (0.0088)
LIMP → LPR	23.87*** (0.0000)	1.23 ^ (0.3112)	3.84** (0.0246)	3.26** (0.0340)
Colombia				
LPR → LIMP	3.87 ^ (0.0605)	3.32 (0.0540)	3.07 (0.0503)	2.03 (0.1309)
LIMP → LPR	3.45 ^ (0.0752)	7.40*** (0.0033)	4.04** (0.0206)	4.67*** (0.0086)
Belgium				
LPR → LIMP	6.47** ^ (0.0176)	8.91*** (0.0014)	12.06*** (0.0000)	8.15*** (0.0005)
LIMP → LPR	1.18 ^ (0.2876)	1.17 (0.3268)	0.82 (0.4990)	4.15** (0.0139)
Philippines				
LPR → LIMP	6.68** (0.0160)	8.15*** (0.0021)	3.22** ^ (0.0436)	2.94** (0.0477)
LIMP → LPR	6.98** (0.0140)	9.61*** (0.0009)	1.53 ^ (0.2350)	1.90 (0.1523)

Note: F-statistics are displayed with probability values in parentheses.

The results are tested from the null hypothesis that PR (Imports) does not Granger-cause Imports (PR).

^ indicates the optimal lag order k .

p<.05 *p<.01

For Japan, the findings show that public relations expenditure Granger-caused the amount of US imports from Japan at the optimal lag order ($p < .05$), which is the second lag. PR expenditure affected US imports from Japan at the first lag order ($p < .01$), and this was observed until the fourth lag order ($p < .05$; $p < .05$; $p < .01$, respectively). For Japan, the opposite causal direction was also captured. The results show that US imports from Japan Granger-caused Japan's PR expenditure at the first lag order ($p < .01$), and this occurred at the third and the fourth lags ($p < .05$).

For Colombia, the results on the first lag, which is the optimal lag, showed no significant causal relations in both directions. PR expenditure did not affect US imports from Colombia at every lag. Rather, in Colombia, US imports from Colombia Granger caused the PR expenditure of Colombia more significantly. The direction of the causality from US imports to PR expenditure was found at the second, third and fourth lags ($p < .01$; $p < .05$; $p < .01$, respectively).

For Belgium, PR expenditure was found to Granger-cause US imports from Belgium at every lag ($p < .05$; $p < .01$; $p < .01$; $p < .01$, respectively). Also, at the fourth lag, a causal relationship at the opposite direction was also significant ($p < .05$). The first lag was the optimal lag order for the VAR model for Belgium, and it indicates a unidirectional causal relationship from PR expenditure to US imports.

For the Philippines, PR expenditure was found to have Granger-caused US imports from the Philippines at every lag ($p < .05$; $p < .01$; $p < .05$; $p < .05$, respectively). At the opposite direction (i.e., from US imports to PR expenditure), significant causality was detected at the first and the second lags ($p < .05$; $p < .01$, respectively). The optimal

lag on the third order showed a unidirectional causal relationship from PR expenditure to US imports.

Public relations expenditure and foreign direct investment feature

Table 9 shows the results of the augmented Dickey-Fuller test. As mentioned, because the FDI data were not cost-adjusted which precluded logarithm transformations, the series satisfies the stationary assumption. It is important to note that most economic data are non-stationary, in general. Each VAR model for Japan and Colombia consists of $I(1)$ and $I(0)$, and those for Belgium and the Philippines consist of $I(0)$ and $I(0)$.

Table 9.
Augmented Dickey-Fuller unit root test

Country	Augmented Dickey-Fuller for $I(0)$				1 st order differenced ADF value for $I(1)$			
	Lag length	PR	Lag length	FDI	Lag length	∇ PR	Lag length	∇ FDI
Japan	2	-3.36*	0	-4.19**	1	-3.77**		N/A
Colombia	1	-2.68	0	-4.76**	1	-7.14**		N/A
Belgium	0	-3.89**	1	-3.73**		N/A		N/A
Philippines	0	-4.99**	0	-5.52**		N/A		N/A

Note: Tau (τ) statistics are displayed for the Augmented Dickey-Fuller unit root test.

* $\text{Pr} < \text{Tau}$ at 10% ** $\text{Pr} < \text{Tau}$ at 5%

For the purpose of model specification, this study also checked the autocorrelations of the residuals. The VAR models for Colombia, Belgium, and the Philippines were assumed to be linear. However, the VAR model for Japan showed significant autocorrelations in error terms from 1 to 12 lags. Figure 5 shows the

specification failure of the VAR models for Japan, which means that the estimation of the VAR model for that country may contain bias.

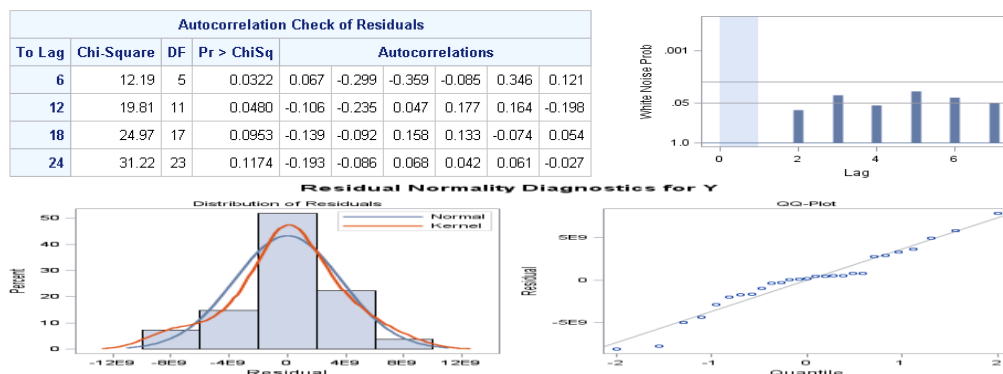


Figure 5. Model specification failure for Japan

As the results of the ADF unit-root test show, it was not suitable to conduct the VECM Granger causality model to test the relationship between PR and FDI. Table 10 shows the results of the AIC for selecting the optimal lag length for each of the original VAR models.

Table 10.

Akaike Information Criterion (AIC) to determine the optimal lag length for the original VAR model

Country	Lags			
	1	2	3	4
Japan	75.26500	74.77553 [^]	74.88396	75.15236
Colombia	70.98623 [^]	71.06366	70.99733	71.02630
Belgium	67.68285 [^]	67.87548	67.80942	67.71166
Philippines	68.50512	68.73510	68.38897 [^]	68.56970

Note: The minimum AIC indicates the optimal lag order for the original VAR models.
[^] indicates the optimal lag order.

This study conducts the simple ADL model Granger causality test for Belgium and the Philippines (Table 11). In order to find that when the causality occurred and how long it lasted, the results are shown at every lag, from one through four.

Table 11.

Results of the simple ADL model Granger causality test for Belgium and the Philippines

Relationship	Lags			
	1	2	3	4
Belgium				
PR → FDI	0.49 ^ (0.4908)	1.71 (0.2015)	2.09 (0.1295)	3.81** (0.0177)
FDI → PR	0.78 ^ (0.3852)	2.38 (0.1513)	1.92 (0.1538)	1.73 (0.1815)
Philippines				
PR → FDI	0.21 (0.6534)	0.30 (0.7433)	6.79*** ^ (0.0019)	6.00*** (0.0022)
FDI → PR	0.01 (0.9297)	0.72 (0.4972)	0.26 ^ (0.8538)	0.30 (0.8769)

Note: F-statistics are displayed with probability values in parentheses.

The results are tested from the null hypothesis that PR (FDI) does not Granger-cause FDI (PR).

^ indicates the optimal lag order k .

** $p < .05$ *** $p < .01$

For Belgium, the findings indicate that public relations expenditure Granger-caused foreign direct investment toward Belgium at the fourth lag ($p < .05$). Other causal relationships were also significant. The optimal lag order at the first lag shows no causality at any direction.

For the Philippines, PR expenditure was found to have Granger-caused foreign direct investments toward the Philippines at the third and the fourth lag ($p < .01$). No significant causality was observed in the opposite direction. At the optimal lag order three, the causality was unidirectional, from PR expenditure to foreign direct investment toward the Philippines.

The T-Y test was performed for Japan and Colombia. The results are shown in Table 12 and are compared against the results for Belgium and the Philippines. The T-Y test is also applicable for the VAR models for Belgium and the Philippines, but the results would be equivalent to those of the simple ADL model Granger causality test because that there are no d_{\max} parts in the unrestricted regression model when the VAR models for these countries are applied to the T-Y test.

For Japan, public relations expenditure was found to have Granger-caused foreign direct investment toward Japan at the second, third and fourth lags ($p < .01$; $p < .05$; $p < .01$, respectively). Causality in the opposite direction was also found at the first lag ($p < .01$). For the optimal lag order, which is the second lag, the causal relationship was unidirectional.

In Colombia, the results were similar to that of the imports feature. That is, foreign direct investment more likely affected PR expenditure. Direct investment toward Colombia was found to have Granger-caused PR expenditure of Colombia at the first, second, and fourth lags ($p < .01$; $p < .01$; $p < .01$, respectively). The optimal lag for the Colombia VAR model was the first lag.

Table 12.
Results of the Toda and Yamamoto causality test for the four countries

Relationship	Lags			
	1	2	3	4
Japan				
PR → FDI	3.60 (0.0689)	9.13*** ^ (0.0011)	4.15** (0.0180)	5.41*** (0.0041)
FDI → PR	18.02*** (0.0002)	0.89 ^ (0.4220)	0.95 (0.4339)	1.78 (0.1716)
Colombia				
PR → FDI	3.09 ^ (0.0904)	2.79 (0.0815)	1.99 (0.1444)	2.24 (0.1009)
FDI → PR	8.11*** ^ (0.0085)	7.63*** (0.0027)	2.95 (0.0553)	8.09*** (0.0005)
Belgium				
PR → FDI	0.49 ^ (0.4908)	1.71 (0.2015)	2.09 (0.1295)	3.81** (0.0177)
FDI → PR	0.78 ^ (0.3852)	2.38 (0.1513)	1.92 (0.1538)	1.73 (0.1815)
Philippines				
PR → FDI	0.21 (0.6534)	0.30 (0.7433)	6.79*** ^ (0.0019)	6.00*** (0.0022)
FDI → PR	0.01 (0.9297)	0.72 (0.4972)	0.26 ^ (0.8538)	0.30 (0.8769)

Note: F-statistics are displayed with probability values in parentheses.

The results are tested from the null hypothesis that PR (FDI) does not Granger-cause FDI (PR).

^ indicates the optimal lag order k .

** $p < .05$ *** $p < .01$

To show all causal relationships at a glance, all the results of the T-Y test at the optimal lag are shown in Table 13. The results of other analytic models or the details of the T-Y test can be found in the original result tables.

Table 13.

Results of the Toda and Yamamoto causality test at the optimal lag for all four countries

Countries	Relationship			
	LPR \rightarrow LIMP	PR \rightarrow FDI	LIMP \rightarrow LPR	FDI \rightarrow PR
Japan	Significant	Significant	Non-significant	Non-significant
Colombia	Non-significant	Non-significant	Non-significant	Significant
Belgium	Significant	Non-significant	Non-significant	Non-significant
Philippines	Significant	Significant	Non-significant	Non-significant

CHAPTER 5

DISCUSSION AND CONCLUSIONS

This study offered a more rigorous causality test between public relations expenditure and its economic return at the country level. It measured the relationship between data series, not the correlation between two variables. Although correlations can show the variance between two variables at a particular time point, the Granger causality test is more robust because it determines the relationship between two variables over time. In previous studies that introduced the lagged effect in economic data, inputting a value at time point 1 may not be necessarily related to variations in the output at time point 1, but may be related instead to variations in the output at time point 2 or 3 as influenced by the cumulated effects of other inputs. As such, the relationship between input and output may not be correctly measured through correlations. Considering the long-term relationship between economic input and output, especially the relationship between PR efforts and expected returns from them, a time-series analysis is critical in a rigorous examination of causal relationships. This study represents a step in this direction.

The findings of this study suggest that past information about one variable can predict the current and future values for other variables. Thus, a variable is said to have “Granger-caused” another variable. Also, because of the heteroscedasticity among countries, the results should be understood one country at a time. In other words, the results of this study cannot be statistically generalized to a population of countries.

Synthesizing the findings, this study concludes that public relations expenditure is more likely to Granger-cause economic outcomes.

The case of Japan, which actively spent money on public relations in the US and has a high GDP per capita, shows that PR expenditure Granger-caused the economic outcome. Based on the VECM Granger causality test, the PR expenditure of Japan Granger-caused the US imports significantly, satisfying both short-run and long-run causation requirements. The relationship was unidirectional. The T-Y test also shows the unidirectional causality at the optimal lag in direction of PR expenditure to US imports. Yet, causality in the opposite direction was also significant at every lag other than the optimal lag. The T-Y test for the relationship between PR expenditure and foreign direct investment also shows that PR expenditure Granger-caused US direct investment toward Japan at the optimal lag order and that this relationship was also unidirectional. Based on the results of the T-Y test for each lag, this study concludes that Japan's investment in public relations showed immediate as well as long lasting economic returns.

The case of Belgium, which also ranked high in GDP per capita, but spent relatively less on public relations in the US, shows a restricted effect of PR expenditure on economic outcomes. The T-Y test shows that Belgium's PR expenditure Granger-caused US imports from that country at the optimal lag, and that this relationship was unidirectional. Causality started at the first lag and it continued to the fourth lag. However, the simple ADL model test shows that PR expenditure of Belgium did not Granger-cause US direct investment toward Belgium at the optimal lag. Causality at the

opposite direction was not significant either. PR expenditure influenced FDI at the fourth lag.

It can be inferred that the different results for Japan and Belgium may have been due to the fact that series were not *differenced*. One way to validate this inference is to transform the FDI data through deflation transformation. To do this properly, a deeper time-series analysis is required to estimate the model correctly. The present study tentatively applied *difference*, using the SAS command *DIF*, to the VAR model for Belgium to find out if it produces a different result. After conducting the first order *difference* to both series, the T-Y test was performed. The result is that PR expenditure was found to have Granger-caused the FDI at the optimal lag ($F=3.49$; $p<.10$), and that the FDI Granger-caused PR expenditure at the optimal lag ($F=5.16$; $p<.05$). Further research should validate this inference. Future studies also could re-analyze the relationship between PR expenditure and foreign direct investment using current cost-adjusted data.

The case of the Philippines, which spent less money on public relations in the US and had a lower ranking in terms of GDP per capita, shows that PR expenditure Granger-caused the economic outcome. The T-Y test indicates that PR expenditure Granger-caused US imports from the Philippines at the optimal lag, and the simple ADL model test shows that PR expenditure Granger-caused US direct investment toward the Philippines at the optimal lag. Both relationships were unidirectional. Also, as in the case of Belgium, the T-Y test was applied to the relationship between PR and FDI after *differencing* the series. The result shows that public relations expenditure Granger-

caused US direct investment toward the Philippines at the optimal lag ($F=8.79$; $p<.01$). Causality in the opposite direction was not significant at the optimal lag ($F=0.54$).

However, the Philippines case posed another problem. Here, the results of the VECM Granger causality test and the T-Y test were different for the relationship between PR expenditure and imports. The VECM Granger causality test shows that only the Granger Strong causality was significant in the US imports to PR expenditure direction. This may be because of the VECM test is more sensitive to the selection of the optimal lag and unit root test. The VAR model for the relationship between PR and imports was not specified as a linear model, which may cause bias in the estimations. To handle this problem, future studies may apply other models of analysis such as the autoregressive conditional heteroscedastic (ARCH) models.

The case of Colombia, a country that spent a lot of money on public relations in the US but ranked low in terms of GDP per capita, offered rather baffling the results. For this county, foreign direct investment from the US was more likely to affect Colombian PR expenditure in the US rather than the other way around.

Historically strong bilateral ties and a record of robust economic partnership may help explain this reverse causation. First, the United States is Colombia's largest trading partner, and the two countries' free trade agreement entered into force in May 2012. The US-Colombia Trade Promotion Agreement aims "to improve the investment environment, eliminate tariffs and other barriers to US exports, expand trade, and promote economic growth in both countries" (US Department of State, 2012, para. 5). Second, the U.S. has had diplomatic relations with Colombia since 1982, following the

latter's independence from Spain. Third, Colombia is instrumental in the American geopolitical objective of re-establishing state control and legitimacy in strategically important areas in Latin America, previously dominated by illegal armed groups by implementing a phased approach that combines security, counter-narcotics, and economic and social development initiatives. According to the US Department of State (2012), US policy toward Colombia "supports the government's efforts to strengthen its democratic institutions, promote respect for human rights and the rule of law, foster socio-economic development, address immediate humanitarian needs, and end the threats to democracy posed by narcotics trafficking and terrorism" (para. 2). Fourth, aside from the recently launched free trade agreement, the US and Colombia have signed agreements on environmental protection, asset sharing, chemical control, ship-boarding, renewable and clean energy, science and technology, and civil aviation (US Department of State, 2012). This long-standing relationship appears strong enough to create more public relations expenditure in the current term and into the future.

Considering the robust ties between these two nations, the reversed causal relationship between PR expenditure and economic outcome cannot be considered anomalous. The same tendency can be found in the case of Japan, Belgium, and the Philippines where US imports figures also were observed to have Granger-caused the public relations expenditure. This suggests that economic gains also influence the amount of public relations expenditure of a client country within a target country. In other words, client countries tend to invest in public relations in target countries because the targets are seen as important economic partners in the first place. Future studies with

extended time-points may be able to thresh out the dynamics of this two-way direction causation.

There are other limitations of this study. First, US direct investment abroad could have been adjusted to current cost to get more accurate results. Second, other approaches to estimate, specify, and adjust the time-series data were not applied in favor of those used in previous economic studies (i.e., the three widely used models for causality testing based on the estimation of the VAR models). This study, however, failed to account for the model specification failure in the results. Third, this study analyzed 28 time points, which may not be fully sufficient for an ideal time-series analysis. Most time-series studies examine more than 50 time points. The most suitable models, however, were tested based on available FARA data. Finally, factors other than public relations efforts may have influenced economic returns at the country level. For example, this study did not control for other potential determinants of economic returns, such as historical ties, cultural similarities (especially related to values), ideological differences, and geographical distance.

In spite of the limitations, by overcoming the weakness of previous studies that were mostly based on cross-sectional data analysis, the study was able to show that past information about public relations expenditure holds power in forecasting the economic outcome returns for Japan, Belgium, and the Philippines.

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