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# ECONOMIC SANCTIONS AND THE SOURCE COUNTRY: HOW ECONOMIC SANCTIONS IMPOSED ON CHINA AFFECT THE U.S.

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**ABSTRACT**

*We perform an event study to assess one potential effect of economic sanctions on source countries. Specifically, for publicly-traded firms in the U.S. that report China as a geographic segment, we examine the stock price reaction to the Tiananmen Square Massacre, which occurred on June 4, 1989. Such firms experienced an economically- and statistically-significant negative market reaction to the Massacre. This finding suggests that the event increased the probability of economic sanctions against China, and that this increased probability adversely impacted at least one segment of the source-country's population. Prior studies have examined the adverse effects to the target country (e.g., China), but have not been able to document systematic evidence of the effects to the source country (e.g., U.S.).*

**JEL:** F51, G14

**KEYWORDS:** economic sanctions, Tiananmen Square Massacre, event study

## INTRODUCTION

Economic sanctions are defined as deliberate, government-inspired withdrawal, or threat of withdrawal, of customary trade and official relations with a target country in an effort to change that country's policies. They have long been at the core of international relations in attempting to promote democracy and human rights, to end civil war, to fight terrorism, to combat weapons proliferation. Several studies have examined the economic impact (costs) on *target countries*, which is largely determined by the severity of sanctions imposed, and the extent of the target country's trade and investment links with the source country or coalition. However, there are costs to the *source country* as well. For instance, U.S. import restrictions will raise prices of its imports and reduce consumer welfare. Anecdotally, such sanctions can have economically-significant costs imposed on U.S. companies. But, "given the difficulties in compiling more systematic and comprehensive estimates of the impact of US economic sanctions, most analyses have been anecdotal." (Askari et al. 2003) Though the costs to the U.S. and U.S.-based firms may be quite large, no one has systematically quantified these costs. The goal of this study is to provide some systematic evidence.

The main research question of this study is: Do events that impact the likelihood of the U.S. imposing economic sanctions on target countries have an effect on the market value of publicly-traded firms located in the U.S. (i.e., *source country*)? In recent history, various political, economic, and social events have impacted the likelihood of the United States imposing economic sanctions on other (target) countries. For instance, the Tiananmen Square Massacre of 1989 increased the likelihood of the U.S. imposing economic sanctions on China for its human rights violations. Do events like the Tiananmen Square Massacre—that increase the likelihood of imposing economic sanctions on a *target* country like China—have an effect on the market value of publicly-traded firms located in the *source* country (i.e., the U.S.)? For instance, can we make any ex ante predictions about the short-window returns around this event for U.S.-based firms that conduct economically significant transactions with China? We investigate this question because, outside of general measures like GDP and anecdotal evidence about specific effects, the extant literature has not been able to systematically quantify the specific economic effects of economic sanctions on the source country. This study attempts to systematically document some of these costs.

Our results suggest that these firms with explicit China-segment financial reporting suffered approximately a -3.5% decline in market-adjusted capitalization. This documents a specific segment of the source country population that is adversely affected by changes in the probability of imposing economic sanctions on other countries. Additional analysis suggests that this effect systematically varied—firms that were relatively higher in reported revenues, higher in market-to-book ratio, and higher in R&D expenditures experienced a more pronounced adverse effect.

In section 2, we discuss relevant literature. In section 3, we discuss the sample and research design. In section 4, we discuss empirical results. In section 6, we conclude.

## LITERATURE REVIEW

### Economic Sanctions: Costs to The *Target* and *Source* Countries

Economic sanctions are defined as deliberate, government-inspired withdrawal, or threat of withdrawal, of customary trade and official relations with a target country in an effort to change that country's policies (see Hufbauer and Oegg, 2001, for an excellent discussion). They have long been at the core of international relations in attempting to promote democracy and human rights, to end civil war, to fight terrorism, to combat weapons proliferation. (The first documented sanctions date back to the Megarian decree in Greece circa 432 BC.)

Some argue that economic sanctions have been an effective middle-of-the-road policy between diplomatic protest and military force—that they have contributed to achieving major policy changes abroad; that they have signaling purposes in deterring future wrongdoing; that they demonstrate resolve both to allies and domestic constituencies. Others argue that they are generally ineffective in achieving policy goals, and question whether the costs are worth the benefits. The Institute for International Economics examined 185 economic sanctions during the 1919-2000 period. They find that about 50% of the sanctions during 1945-69 were successful in at least partially achieving policy objectives; however, since 1970, the success rate has dropped to roughly 20%.

Since free trade is good for all trading nations, and economic sanctions interfere with normal trade, sanctions must hurt both the target and source country. The assumption underlying this argument is that both countries are large economies that can influence supply and demand and therefore the prices in each other's markets (smaller economies are hit harder than larger ones). The economic impact (costs) on the target country is largely determined by the severity of the sanctions imposed, and the extent of the target country's trade and investment links with the source country or coalition. The Institute for International Economics finds that the aggregate economic cost to a target country is, on average, under 2 percent of GDP annually, and only in a few cases did costs exceed 5 percent. Thus, the costs do not seem to exceed the economic costs of a moderate recession.

There are costs to the source country as well. For instance, U.S. import restrictions will raise prices of its imports and reduce consumer welfare. In general though, when the U.S. imposes economic sanctions on a target country, the costs are a very small fraction of U.S. GDP. For instance, the Institute for International Economics measured the impact of sanctions on bilateral merchandise trade flows in 1995. Total U.S. exports to 26 countries subjected to sanctions in 1995 were as much as $20 billion lower than otherwise. These lost sales roughly translated to about 200,000 jobs in the US, resulting in a loss of about $800-999 million in wage premiums. Moreover, the adverse effects of sanctions may linger long afterwards; these losses are typically referred to as the "chilling effect" of sanctions—when companies forego certain business opportunities rather than risk being subject to (future) sanctions, or when business dries up afterwards because U.S. firms maybe viewed as, e.g., "unreliable suppliers".

In any case, the costs have not been well documented: "Given the difficulties in compiling more systematic and comprehensive estimates of the impact of US economic sanctions, most analyses have been anecdotal." (Askari et al., 2003). Moreover, when the costs have been anecdotally documented, they allude to non-trivial, economically-significant costs imposed on U.S. companies: "[F]rom 1988 to 1998 the US government refused seven of twenty satellite export projects to China. One such refusal cost Hughes $450 million in exports to China. To protest U.S. trade policies toward China, Beijing passed up Boeing in favor of Airbus in placing a $1.89 billion order for 34 planes in 1996 (Burstin and Keijzer, 1998). Caterpillar reported in 1998 that the prohibition of U.S. Ex-Im Bank financings for sales of construction equipment for the Three Gorges Dam project gave foreign companies a competitive edge (ITC 1998). According to a *Financial Times* report, a Chinese official once specifically mentioned Westinghouse as a 'very strong competitor in bidding for China's nuclear power construction' (Harding 1997). But U.S. sanctions on nuclear power plant exports to China pushed the opportunities to competitors from other nations…" (Askari et al., 2003)

Thus, it becomes clear that, though the costs to the U.S. and U.S.-based firms may be quite large, no one has systematically quantified these costs. Or, more precisely, given a significant event, no one has systematically quantified the market's changes in expectations regarding these costs. This study attempts to document some of these costs by examining the market reactions of China-related firms that are publicly-traded in the U.S.

U.S.-China Relations

Over recent history, the U.S. has imposed an embargo on all trade with China from the time of the Korean War until mid-1971. Since the embargo was lifted, U.S. exports have been subject to a complex system of restrictions. There are many reasons for these embargos and/or restrictions, including: geopolitical considerations, national security, human rights, democratization issues, domestic politics, and of course, commercial interests. These embargos/restrictions include the prohibition of nuclear trade (July 1985), the suspension of trade financing (1964 Foreign Assistance Appropriation Act), the prohibition of certain imports produced by prison labor (since 1992), the prohibition of imports of munitions/ammunition (May 1994) (see Askari, Forrer, Teegen and Yang, 2003, for an excellent, detailed discussion about U.S.-China relations.)

More relevant to the current study, immediately after the TSM, many U.S. businesses closed their offices in China or withdrew their prospective investment projects. China's imports and economic growth suffered a temporary setback in 1990 following the Tiananmen-related sanctions imposed by the U.S. and other nations. The European-American Business Council (1997) points out that understanding the impact of the sanctions on the U.S. economy and multinational companies is a complex and challenging task. On the import side, U.S. imports from China in 2000 were $52-$100 billion. Thus, we pay higher prices for Chinese imports. If we assume the average duty on imports is 4%, then U.S. consumers paid between $2.04-4.24 billion in duties on imports from China (these are income transfers from U.S. consumers to the U.S. government). On the export side, $1 billion of goods exported to China in 1992 supported 15,500 jobs.

The U.S. was China's top export market and third largest import source in 2000, accounting for 20.9% and 9.0%, respectively. The top five U.S. exports to China (accounting for 45% of total exports to China) were: fertilizers, transport equipment (aircraft and parts), cereals, textile fibers, telecommunication and sound equipment. The top five imports from China in 1995 (accounting for 65% of all imports from China) were: miscellaneous manufactured articles (toys games), clothing apparel, footwear, telecommunications and sound recording equipment, and electrical machinery. Despite all this, normal trading status (or "most favored nation" treatment, as it was called previously) has not been denied to China since 1979.

## METHODOLOGY

Sample: China and the Tiananmen Square Massacre

In creating a sample to examine our research question, our goal is to consider a sample of firms that have two salient characteristics. First, the firms must have significant foreign, overseas interests that we can objectively and systematically identify. Second, the overseas activities must take place in countries that possess a non-trivial probability (either ex ante or ex post) of being the target of economic sanctions. A search for the phrase "economic sanctions" in Factiva and Lexis/Nexis finds that the top countries that economic sanctions are discussed about in the public sphere are China, Lybia, Syria, Iran, and Iraq. We continue our investigation by examining the Compustat Segment tapes. Overwhelmingly, China is identified as the most common geographic segment. Publicly-traded firms with segments identified in Lybia, Syria, Iran and Iraq are either non-existent or have one (1) such company.

The above search process strongly suggests that we limit our investigation to solely China. Once China is chosen, the next task is to consider events that may affect the probability of economic sanctions. More specifically, to implement an event study, we seek *unanticipated* events that may affect this probability. The Tiananmen Square Massacre ("TSM") is one of the most salient events that has taken place that has affected U.S.-China relations. Over the following two years, there was ongoing public discussion about the possibility of economic sanctions imposed upon China (e.g., on November 9, 1989, both the House and Senate agreed upon a compromise package of tough punitive sanctions).

More importantly, from the aspect of creating a research design, the TSM which took place on June 4, 1989, was completely unexpected. The unexpected nature of this event makes it ripe for an event study. Other events and discussions, such as ongoing political discussions in the public domain about China's exchange rates, typically are long-anticipated events. Such long-window "events" lose much of their appeal for implementing event study tests because the long windows allow for confounding events to creep into the analysis. Statistical tests on such long window events are therefore fraught with hurdles that a clean, simple short-window event study does not have.

Given these advantages, we choose to examine the short-window stock price reactions (of publicly-traded firms with China as an identified geographic segment) to the Tiananmen Square Massacre. Using the Compustat Segment tapes, we identify 120 firms that have reported China as one of the geographic segments of their business. This small sample size, as well as the concentration on only one country, as well as on only one event, limits the generalizability of our results. However, the nature of this empirical project makes a more general approach extremely costly in data collection costs, as well as a loss in statistical power since an investigation of all countries and all significant events would exhibit an incredible amount of heterogeneity across countries and time. Instead, we chose a research design that concentrates on one country and one event, which enables us to examine within-sample heterogeneity.

Research Design

As discussed above, we limit our investigation to the 120 firms on the Compustat Segment tapes that identify themselves as having a geographic segment in China. We essentially perform an event study for these firms on the date of the Tiananmen Square Massacre event. June 4 was a Sunday, so there is no trading activity on this day. We therefore use the two immediate trading days that follow the Massacre, Monday and Tuesday (June 5 and 6); using several alternative windows does not qualitatively change the nature of our results. (I choose not to include the Friday before because there was unlikely to be any "information leakage" of the event beforehand due to its unanticipated nature. Results are qualitatively similar with inclusion of this day. Results are also similar if the window is defined as the 1-day window, Monday.)

In a univariate approach, a simple test to assess whether the average (market-adjusted) return over the event window is statistically different from zero will suffice. In regression form, we also test the same notion by estimating the following model:

$$CAR = \alpha + \beta\ TSM + \varepsilon$$

where CAR is the cumulative abnormal (value-weight market-adjusted) return for each day in the surrounding 40 trading days of the TSM (i.e., the 20 days prior and 20 days subsequent to the event), and TSM = 1 if the day is June 4, 1989; = 0 otherwise.

In this model, if the Tiananmen Square Massacre increases the probability of economic sanctions imposed on China, and this probability has an adverse effect on publicly-traded companies with explicit business ties to China (in the form of reported revenues originating from China), we predict the estimated coefficient for TSM will be significantly negative. (An alternative model is to regress raw returns on market-returns [i.e., the market model], as well as the TSM indicator variable. Untabulated results reveal that results are qualitatively identical using this alternative specification.)

In our expanded model, we also allow for cross-sectional variation of this event study by including several firm-specific characteristics and their interaction terms. Specifically, we estimate the following expanded model:

$$CAR = \alpha + \beta_0\ TSM + \beta_1\ MV + \beta_2\ REV + \beta_3\ NI + \beta_4\ MTB + \beta_5\ RND + \beta_6\ MV*TSM + \beta_7\ REV*TSM + \beta_8\ NI*TSM + \beta_9\ MTB*TSM + \beta_{10}\ RND*TSM + \varepsilon$$

where CAR is the cumulative abnormal (value-weight market-adjusted) return for each day in the surrounding 40 trading days of the TSM (i.e., the 20 days prior and 20 days subsequent to the event), TSM = 1 if the day is June 4, 1989; = 0 otherwise, MV = market-value-ranked quintile variable (ranging from 1 to 5), REV = (revenue / total assets)-ranked quintile variable (ranging from 1 to 5), NI = (net income / total assets)-ranked quintile variable (ranging from 1 to 5), MTB = market-to-book-ranked quintile variable (ranging from 1 to 5), and RND = (research and development / total assets)-ranked.

Here, the estimated coefficients for $\beta_6$ through $\beta_{10}$ represent the systematic variation that occurs from the TSM event based on interaction terms with various firm-characteristics.

## EMPIRICAL RESULTS

### Descriptive Statistics

In Table 1, we present descriptive statistics of the 120 firms of our sample. The average market value is $1.873 billion. Average revenues are $315 million. The average market-to-book ratio is 2.384. Untabulated results reveal that 23.9% of the sample report accounting losses during the year, and all companies are non-dividend paying stocks.

### Univariate Results

In Table 2, we present univariate results. We find that the mean raw return for firms with China as a reported segment is -0.0401 (t-statistic = -3.33). Results are similar when we market-adjust the returns. Specifically, the equal-weight (value-weight) adjusted returns were -0.0348 (-0.0304), with t-statistics of -2.89 and -2.53, respectively. When we consider the median returns, the results are similar, suggesting that outliers in the distribution are not driving the empirical results. Specifically, median raw (equal-weight)

[value-weight] returns were -0.0212 (-0.0173) [-0.0131]; all are statistically significant at the 5% level or better.

Table 1: Descriptive Statistics

| | n | Mean | 10% | 25% | Median | 75% | 90% |
|---|---|---|---|---|---|---|---|
| MV | 120 | 1873.6 | 20.2 | 57.1 | 239.8 | 1232.9 | 5885.0 |
| REV | 120 | 0.315 | 0.167 | 0.224 | 0.294 | 0.385 | 0.458 |
| NI | 120 | 0.017 | -0.010 | 0.006 | 0.017 | 0.028 | 0.044 |
| MTB | 120 | 2.384 | 0.949 | 1.220 | 1.831 | 2.685 | 4.242 |
| RND | 120 | 0.014 | 0.000 | 0.000 | 0.000 | 0.024 | 0.042 |

*This table presents descriptive statistics for the sample of 120 publicly-traded firms in the U.S. that report segment revenues derived from China. MV is market value. REV is revenues / total assets. NI is net income / total assets. MTB is market value of equity / book value of equity. RND is research and development expenses / total assets.*

Table 2: Average Short-window Returns around Tiananmen Square Massacre for Firms Reporting "China" as Geographic Segment

| | Mean | Median |
|---|---|---|
| Raw returns | -0.0401 | -0.0212 |
| (t-statistic) | (-3.92)*** | |
| Value-weight market-adjusted returns | -0.0304 | -0.0131 |
| (t-statistic) | (-2.72)*** | |
| Equal-weight market-adjusted returns | -0.0348 | -0.0173 |
| (t-statistic) | (-3.27)*** | |

*This table presents mean and median returns (of all firms reporting China as a geographic segment) over the 2-day period surrounding the TSM event (June 5 and 6, 1989). *** indicates significance at the 5% level.*

The results provide evidence that a segment of the source-country (U.S.) population is adversely impacted by the increased likelihood of economic sanctions on a target country; specifically, publicly-traded firms with sales that take place in the geographic segment, China. Because the international economics literature has not been able to perform any systematic examination of the effects on the *source* country of such events, these results make a clear contribution.

Table 3: Average Short-window Returns Around Tiananmen Square Massacre for Firms Reporting "Asia Pacific", the "Far East", or the "Pacific Rim" as Geographic Segment

| | | *Mean* | *Median* |
|---|---|---|---|
| Raw returns | | -0.0241 | -0.0154 |
| (t-statistic) | | (-3.92)*** | |
| Value-weight returns | market-adjusted | -0.0167 | -0.0109 |
| (t-statistic) | | (-2.72)*** | |
| Equal-weight returns | market-adjusted | -0.0201 | -0.0129 |
| (t-statistic) | | (-3.27)*** | |

*This table presents mean and median returns (of all firms reporting Asia Pacific, Far East or Pacific Rim as a geographic segment) over the 2-day period surrounding the TSM event (June 5 and 6, 1989). *** indicates significance at the 5% level.*

In Table 3, we expand the analysis to include those firms that do not specifically state China as a geographic segment, but rather, state a portion of Asia as a geographic segment. We consider those firms that state "Asia Pacific", the "Far East", and the "Pacific Rim" as a geographic segment. (Standardization in the Compustat Segment files is quite poor. For instance, there are firms that report "Asia Pacific",

"Asia-Pacific", "Asia/Pacific" as segments, and Compustat treats these as different reporting segments. Similarly, "People's Republic of China" [with the apostrophe], "Peoples Republic of China" [without], and "PRC" are all considered different segments. We use our judgment and assume that these "different" segments are all the same.) These firms may be exposed to China-specific economic-sanction risk, but may exhibit a weaker effect from the Massacre because geographical operations are spread to other countries on the Asian continent. Results in Table 3 confirm this. Specifically, the raw returns around the Massacre date for these "Asia"-related segments is -0.0241 (t-statistic=-3.92). The returns are statistically-significantly negative, but are smaller in magnitude than those of the China-specific firms. Market-adjusting by value- and equal-weight provides similar results, with returns of -0.0167 and -0.0201, respectively; t-statistics were -3.27 and -2.72. Results for the median returns are similar.
Overall, we find that firms exposed to China-specific risk, were met with a negative market reaction upon news of the Tiananmen Square Massacre.

Table 4: Regression of Abnormal (Value-weight Market-adjusted) Returns Regressed on Tiananmen Square Massacre Indicator Variable and Interaction Terms with Firm-specific Characteristics

| | **Model 1** | **Model 2** |
|---|---|---|
| Intercept | -0.0009*** | 0.0002 |
| | 7.51 | 0.43 |
| TSM | -0.0135*** | 0.0112*** |
| | 4.32 | 5.49 |
| MV | | 0.0001** |
| | | 1.84 |
| REV | | 0.0000 |
| | | 0.15 |
| NI | | -0.0001*** |
| | | -1.97 |
| MTB | | 0.0001*** |
| | | 2.14 |
| RND | | -0.0003*** |
| | | -7.29 |
| MV*TSM | | -0.0003 |
| | | -1.10 |
| REV*TSM | | -0.0010*** |
| | | -3.96 |
| NI*TSM | | 0.0004 |
| | | 1.42 |
| MTB*TSM | | -0.0011*** |
| | | -4.45 |
| RND*TSM | | -0.0012*** |
| | | -5.38 |
| Adj-R2 | 0.90 | 1.31 |

*This table presents results from regressing daily abnormal (value-weight market-adjusted) returns over the 40-day period surrounding the TSM event (i.e., the 20 days prior and 20 days subsequent to the event). TSM is an indicator variable =1 if the day is June 4, 1989, =0 otherwise. The following are quintile-ranked variables (ranging from 1 to 5): MV is market value. REV is revenues / total assets. NI is net income / total assets. MTB is market value of equity / book value of equity. RND is research and development expenses / total assets. ***, ** indicates significance at the 5%, 10% level.*

## Regression Results

In Table 4, we present our main regression results. In Model 1, we show the results of the initial model of regressing abnormal returns on the TSM indicator variable. The estimated coefficient for TSM is -0.0135 (t-statistic=4.32), suggesting that firms reporting China as a geographic segment realized a -1.35% negative abnormal return.

In Model 2, we include several quintile-ranked firm characteristics and their interaction terms. Results reveal that it is particularly firms that are high in revenues, high in growth options (market-to-book), and high in R&D expenditures that exhibit the adverse effect. Specifically, we find that the estimated coefficient for the REV*TSM is significantly negative (-0.0010, t-statistic=-3.96), as is the coefficients for MTB*TSM (-0.0011, t-statistic=-4.45) and RND*TSM (-0.0012, t-statistic=5.38). This suggests that there is systematic variation in the adverse effect that the Massacres had on firm value, where firms with high levels of revenues, market-to-book and R&D were particularly exposed, while those with lower levels of these characteristics were less exposed. We find no variation in the MV or NI variables, suggesting that there is no cross-sectional variation in the effect based on firm size or profitability.

## CONCLUSION

We examine publicly-traded firms in the U.S. that report China as a geographic segment in their financial statements. We specifically examine the short-window market reaction of such firms to the Tiananmen Square Massacre that took place on June 4, 1989. The Massacre was publicly rebuked by the U.S. and other countries as a significant human rights violation. There were explicit discussions in Congress about the possibility of imposing economic sanctions on China due to these events. In this study, we examine the market reactions of U.S.-based firms to examine whether changes in the probability of economic sanctions imposed on a *target* country can have any systematic, documented effect on the U.S., the *source* country. Our results suggest that these firms with explicit China-segment financial reporting suffered approximately a -3.5% decline in market-adjusted capitalization. This documents a specific (albeit limited) segment of the source country population that is adversely affected by changes in the probability of imposing economic sanctions on other countries, and starts to address some of the concerns in the international economics literature that laments the lack of systematic evidence of such adverse effects to the source country (e.g., Askari et al. 2003). Additional analysis suggests that this effect systematically varied—firms that were relatively higher in reported revenues, higher in market-to-book ratio, and higher in R&D expenditures experienced a more pronounced adverse effect.

One caveat of our study is its limited generalizability. The small sample size, as well as the concentration on only one country, as well as on only one event, suggests that the reader should be cautious before generalizing these inferences to other economic-sanction events. Nonetheless, we believe the findings help and approach taken in this study open up new avenues for future research in examining such *source*-country effects.

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## BIOGRAPHY

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# IMMIGRATION EFFECTS ON ECONOMIC SYSTEMS THROUGH DYNAMIC INEQUALITY INDICES

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**ABSTRACT**

*In this paper we propose a stochastic model to analyze the time evolution of inequality within an economic system. The classical inequality indices (Herfindahl-Hirschman, Gini and Theil's entropy) are thereby turned into a dynamic form. We show, by using a simulative approach, how it is possible to study the time evolution of inequality in a closed or open economy. We pay particular attention to immigration effects on the inequality. The model is able to manage different behaviors of the inequality indices and it may help decision makers calibrate the economic policies of inequality containment.*

**JEL:** C63

**KEYWORDS:** Income distribution**,** Dynamic inequality index, semi-Markov reward processes.

## INTRODUCTION

Relevant economic problems include the measure of changes in economic inequality. This measure can be examined by computing inequality indices. In this paper we propose a stochastic model that makes dynamic those classical inequality indices applied in a static framework. We simulate a model and compute the dynamic indices for different economic scenarios. Additionally we show useful of the model for analyzing the impact of immigration with respect to the concentration of wealth distribution in the economic system. We focus on effects caused by a population increase of 10% as a consequence of immigration. To this end we use computer code, programmed in the Mathematica language, to give results for any immigration level and economic scenario.

The paper is organized as follows. We start by describing the literature review in Section 2. Then we describe, in Section 3, the stochastic model and the way in which it is possible to compute the dynamic inequality indices. In Section 4 we present a numerical experience by showing the applicability of the model. Moreover we give some results with a particular attention to the immigration effects on the inequalities. Finally, we give some conclusions and further research suggestions in Section 5.

## LITERATURE REVIEW

Income inequality can be measured by means of econometric indices. The most common methods are the Herfindahl-Hirschman index, the Gini index and the Theil's entropy. The Herfindahl-Hirschman index is used mainly in industrial economic as a measure of market concentration. It is calculated by squaring the market share of each firm competing in the market and then summing the resulting numbers. Because the index measures market concentration, it is an inverse inequality measure. It takes into account the relative size and distribution of the agents in an economy. It approaches zero when the economy consists of a large number of agents of relatively equal size. It increases both as the number of agents in the economy decreases and as the disparity in size between those agents increases. This index has been proposed and studied by Hirschman (1964). Since then many applications appeared (see i.e. Kwoka, 1977;.Tirole, 1988; Kooleman and Van Doorslaer, 2004).

The Gini index is attributed to Gini (1912). Formally it is derived as one half of the mean of the absolute values of differences between all pairs of income relative to the mean income. It has values between zero and one. If the index value is equal to zero, then, the wealth is equidistributed in the population. On the contrary a value equal to one indicates that one economic agent possesses all the wealth. Among the properties we recall the scale independence and the invariance to replication of population. Moreover it meets the Pigou-Dalton principle of transfers (Athanasopoulos and Vahid, 2003).

The last quoted properties are satisfied also by the Theil's Entropy, introduced by Theil (1967). This index is defined as the sum of the products of the shares of the total income of each individual (denoted by $x_i$) times the logarithm of $nx_i$ where $n$ is the number of agents in the economic system. Besides the above mentioned properties, the index satisfies the strong principle of transfers and, moreover, it is additively decomposable (Cowell, 1995). The range of values is between 0 and $ln(n)$. The index gives 0 when the wealth is equidistributed among the agents whereas it reaches the value of $ln(n)$ when one agent holds all the wealth.

More details about economic indices are available in Dagum (1990) and Davies and Hoy (1995). Recently, the themes of inequality and wealth concentration in a subclass of an economic system have acquired increasing relevance and have been extensively studied (Quah, 1993, 1994, 1995; Shahrestani and Bidabad 2010).

In particular many papers make use of Markov chain modelling to describe income dynamics (Quah, 1993, 1994, 1995). Nevertheless, Markov chains do not consider properly the randomness in the waiting times in the states. Indeed, in the authors opinion, the elapsed time in a class of income, influences the probability distributions of the income. If an agent is in the rich class for long time, there is a stronger likelihood of remaining than that of an individual who is rich for a shorter period of time. The inadequacy of the Markov chain model has been outlined by Bickenbach and Bode (2003) without proposing any new model able to surmount this inadequacy.

These drawbacks have been overcome in a recent paper by D'Amico and Di Biase (2010) in where the authors proposed the use of a semi-Markov process to compute inequality indices dynamically. Generalization of the indices was made possible by considering a population that evolves over time according to a semi-Markov process and by considering the production of each economic agent as a reward process. Therefore it is possible to justify changes in the indices when the population composition varies over time and if other relevant economic events do not occur. The semi-Markov approach has been used because it is able to treat the phenomena of real life by considering explicitly the randomness in waiting times. It is worth noticing that the Markov chain model is a special case of our model and as such, our model should always work at least as well as the Markov chain model. A complete treatment of the semi-Markov models is available for example in Janssen and Manca (2006, 2007).

## THE MODEL

Consider a system of $N$ economic agents which can be countries, regions or individuals. At each time $t \in$ each agent $i \in \{1,2,...,N\}$ produces a quantity $y_i(t)$ of a good. Suppose that the $N$ time series of productions are observed up to time $T$. Then data available, in general, are represented by the following $N$ time series:

$$\begin{matrix} y_1(0)\ y_1(1)\ y_1(2)\cdots y_1(T) \\ y_2(0)\ y_2(1)\ y_2(2)\cdots y_2(T) \\ \vdots \quad \vdots \quad \vdots \quad \cdots \quad \vdots \\ y_N(0)\, y_N(1)\, y_N(2)\cdots y_N(T) \end{matrix} \tag{1}$$

The quantity $y_i(s)$ represents the wealth produced (in terms of good production) by agent $i$ at time $s$. In order to make things as simple as possible we classify each agent by means of its wealth. To this end each agent is allocated, at each time, in one of $K$ mutually exclusive classes:

$$E = \{C_1, C_2, \ldots, C_K\} \tag{2}$$

through an allocation map.

The allocation is done using some criterion, for example:

1)consider a partition of the positive real line through a sequence of real numbers $\{l_i\}_{i=1,2,\ldots,K}$ such that $0 = l_0 < l_1 < \ldots < l_{K-1} < l_K < \infty$

2)if the wealth produced by agent $i$ at time $t$ belongs to the *j-th* interval, then agent will be allocated in the $C_j$ class. In symbols:

$$y_i(t) \in \left[ l_{j-1}, l_j \right) \Leftrightarrow i \in C_j \text{ at } t. \tag{3}$$

Using the allocation map the $N$ income time series are transformed in $N$ time series of states of $E$:

$$\begin{matrix} C^1(0)\ C^1(1)\ C^1(2)\cdots C^1(T) \\ C^2(0)\ C^2(1)\ C^2(2)\cdots C^2(T) \\ \vdots \quad \vdots \quad \vdots \quad \cdots \quad \vdots \\ C^N(0)\, C^N(1)\, C^N(2)\cdots C^N(T) \end{matrix} \tag{4}$$

From these sequences we define $\forall h \in \{1,2,\ldots,N\}$:

$$\begin{aligned} T_n^h &= \inf\left\{ t \in \square : C^h(t) \neq C^h(T_{n-1}^h) \right\}, \ T_0^h = 0 \\ J_n^h &= C^h(T_n^h) \end{aligned} \tag{5}$$

In this way we obtain $N$ time series of states-times $\left( J_n^h, T_n^h \right)_{h=1,\ldots N}$

Such time series can be considered as realizations of a random process. Therefore the following hypothesis is formulated:

Assumption 1

The $\left( J_n^h, T_n^h \right)$ are $N$ independent trajectories of a discrete time Markov renewal process.

A Markov renewal process is stochastic process which generalize both Markov chains and renewal processes. The process behaviour is described by the kernel **Q** which is a matrix of functions. The probabilistic meaning of the element $Q_{ij}(t)$ has been described in the following relation:

$$Q_{J_n,j}(t) = P\left[ J_{n+1} = j, T_{n+1} - T_n \le t \middle| \left( J_k, T_k \right), k = 0,...,n \right] \tag{6}$$

In this model $Q_{ij}(t)$ denotes the probability that an agent now allocated in wealth class $C_i$ will receive with next allocation wealth class $C_j$ within a time $t$. The kernel can be estimated using techniques developed by Ouhbi and Limnios (1999)

$$\hat{Q}_{ij}(t) = \frac{1}{N_i} \sum_{h=1}^{N} \sum_{l=1}^{N^h} \mathbf{1}_{\left\{ J_{l-1}^h = i, J_l^h = j, T_l^h - T_{l-1}^h \le t \right\}}. \tag{7}$$

where $N^h = N^h(t) = \sup\left\{ n \in \square : T_n^h \le T \right\}$ is the total number of transitions held by the *h-th* agent. This identity consists of computing the number of times a transition from state $i$ towards state $j$ occurred in a time no longer than $t$ in the whole dataset, divided by the total number of transitions in state $i$.

For each $C_j \in E$ set

$$y_{C_j} = \frac{\sum_{h=1}^{N} \sum_{t=0}^{T} \mathbf{1}_{\left\{ C^h(t) = C_j \right\}} y_h(t)}{\sum_{h=1}^{N} \sum_{t=0}^{T} \mathbf{1}_{\left\{ C^h(t) = C_j \right\}}}. \tag{8}$$

It represents the average wealth of agent in class $C_j$ estimated from data. Therefore the following hypothesis is formulated:

Assumption 2

Each time an agent is in state $C_j$ it produces a wealth equal to $y_{C_j}$ which can be considered as a permanence reward in the class $C_j$.

In order to define dynamic inequality indices we introduce a population structure at some starting time, denoted by zero. At starting time $t = 0$ we have the configuration of the population

$$\left\{ n_{C_1}(0), n_{C_2}(0), ..., n_{C_k}(0) \right\}. \tag{9}$$

We would analyze the time evolution of some indices (stochastic processes) which describe the inequality of the total wealth in the $K$ classes. To this end, for each class $C_j \in E$, let $a_{C_j}(0,n)$ be the initial share of production (wealth) due to class $C_j$:

$$a_{C_j}(0,n)=\frac{n_{C_j}(0)y_{C_j}}{\sum_{h=1}^{K}n_{C_h}(0)y_{C_h}}=\frac{n_{C_j}(0)y_{C_j}}{<\underline{n}(0),\underline{y}\ >}. \tag{10}$$

We define the multivariate stochastic process

$$\underline{a}(t,n)=\left(a_{C_1}(t,n),a_{C_2}(t,n),...,a_{C_K}(t,n)\right) \tag{11}$$

which describes the time evolution of the shares of production among the classes of population:

$$a_{C_j}(t,n)=\frac{n_{C_j}(t)y_{C_j}}{<\underline{n}(t),\underline{y}\ >}. \tag{12}$$

It is a function of the multivariate counting process

$$\underline{n}(t)=\left(n_{C_1}(t),n_{C_2}(t),...,n_{C_K}(t)\right), \tag{13}$$

and of the vector of rewards

$$\underline{y}\ (t)=\left(y_{C_1},y_{C_2},...,y_{C_K}\right). \tag{14}$$

Economists have shown it is important to have measures of how concentrated the production of the wealth inside an economic system is. Indeed for economic growth considerations and for social welfare needs, it is necessary to execute economic policies aimed to an increase of the average gross domestic product but also lead to lower income distribution inequality in the society, see for instance Campano and Salvatore (2006), Dasgupta et al. (1973).

The literature includes many indices useful for the measurement of concentration and inequality of wealth. In this section we define and analyze some dynamic inequality indices usually computed in the economic analyses in a static way, see for instance Hirschman (1964), Gini (1912), Theil (1967). Concentration indices have been mainly used in the industrial organization literature to provide information on the degree of competition inside an industry. A book by Tirole (1988) constitutes a key reference. Concentration indices consider as relevant factors inequality with respect to size of the firms and the number of the firms. So it is evident that some connections should exist between concentration and inequality indices. Marfels (1971) was one of the first to investigate the relationship between concentration and inequality measures. A more recent contribution to this subject is given by Bajo and Salas (2002) were a connection between concentration and inequality indices is provided. For this reason, henceforth, we will refer only to inequality indices.

The Herfindahl-Hirschman index

This index is widely used as a measure of inequality and it was defined by Hirschman (1964) as

$$C_{HH}=\sum_{i=1}^{K}a_i^2 \tag{15}$$

In order to measure the time evolution of the inequality of wealth in an economic system, it is necessary to replace the static Herfindahl-Hirschman index with a dynamic one. It is possible to reach this goal because the shares of production among the classes of population are considered a multivariate stochastic process through formula (12).

DEFINITION Given the population configuration $\left\{n_{C_1}(0), n_{C_2}(0), ..., n_{C_k}(0)\right\}$ at the starting time $t = 0$ and the vector of mean productions $\underline{y}\ (t) = \left(y_{C_1}, y_{C_2}, ..., y_{C_K}\right)$, the dynamic Herfindahl-Hirschman index is the stochastic process:

$$C_{HH}(t) := \sum_{i=1}^{K} a_{C_i}^2(t,n) = \sum_{i=1}^{K} \left( \frac{n_{C_i}(t) y_{C_i}}{< \underline{n}(t), \underline{y} >} \right)^2 . \tag{16}$$

Because it is difficult to characterize the evolution of the process $C_{HH}(t)$, we concentrate on its first moment:

$$E\left[ C_{HH}(t) \right] = \sum_{i=1}^{K} E\left[ \left( \frac{n_{C_i}(t) y_{C_i}}{< \underline{n}(t), \underline{y} >} \right)^2 \right] . \tag{17}$$

In D'Amico and Di Biase (2010) it has been proved that

$$\begin{aligned} E\left[ C_{HH}(t) \right] &= \sum_{i=1}^{K} \sum_{\underline{n}' \in pc} \frac{N!}{\prod_{h=1}^{K} n_{C_h}'!} \prod_{h=1}^{K} \left( P_h(t) \right)^{n_{C_h}'} \left( a_{C_i}(t, n') \right)^2 \\ &= \sum_{i=1}^{K} \sum_{\underline{n}' \in pc} P\left[ \underline{n}(t) = \underline{n}' \mid \underline{n}(0) = \underline{n} \right] \left( a_{C_i}(t, n') \right)^2 \end{aligned} \tag{18}$$

where by pc we denoted the set of all possible population configuration. The cardinality of the population configuration set is given by the following binomial coefficient:

$$card(pc) = \binom{N + K - 1}{K - 1}. \tag{19}$$

The joint distribution of each population configuration in the classes, as stated by Mehata and Selvam (1986), follows multinomial distribution with parameters $\left\{N, P_1(t), P_2(t), ..., P_k(t)\right\}$, where for each $i$ = 1, 2,..., $K$:

$$P_i(t) = \sum_{h=1}^{K} \frac{n_h(0)}{N} \varphi_{hi}(t) \tag{20}$$

being $\varphi_{hi}(t)$ the transition probabilities of the semi-Markov process associate to the Markov renewal process. These transition probabilities can be obtained by solving the following evolution equations:

$$\varphi_{hi}(t) = \delta_{hi}(1 - \sum_{r \in E} Q_{hr}(t)) + \sum_{r \in E} \sum_{s=1}^{t} \left(Q_{hr}(s) - Q_{hr}(s-1)\right) \varphi_{ri}(t-s). \tag{21}$$

Algorithms able to solve the evolution equation (21) are well known in literature, for instance Janssen and Manca (2006).

The Gini Index

The Gini index is one of the most used inequality index since it satisfies common criteria of inequality measures, see Sen (1993): a)Invariance to unit of measurement of incomes. If the incomes of all the economic agents increase (decrease) of the same percentage, then the inequality measure should not change. b)Invariance to replication of population. It means that if, for instance population size is doubled by adding an exact replica of every individual to the population, then the inequality measure does not change. c)Compliance with the Pigou-Dalton principle of transfers, see for instance Dalton (1920), Quah (1996). This principle requires the inequality measure to not increase any time that income is redistributed from a richer agent to a poorer agent and vice versa.

A computationally efficient representation of the Gini index is the following, see Gini (1912):

$$G = 1 + \frac{1}{K} - \left(\frac{2}{K^2 \overline{a}}\right) \sum_{i=1}^{K} i a_{(i)}, \tag{22}$$

where $a_{(i)}$ is the *i-th* highest share and $\overline{a}$ is the average population share. A sorting of shares is required first for computing the index. The Gini index has values between zero and one. If the index value is equal to zero then the wealth is equidistributed in the population. On the contrary a value equal to one denotes the fact that only one economic agent possesses all the wealth.

DEFINITION Given the population configuration $\left\{n_{C_1}(0), n_{C_2}(0), ..., n_{C_k}(0)\right\}$ at the starting time $t = 0$ and the vector of mean productions $\underline{y}(t) = \left(y_{C_1}, y_{C_2}, ..., y_{C_K}\right)$, the dynamic Gini index is the stochastic process:

$$G(t) := 1 + \frac{1}{K} - \left(\frac{2 \sum_{i=1}^{K} i a_{(i)}(t,n)}{K}\right). \tag{23}$$

First moment can be written, see D'Amico and Di Biase (2010), as

$$E\left[G(t)\right] = 1 + \frac{1}{K} - \frac{2}{K} \sum_{i=1}^{K} \sum_{\underline{n}' \in pc} \frac{i \cdot N!}{\prod_{h=1}^{K} n'_{C_h}!} \prod_{h=1}^{K} \left(P_h(t)\right)^{n'_{C_h}} \left(a_{C_i}(t, n')\right). \tag{24}$$

The Theil's Entropy

This measure has been proposed by Theil (1967) and is derived from the mathematical theory of communication founded by Shannon (1948). In its static form the Theil's entropy is defined in Theil (1967) by:

$$T_e = \sum_{i=1}^{K} a_i \left( \log K a_i \right). \tag{25}$$

This index satisfies the following criteria: a) Strong principle of transfers. It is more sensitive to transfers of wealth in the lower tail of the wealth distribution than it is to the transfers in the upper tail, see Cowell (1995). b) It is additively decomposable. This means that for any significant grouping of the population (for example by age, region, occupation) the Theil measure in the entire population can be additively decomposed to inequality between subgroups and an appropriately weighted average of inequality within each group.

DEFINITION Given the population configuration $\left\{ n_{C_1}(0), n_{C_2}(0), ..., n_{C_k}(0) \right\}$ at the starting time $t = 0$ and the vector of mean productions $\underline{y}(t) = \left( y_{C_1}, y_{C_2}, ..., y_{C_K} \right)$, the dynamic Theil's Entropy is the stochastic process:

$$T_e(t) := \sum_{i=1}^{K} a_{C_i}(t,n) \left( \log K a_{C_i}(t,n) \right). \tag{26}$$

First moment has been evaluated by D'Amico and Di Biase (2010), as:

$$E\left[ T_e(t) \right] = \sum_{i=1}^{K} \sum_{\underline{n}' \in pc} \frac{N!}{\prod_{h=1}^{K} n_{C_h}'!} \prod_{h=1}^{K} \left( P_h(t) \right)^{n_{C_h}'} \left( \frac{\log K\, a_{C_i}(t,n')}{a_{C_i}^{-1}(t,n')} \right). \tag{27}$$

**SIMULATION RESULTS**

In this section we provide numerical examples performed by MATHEMATICA software. In our *Mathematica* session we loaded the adds-on packages *MultivariateStatistics* and *Combinatorica* able to compute in a direct way the binomial coefficient $\binom{N+K-1}{K-1}$ and the multinomial distribution values necessary in order to evaluate the joint distribution of each population configuration in the classes.
In the following simulations we classify the economic agents in 5 different classes

$$E = \{C_1, C_2, C_3, C_4, C_5\}. \tag{28}$$

Economic agents are allocated in the classes depending on their wealth. In $C_1$ we can find the poorest agents and in $C_5$ the richest according to the allocation map described by formula (3). In order to describe the time evolution of the population we need the semi-Markov kernel (6). To this end we considered the transition probability matrix estimated by Quah (1996):

$$\mathbf{P} = \begin{pmatrix} 0.97 & 0.03 & 0.00 & 0.00 & 0.00 \\ 0.04 & 0.92 & 0.04 & 0.00 & 0.00 \\ 0.00 & 0.04 & 0.92 & 0.04 & 0.00 \\ 0.00 & 0.00 & 0.04 & 0.94 & 0.02 \\ 0.00 & 0.00 & 0.00 & 0.01 & 0.99 \end{pmatrix} \tag{29}$$

and, due to unavailability of real data, we simulated the conditional waiting time cumulative distribution functions. From matrix **P** we can see that the agents tend to allocate in two main clusters: the first contains poor agents and the second rich agents.

In order to illustrate the results we consider three basic different economic scenarios called Average, Poor and Rich. The Average scenario takes into account a hypothetical situation in which agents are allocated mainly in the central class $C_3$. More precisely this economy is symmetrically distributed with respect to the central class and is described in the second column of Table 1. The mean wealth produced by an agent, depending on own class, is reported in the fifth column and it is assumed invariant with respect to the three economic scenarios. For instance, in class $C_2$ of the average scenario, there are two agents each of them produces a wealth equal to four units of good production. The Poor scenario is characterized by an asymmetrical distribution towards the poorest class, as reported in the third column of Table 1. Finally the Rich scenario is characterized by an asymmetrical distribution towards the richest class, as reported in the fourth column of Table 3.

Table 1: Average, Poor and Rich Economy Configurations

| **Classes** | Average $\underline{n}(0)$ | Poor $\underline{n}(0)$ | Rich $\underline{n}(0)$ | $\underline{y}(0)$ |
|---|---|---|---|---|
| $C_1$ | 1 | 4 | 1 | 2 |
| $C_2$ | 2 | 2 | 1 | 4 |
| $C_3$ | 4 | 2 | 2 | 10 |
| $C_4$ | 2 | 1 | 2 | 18 |
| $C_5$ | 1 | 1 | 4 | 50 |

*This Table shows Average ,Poor and Rich economic scenarios. They describe hypothetical situations in which the N=10 agents are allocated mainly in the central class, poorest class and richest class, respectively.*

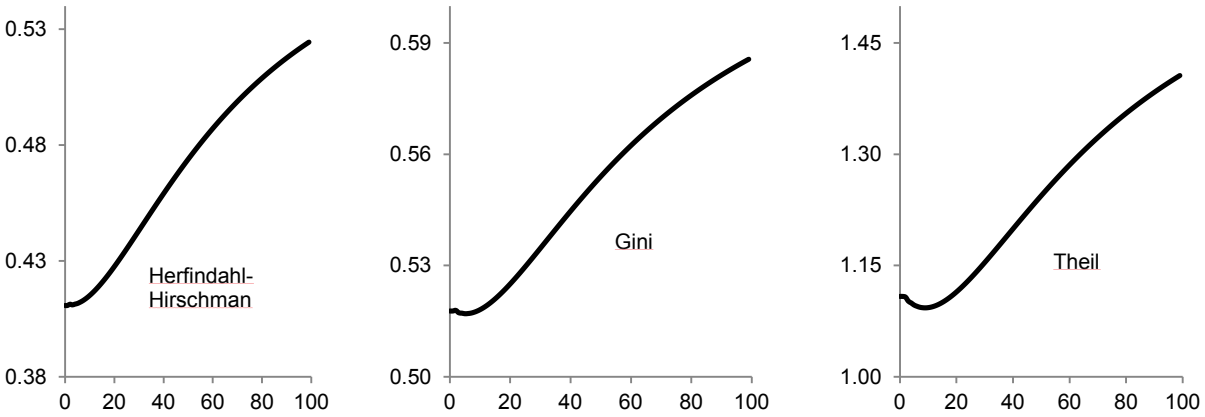
In Figure 1 we show the three dynamic inequality indices computed for a time horizon of 100 periods for the three economic scenarios above described. The observation of these graphical results leads to the following remarks. All the indices, after a certain period of time, are increasing proving the increase of the inequality. The inequality results greater in the rich scenario than in the average one and, the same, greater in the average scenario than in the poor one. That can be explained by noting that if there many rich persons they tend to remain rich and, because they produce higher wealth with respect to other people, as a consequence we have a high value of inequality. On the contrary if there are a lot of poor persons the inequality decreases. In such a case the total wealth produced by poor people is less dissimilar from that produced by the few rich agents.

The second investigation concerns the change of indices with respect to a uniform increase in the population. We considered a doubling and a tripling of the population size, as in Table 2. We do not present the results graphically because the index changes are very thin and for the Gini index, according to the invariance to replication of population principle, are nulls.

Immigration Effects

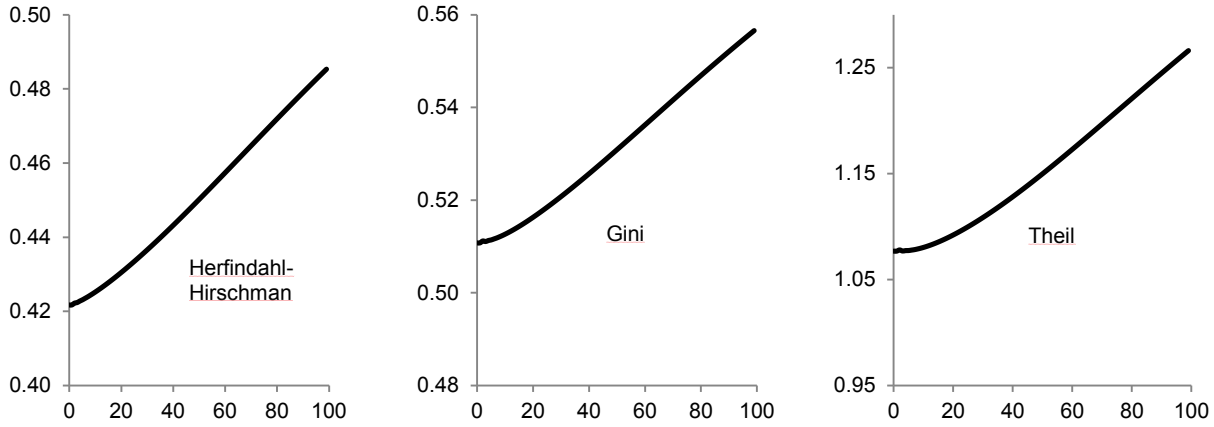
In this subsection we would like to show how the model could be useful for analyzing the impact of immigration with respect to the inequality of wealth distribution in the economy. We focused our attention to the effects due to a population increase of 10% as a consequence of immigration. Then we added one agent to each economic scenario. Moreover within each scenario we modified the population

Figure 1: Herfindahl-Hirschman, Gini, Theil Dynamic Indices, $N = 10$, Average Scenario



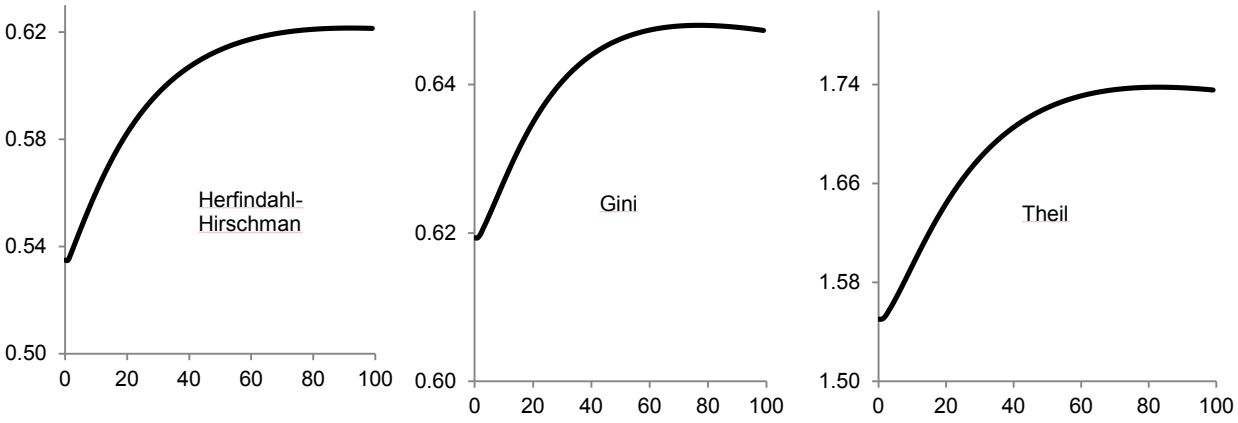

*This Figure shows the index values evolving in time for an Average economy configuration with a population size equal to 10. On the left side of figure the Herfindahl-Hirschman index is pictured. In the middle and on the right, Gini and Theil indices are displayed respectively.,*

Figure 2: Herfindahl-Hirschman, Gini, Theil Dynamic Indices, $N = 10$, Poor Scenario




*This Figure shows the index values evolving in time for an Poor economy configuration with a population size equal to 10. On the left side of figure the Herfindahl-Hirschman index is pictured. In the middle and on the right, Gini and Theil indices are displayed respectively.,*

Figure 3: Herfindahl-Hirschman, Gini, Theil Dynamic Indices, $N = 10$, Rich Scenario




*This Figure shows the index values evolving in time for an Rich economy configuration with a population size equal to 10. On the left side of figure the Herfindahl-Hirschman index is pictured. In the middle and on the right, Gini and Theil indices are displayed respectively.,*

Table 2: Configurations under Different Population Sizes

| Scenario | Agents | $n_{C_1}(0)$ | $n_{C_2}(0)$ | $n_{C_3}(0)$ | $n_{C_4}(0)$ | $n_{C_5}(0)$ |
|---|---|---|---|---|---|---|
| A | 20 | 2 | 4 | 8 | 4 | 2 |
| | 30 | 3 | 6 | 12 | 6 | 3 |
| P | 20 | 8 | 4 | 4 | 2 | 2 |
| | 30 | 12 | 6 | 6 | 3 | 3 |
| R | 20 | 2 | 2 | 4 | 4 | 8 |
| | 30 | 3 | 3 | 6 | 6 | 12 |

*This Table shows the configurations used in the simulations with respect to an uniform increase in the population.. In particular doubling and tripling of number of the agents has been considered.*

configuration through the increase of one unit allocated first in the poorest class $C_1$, next in average class $C_3$ and finally in the richest class $C_5$. The mean wealth produced by an agent, depending on own class, is reported in the eleventh column and we suppose that the mean wealth is invariant with respect to immigration and economic scenarios.

To arrive at this point we computed the indices for each of the nine population configurations collected in Table 3. Due to paper length constraints we are not able to report all the results. Additional results are available from the authors by request. Here after we discuss only the results concerning the Theil index. The Figure 4 shows the Theil index computed for a time horizon of 100 periods in the Average scenario.

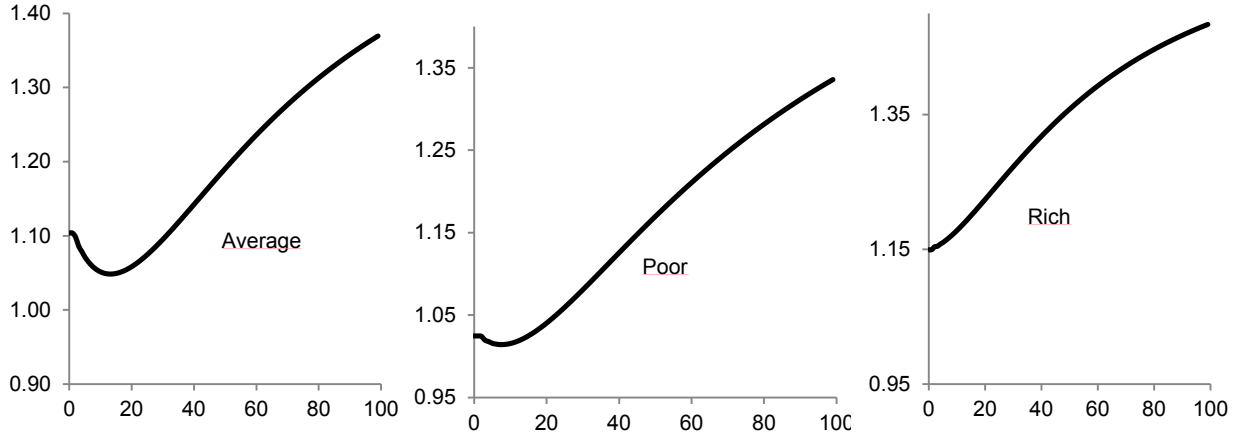
Table 3: The Average, Poor, Rich Economy Configurations Due to Immigration

| | Average | | | Poor | | | Rich | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Classes** | $\underline{n}^A(0)$ | $\underline{n}^P(0)$ | $\underline{n}^R(0)$ | $\underline{n}^A(0)$ | $\underline{n}^P(0)$ | $\underline{n}^R(0)$ | $\underline{n}^A(0)$ | $\underline{n}^P(0)$ | $\underline{n}^R(0)$ | $y(0)$ |
| $C_1$ | 1 | 2 | 1 | 4 | 5 | 4 | 1 | 2 | 1 | 2 |
| $C_2$ | 2 | 2 | 2 | 2 | 2 | 2 | 1 | 1 | 1 | 4 |
| $C_3$ | 5 | 4 | 4 | 3 | 2 | 2 | 3 | 2 | 2 | 10 |
| $C_4$ | 2 | 2 | 2 | 1 | 1 | 1 | 2 | 2 | 2 | 18 |
| $C_5$ | 1 | 1 | 2 | 1 | 1 | 2 | 4 | 4 | 5 | 50 |

*This Table shows the configurations of the population modified in the following way:* ***a)*** *within the Average scenario one additional entry in the Average class (configuration* $\underline{n}^A(0)$ in the *second column*), *one additional entry in the Poor class (configuration* $\underline{n}^P(0)$ *in the third column) and one additional entry in the Rich class (configuration* $\underline{n}^R(0)$ in the *fourth column*); ***b)*** *within the Poor scenario one additional entry in the Average class (configuration* $\underline{n}^A(0)$ in the *fifth column*), *one additional entry in the Poor class (configuration* $\underline{n}^P(0)$ i*n the sixth column*) *and one additional entry in the Rich class (configuration* $\underline{n}^R(0)$ i*n the seventh column*); ***c)*** *within the Rich scenario one additional entry in the Average class (configuration* $\underline{n}^A(0)$ i*n the eighth column*), *one additional entry in the Poor class (configuration* $\underline{n}^P(0)$ i*n the ninth column) and one additional entry in the Rich class (configuration* $\underline{n}^R(0)$ *in the tenth column*).

In the Average economic scenario we remark that there is an increase of the inequality with regard to the early periods because a new additional agent in the class $C_3$ leads to a wealth production with a lower interclass variance. Afterward, thanks also to the kernel structure, the population tends towards two distinct clusters. Later like in the case without immigration, there is an increase in inequality. Therefore it seems that a 10% immigration in the class $C_3$ leads to an increase in gross domestic product but without a corresponding increase in the long term inequality. Indeed for the second column configuration of Table 1 we have $\text{GDP} = 1\times 2 + 2\times 4 + 4\times 10 + 2\times 18 + 1\times 50 = 136$, whereas for the configuration in the second column of Table 3, GDP = 146.

Figure 4: Theil Dynamic Index, $\underline{n}^{A}(0),\underline{n}^{P}(0),\underline{n}^{R}(0)$, Average Scenario

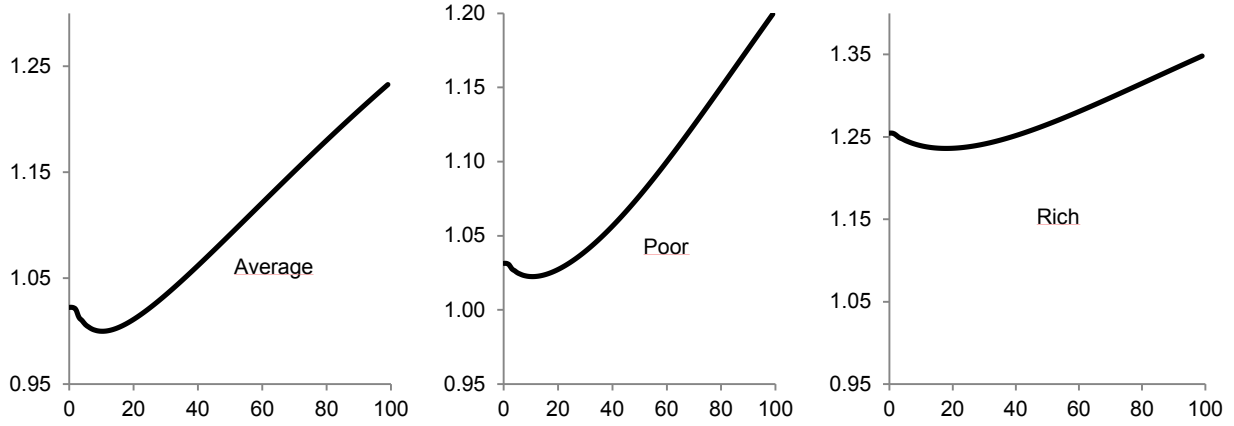



*This Figure shows the immigration effects on the values of the Theil index for an Average economy configuration with a population size equal to 11. On the left side of figure the Theil index corresponding to the configuration* $\underline{n}^{A}(0)$ *is pictured. On the middle and on the right the same index is displayed for configurations* $\underline{n}^{P}(0),\underline{n}^{R}(0)$ *respectively.*

Moreover a 10% immigration in the $C_1$ class determines a decreasing of the inequality. Indeed the total wealth produced by the $C_1$ class grows, and then interclass variance of wealth production goes down. On the contrary a 10% immigration in the $C_5$ class determines an increasing of the inequality by generating an higher interclass variance. Therefore we conclude that a 10% immigration in the $C_5$ class produces a strong increase of gross domestic product and at same time generates an increase in the inequality. This points out that decision makers need to measure oneself with a trade-off between gross domestic product and inequality.

The Figure 5 shows the Theil index computed for a time horizon of 100 periods in the Poor scenario.

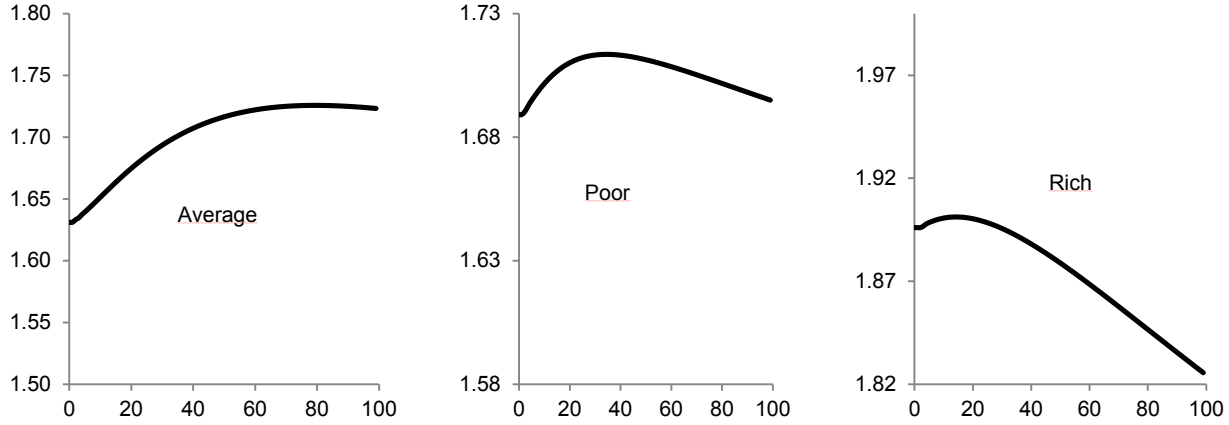
Figure 5: Theil dynamic index, $\underline{n}^{A}(0),\underline{n}^{P}(0),\underline{n}^{R}(0)$, Poor scenario




*This Figure shows the immigration effects on the values of the Theil index for the Poor economy configuration with a population size equal to 11. On the left side of figure the Theil index corresponding to the configuration* $\underline{n}^{A}(0)$ *is pictured. On the middle and on the right the same index is displayed for configurations* $\underline{n}^{P}(0),\underline{n}^{R}(0)$ *respectively.*

About the Poor scenario, a 10% immigration in both class $C_3$ and class $C_1$ reduces the inequality, but an immigration in the class $C_5$ leads to a sharp growth. This follows from the comparison of Figure 5 with the Theil index in Figure 2. Figure 6 shows the Theil index computed for a time horizon of 100 periods in the Rich scenario.

Figure 6: Theil Dynamic Index, $\underline{n}^A(0), \underline{n}^P(0), \underline{n}^R(0)$, Rich Scenario




*This Figure shows the immigration effects on the values of the Theil index for the Rich economy configuration with a population size equal to 11. On the left side of figure the Theil index corresponding to the configuration $\underline{n}^A(0)$ is pictured. On the middle and on the right the same index is displayed for configurations $\underline{n}^P(0), \underline{n}^R(0)$ respectively.*

The results obtained in this case are very interesting due to behaviour of the index which is heterogeneous. For instance a 10% immigration in the class $C_5$ leads to a growth of the inequality that in time trends down in a natural way. On the contrary a 10% immigration in the class $C_1$ leads to lower values of the index as expected. There is first a developing sage followed by a critical stage. Finally a 10% immigration in the class $C_3$ suggests that the index increases in time. All these behaviours of the inequality indices may help decision makers calibrate the economic policies of containment of inequality.

## CONCLUDING COMMENTS

In this paper we analysed the immigration effect on inequality within a hypothetic economic system. The analysis was performed by simulating the model proposed by D'Amico and Di Biase (2010). This allowed quantification of the inequality evolution through the computation of dynamic inequality indices. We think the knowledge of time evolution of inequality indices plays a fundamental role in the programming of economic policies geared to the containment of economic inequality. For this reason the model could be of great help to decision makers.

The results of the simulation showed different types of temporal evolutions of the index. Indeed the trajectory of the index can increase and decrease and it can be convex or concave. Possible avenues for future development of our model could be: a) a real data application; b) the consideration of a interdependence relation in the population dynamics; c) the construction of a geographical model; d) the stochastic orders of the semi-Markovian processes involved; e) the research of numerical bounds aimed to explain the differences among the indices values.

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# CONTEXT SENSITIVITY WITH NEURAL NETWORKS IN FINANCIAL DECISION PROCESSES

Charles Wong, Boston University
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**ABSTRACT**

*Context modifies the influence of any trading indicator. Ceteris paribus, a buyer would be more cautious buying in a selling market context than in a buying market. In order for automated, adaptive systems like neural networks to better emulate and assist human decision-making, they need to be context sensitive. Most prior research applying neural networks to trading decision support systems neglected to extract contextual cues, rendering the systems blind to market conditions. This paper explores the theoretical development and quantitative evaluation of context sensitivity in a novel fast learning neural network architecture, Echo ARTMAP. The simulated risk and cost adjusted trading results compare very favorably on a 10-year, random stock study against the market random walk, regression, auto-regression, and multiple neural network models typically used in prior studies. By combining human trader techniques with biologically inspired neural network models, Echo ARTMAP may represent a new tool with which to assist in financial decision-making and to explore life-like context sensitivity.*

**JEL:** G11, G17

**KEYWORDS:** Recurrent neural networks, context sensitivity, financial forecasting, investment decisions

## INTRODUCTION

Stock prices refer to the latest mutually decided transaction price and time between a voluntary buyer and seller. If the stock prices over time are increasing, they indicate that the buying interest exceeds the selling interest. This signals a bullish or optimistic market context favorable to investment, all else equal. A successful trader (Schwager, 1994) often considers the underlying market sentiment when making decisions. This sensitivity to context in decision-making is one of the hallmarks of human intelligence (Akman, 2002).

Human subjects often treat similar tasks differently under different contexts (e.g. Carraher, Carraher, & Schliemann, 1985; Bjorklund & Rosenblum, 2002). Working memory allows features to be tracked over time to extract a context (Kane & Engle, 2002; Baddeley & Logie, 1999). Context sensitivity theoretically enables the decision-maker to disambiguate different feature inputs that may be identical at single points in time (Kane & Engle, 2002).

To better model human decision-making with context sensitivity, an automatic decision system must be context sensitive (see Figure 1, left). Tracking the price over time to determine whether the market is uptrending (bullish) or downtrending (bearish) intuitively provides contextual cues (Schwager, 1994). This paper introduces a context sensitive neural network decision system, Echo ARTMAP.

Figure 1: Extracting Contextual Patterns from Historical Prices

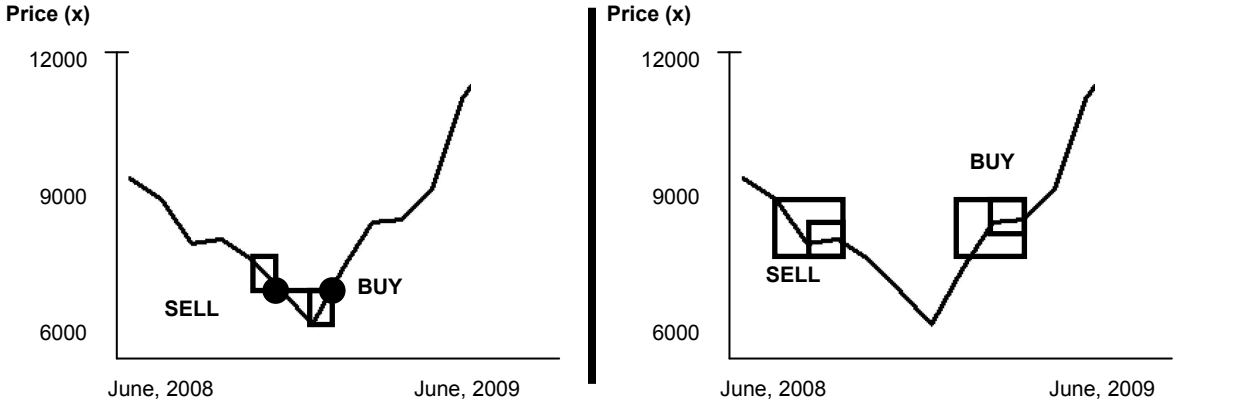


*Figure 1: One-year daily prices for the Dow Jones Industrial Average. (left) Identical point inputs (the horizontal line indicates same price) lead to different classes. The boxes show different contexts that can disambiguate the two inputs. (right) Identical short duration inputs (small boxes) lead to different classes. The longer duration input (large boxes) can disambiguate the two inputs.*

The remaining sections of this paper divide as follows: Section II reviews the recent literature applying neural models to financial time series. Section III provides a brief review of the default ARTMAP neural network kernel mechanism as a base for later extension; Section IV demonstrates how to theoretically adapt the ARTMAP to context sensitivity; Section V outlines the data and methodology; Section VI provides the results and discussion; and Section VII contains concluding remarks.

## LITERATURE REVIEW

Neural networks are biologically inspired, automated, and adaptive analysis models that can better accommodate non-linear, non-random, and non-stationary financial time series than alternatives (e.g. Lo, 2001; Lo & Repin, 2002; Lo, 2007; Gaganis, Pasiouras, & Doumpos, 2007; Yu, Wang, & Lai, 2008). Much research in the past decade applies them to financial time series with typically strong and compelling empirical results. Our survey of 25 studies published in the past decade (Wong & Versace, 2011a) divides the network models into four categories with breakdowns: (1) slow learning context blind, 56%; (2) fast learning context blind, 28%; (3) slow learning context sensitive, 16%; and (4) fast learning context sensitive, 0%.

Saad, et al. (1998), compare multiple neural models on financial forecasting accuracy. Data included the daily prices for 10 different stocks over one year representing high volatility, consumer, and cyclical industries. Models included a fast learning radial basis function, a slow learning backpropagation network, and a slow context sensitive recurrent backpropagation model. Results showed that all three networks provided similar performance.

Versace, et al. (2004), apply genetic algorithms to determine the network, structure, and input features for financial forecasting. Data included 300 daily prices from the Dow Jones Industrial Average. Features included a series of technical indicators. Models included both fast learning and slow context sensitive networks. Results showed that using a genetic algorithm to choose and design the network and features could generate significant accuracy in trading decisions.

Sun, et al. (2005), use a fast learning neural model for time series. Data included two years of daily S&P 500 and Shanghai Stock Exchange indices. Their model updates the fast learning radial basis function with a novel Fisher's optimal partition algorithm for determining basis function centers and sizes with

dynamic adjustment. Results show that the updated fast learning model provides significant improvements.

Zhang, et al. (2005), explore slow learning backpropagation networks for financial time series analysis. Data included seven years of daily Shanghai Composite Index data. Enhancements to the slow learning model apply normalization and kernel smoothing to reduce noise. Results show that the slow learning models consistently outperformed the buy-and-hold strategy.

Chen & Shih, (2006), apply neural network models to six Asian stock markets, including Nikkei, Hang Seng, Kospi, All Ordinaries, Straits Times, and Taiwan Weighted indices. Features included five technical analysis indicators. Models included fast learning support vector machines and the slow learning backpropagation. Results show that the neural models outperformed autoregression models, especially with respect to risk. The fast learning models also appear to outperform the slow learning models.

Ko & Lin, (2008), apply a modified slow learning backpropagation model to a portfolio optimization problem on 21 companies from the Taiwan Stock Exchange for five years. Results show that their resource allocation neural network outperformed the buy-and-hold considerably, averaging 15% to 5% yearly gains.

Freitas, et al. (2009), apply an enhanced slow learning context sensitive model to weekly closing prices for 52 Brazilian stocks for 8 years. Their model uses recurrence to increase emphasis towards more recent data. Results show that their model produced results in excess of the mean-variance model and the market index with similar levels of risk.

In all remaining cases, the neural networks appear outperform random walk or buying-and-holding approaches to the financial time series. The results appear robust regardless of network learning rule or context sensitivity. The bias towards slow learning networks probably reflects their earlier availability (Rumelhart, Hinton, & Williams, 1986). Of the studies employing context sensitive models, all relied on slow learning rules incorporated in Jordan and Elman networks (e.g. Versace et al, 2004; Yu, Wang, & Lai, 2008; Freitas, Souza, & Almeida, 2009; Jordan, 1986; Elman, 1990). Studies directly comparing fast learning, slow learning, and slow learning context sensitive networks have found no significant differences in empirical results (e.g. Saad et al, 1998).

This paper explores the disagreement between the intuition supporting the importance of context sensitivity and the empirical results showing no differential benefit relative to existing neural network models. The bulk of the studies indicate existing models tend not to incorporate fast learning with context in finance. Therefore, this paper introduces a novel context sensitive fast learning network, Echo ARTMAP, for transparent analysis (Moody & Darken, 1989; Carpenter, Grossberg, & Reynolds, 1991; Parsons & Carpenter, 2003). The base fast learning component model is ARTMAP (Amis & Carpenter, 2007) from the Adaptive Resonance Theory class of models. While ARTMAP is not a perfect blend of all existing fast learning characteristics (e.g. it differs in learning vs. Radial Basis Function networks), it can be regarded as a general purpose, default network that automatically adapts and scales its topology to a generic dataset (e.g. Carpenter, 2003). For this paper, benchmarks include random walk, regression, auto-regression, a slow learning backpropagation (Rumelhart, Hinton, & Williams, 1986), a fast learning ARTMAP (Amis & Carpenter, 2007), and a slow learning context sensitive model (Jordan, 1986).

## Kernel Review for a Typical Fast Learning Model

Slow learning networks possess hidden layers that have opaque representations relating inputs to outputs. In contrast, fast learning allows immediate and transparent convergence for independent storage layer

nodes. ARTMAP is a type of fast learning network that was inspired by biological constraints and can be adapted to a variety of uses. Extensive literature shows its capabilities and interprets its mathematical bases (e.g. Amis & Carpenter, 2007; Parsons & Carpenter, 2003). Figure 2 (left) shows the default ARTMAP flow diagram.

Figure 2: A Typical General Purpose Fast Learning Neural Model, ARTMAP

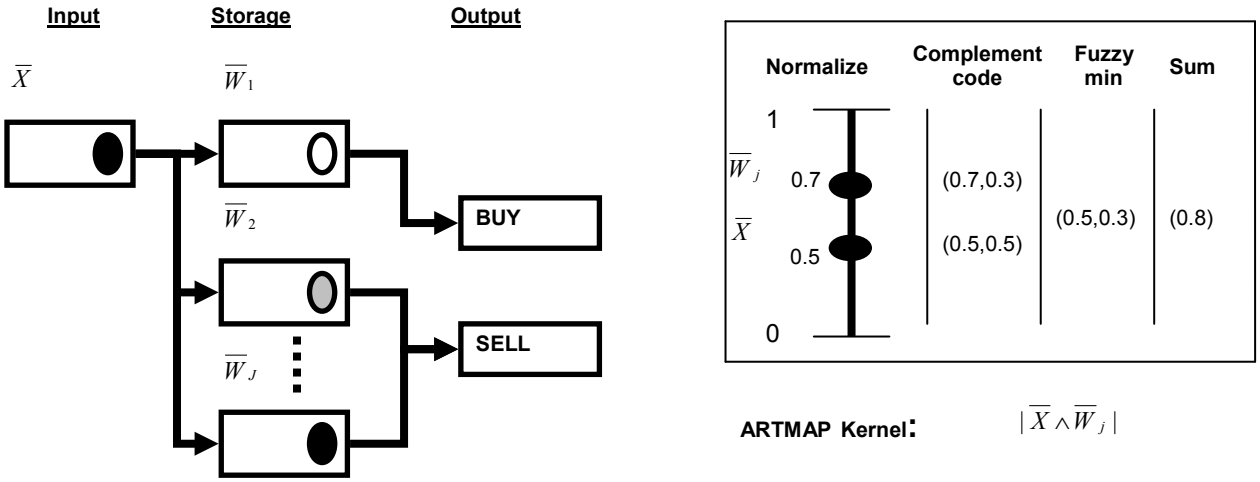


*Figure 2: (left) A default ARTMAP network diagram showing the three-layer architecture. For a particular input pattern, $\overline{X}$ the ARTMAP kernel finds the most similar stored pattern, $\overline{W}_j$ which maps to a specific output node. Boxes, or nodes, represent patterns (responses in the output layer) and circles represent individual components of the pattern. (right) This is an example of the ARTMAP kernel calculating the similarity between an input pattern and a single stored pattern. See the text for details.*

There are three layers in the default ARTMAP network. The input layer receives input patterns, each represented by a vector with one or more components, $\overline{X}$. Given this vector, the network finds the most similar vector $\overline{W}_j$ from the storage layer, where $j = \{1...J\}$ and $J$ is the number of storage nodes. The output layer node associated with the most similar storage node dictates the network response. The ARTMAP kernel, which is a function that determines the similarity between vectors (Bishop, 2006), models pattern recognition as per equation (1):

$$T_j = |\overline{X} \wedge \overline{W}_j|, \quad (1)$$

where $T_j$ is the similarity score for storage node $j$. The kernel procedure has four steps: normalize all vector component values to between 0 and 1; complement code both vectors such that $\overline{X} = (x_1, 1 - x_1)$; apply the fuzzy min operator (^) on the vectors; and sum (||). For example, given a normalized input value of 0.5 and a particular normalized storage node of 0.7, the complement codes would be (0.5, 0.5) and (0.7, 0.3). The fuzzy min would be the lesser of each component, or (0.5, 0.3) and their sum would be 0.8, which as a normalized value can also be read as 80% similar. The default ARTMAP learning rules that update and add storage layer nodes with their associated output nodes are not modified and are not treated here. For references on previously published ARTMAP models, please see http://techlab.bu.edu. The following section provides the theoretical modifications to this kernel.

Extracting Context

The approach taken here explores fast learning network rules with context sensitivity. Figure 3 shows how a fast learning ARTMAP model can be modified to process time patterns in the data with three steps via input delays, decays, and output-to-input recurrence to create the novel Echo ARTMAP model.

Figure 3: Echo ARTMAP Extends the General Purpose Neural Model for Context

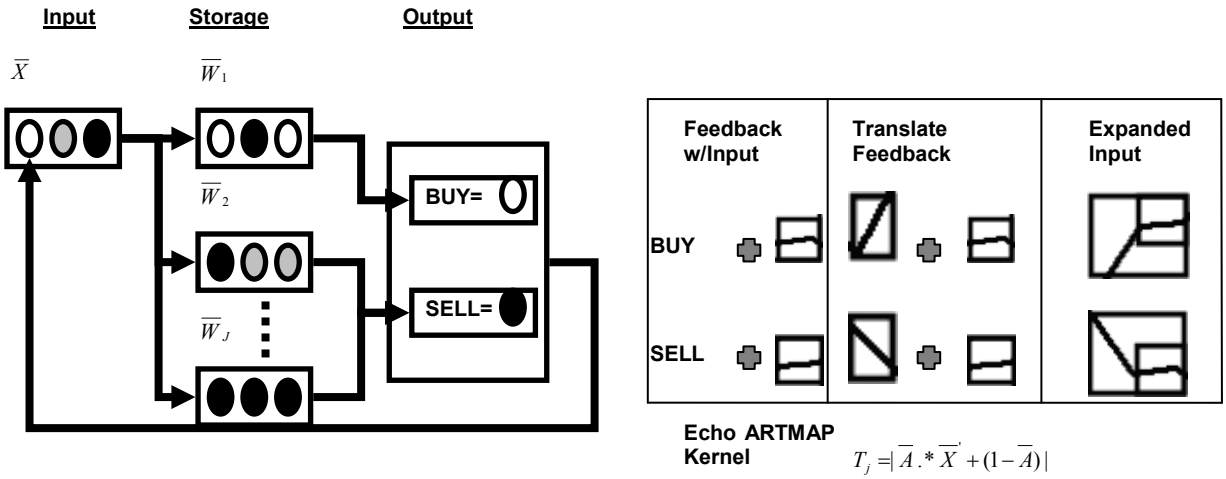


*Figure 3: (left) The full Echo ARTMAP architecture with time delay, decay, and recurrence. See text for the breakdown of the three steps. (right) Excerpted from figure 1, the feedback provides additional input information from past storage values. Translating the feedback back into its component pattern allows more information to be input into the network. This example assumes the patterns in Figure 1, left, have already been stored, for instance allowing the feedback Buy value to be translated into an uptrend. This process can be repeated infinitely, allowing greatly expanded inputs.*

Implementing input time delays allows an ARTMAP network to model one aspect of working memory. Figure 3 (left) shows the ARTMAP network from figure 2 with multiple components in each node, the right two being the same feature at different points in time. Similarity proceeds from equation (1), but depends on multiple points in time. Figure 4 (a and b) compares the influence of a given input over time when introducing input time delay. With no delay, the network at time *t* can only consider inputs from time *t*.

Figure 4: Graphical Representation of Past Influence on Decision with Context Sensitivity

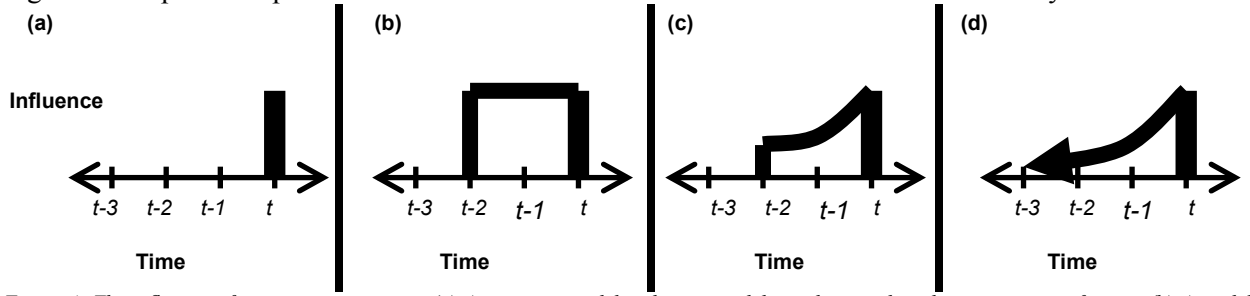


*Figure 4: The influence of past inputs at time t. (a) At time t, a model with no time delay only considers the current input from t. (b) A model with a delay of 2 considers both the input from t and the past two inputs equally. (c) A model with delay of 2 with decay considers the input from t and the past two inputs, but with more emphasis on more current inputs. (d) A model with delay of 2 with decay and output-to-input recurrence theoretically considers all prior inputs albeit with very little emphasis on distant inputs in time.*

Implementing time decay allows an ARTMAP network to model a more complex, non-stationary working memory. In a non-stationary data set, proximal points in time should have more influence than distal points in time (Hamilton, 1994). The underlying state or context is shifting over time, such that

feature values within the current state are more relevant. Equation (2) shows how to scale the contextual importance:

$$T_j = |\,\overline{A}\,.*\,\overline{X}' + (1-\overline{A})\,|, \quad (2)$$

where $\overline{X}' = \overline{X} \wedge \overline{W}_j$, or the component-wise collection after the first three steps in equation (1), $\overline{A} = (a_1, a_2, ...a_M)$, $0 <= a_m < \infty$, $a$ is monotonically decreasing with $m$, $m = \{1..M\}$, and $M$ is the number of time delays. The (.*) operator indicates an array multiplication that performs element-by-element factoring. The vector $\overline{A}$ scales the importance of the components of $\overline{X}'$. Figure 4 (c) shows the scaling effect of monotonically decreasing $A$ components as the influence of inputs from time $t$ diminishes after time $t$. The $(1-\overline{A})$ term ensures the $T_j$ score has a maximum of 1. Although negative scores are possible, the default ARTMAP matching rule selects the highest positive $T_j$ score (Amis & Carpenter, 2007).

Finally, implementing output-to-input recurrence is useful since it allows a compressed version of past inputs (i.e. as implied by the output decision based on these inputs) to remain available to influence decisions at future times. For example, a fixed small window in time may not fully capture a large pattern (Figure 1, right). A fixed large window captures non-pattern noise that leads to over-fitting. Output-to-input recurrence can simulate a dynamic window size. Figure 3 (right) shows a short pattern preceded by a recurrent output label. Since each output label associates with a specific storage pattern, using the label as a further input creates sensitivity to patterns that are composites of past short window patterns as needed, generating the profile in Figure 4(d). This combines the flexibility of long windows with the lower susceptibility to over-fitting of short windows. The novel Echo ARTMAP model performs this implicit composition of past inputs.

## DATA AND METHODOLOGY

Financial Decision Making on a Random Sample of Stocks

Figure 5 shows the overall study framework for collecting and evaluating benchmark performance via risk-adjusted rates of return for the Echo ARTMAP network and benchmarks.

Figure 5: Data and Methodology Overview

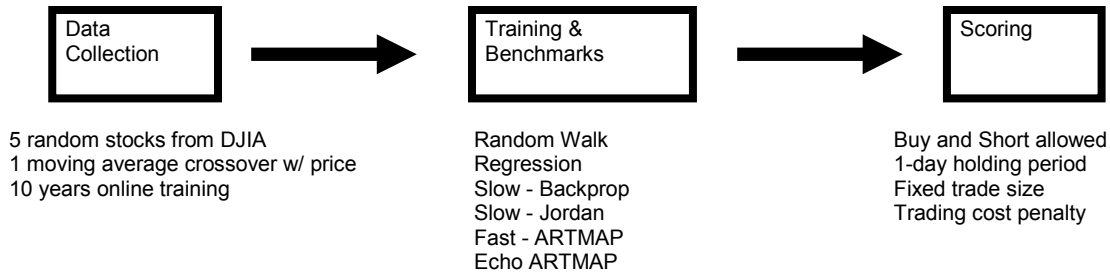


*Figure 5: The outline process flow for evaluating the Echo ARTMAP and benchmarks. Data collection proceeds from http://finance.yahoo.com. This study uses ten years of online training. One moving average difference with the price provides the basic input. Trading costs and risk adjustment are included in fixed trading sizes (no trades are assumed to yield zero percent; gains and losses are replaced to maintain fixed trading size).*

This study randomly selects five stocks from the Dow Jones Industrial Average index as of 1999 (American Express, Exxon-Mobil, IBM, JP Morgan Chase, and United Technologies Corporation) for daily online training spanning ten years from 2000-2009. This generates 12,500 sample data points,

which exceeds the sample size required for 95% confidence given estimated population standard deviation under both normal and non-normal assumptions (Higgins, 2004). Online means the fast learning networks continually expand their training set after testing on each trading day; the slow learning networks replicate this process by using rolling training window sizes of two years and averaging the results. Supervised classes derive from whether the forward one-day price change is positive, negative, or neutral. The single input feature uses a moving average period of 10 days subtracted from the current price. From this single feature, each benchmark model receives up to an 11-dimensional derived input set for each stock: 10 input delays from the single feature plus one from the benchmark's output-to-input recurrence where applicable.

The benchmarks include: an industry standard random walk; regression and auto-regression (Box & Jenkins, 1970); a slow learning static input neural network, backpropagation (Rumelhart, Hinton, & Williams, 1986); a fast learning static input neural network, ARTMAP (Amis & Carpenter, 2007); a slow learning context sensitive neural network, the Jordan network (Jordan, 1986); and the novel Echo ARTMAP fast learning context sensitive network.

For scoring purposes, buying, not trading, and selling short are allowed (i.e. 3-class predictor). Each decision lasts for one day. Position sizes are fixed, with gains being removed and losses being replaced. Not trading is valued at zero gains and zero costs. Round trip trading costs deduct 0.1% per active trading decision. To counter this trading cost, the supervised learning classifies trading days with daily variance of less than 1% as not trading. In addition, the Sharpe Ratio (Chartered Financial Analyst Institute, 2010) divides the average return by the standard deviation of the returns. This provides an additional, singular, and objective measure of the risk/reward profiles for each benchmark.

School Seminar Detection Based on Human Traffic Patterns

This paper uses the same six benchmarks to attempt to detect when a school seminar is taking place at a classroom building based on human foot traffic into and out of the building. The data consists of six-months of human foot traffic data from the University of California, Irvine, machine learning repository with ground truth event listing (http://ics.uci.edu). The goal of all benchmarks is to accurately detect the presence or absence of the seminars (i.e. a 2-class predictor). The static benchmarks (random walk, regression, backpropagation, and ARTMAP) can generate predictions at time $t$ based only on the observations at time $t$. The context sensitive benchmarks (autoregression, Jordan network, and the novel Echo ARTMAP) can also consider previous observations. For evaluation purposes, this paper uses the receiver operating characteristic curve to provide a distribution-free metric of signal utility (Witten & Frank, 2005). This factors the frequency of the events into the final accuracy function.

The utility of this seminar detection problem relies on the fact that it is human driven, has a clear ground truth, has discrete states, and can be followed intuitively for parallel analysis with the financial data set.

Two Class Non-Temporal Circle-in-the-Square Data Set

This paper also uses the six benchmarks to explore context sensitive models on the two-class circle-in-the-square problem, which is a purely spatial, context-blind data set. Given a unit circle occupying exactly 50% of the area of a bounding square, the benchmarks need to predict if a randomly given point inside the square is also inside the circle. Intuitively, since each point is not related to the prior points, context sensitive models may attempt to establish a non-existent context and therefore perform poorly. This problem set allows empirical assessment of this intuition.

## RESULTS

Table 1 shows the six benchmarks' average annualized performance over five random Dow Jones Industrial Average stocks over ten years. For reporting purposes, the ten-year period divides into three periods of 3.33 years each to demonstrate a possible range of results. The Sharpe Ratios provide single, numerical measures of risk and reward for each benchmark.

Table 1: The 10-Year Financial Data Set Annualized Gains per Benchmark

| Decision Method | Annualized Gains | | | Sharpe Ratio |
|---|---|---|---|---|
| | 2000-2003 | 2003-2006 | 2006-2009 | |
| Random Walk | -1.4% | -0.6% | -2.1% | -1.8 |
| (Auto) Regression | -10.9% | -4.7% | -3.3% | -1.6 |
| Slow - Backpropagation | -0.5% | -4.2% | 8.5% | 0.2 |
| Slow - Jordan | 3.3% | -3.9% | 7.0% | 0.4 |
| Fast - ARTMAP | -3.3% | 0.6% | 7.7% | 0.3 |
| Echo ARTMAP | 15.7% | 3.8% | 7.6% | 1.5 |

*Table 1: The 10-year financial data set annualized gains per benchmark. The 10-year average for each benchmark is broken into three equal reporting periods for further granularity. Regression and auto-regression provided similar results and are combined for simplicity. All results include trading costs. The Sharpe Ratio is the average return divided by the standard deviation of returns. Typical mutual fund Sharpe Ratios range from -1.7 to 2.5 per www.morningstar.com.*

Trading costs penalize each trade, which accounts for the random walk having a slightly negative annual rate. Without trading costs a random walk should consistently generate near zero average gains due to perfect hedging of buying and shorting. In agreement with Yu et al. (2008), the regressive benchmarks both had more difficulty than neural networks due to the non-linear nature of financial time series data and the penalties incurred from the trading costs. Results are combined in Table 1 for simplicity since both benchmarks had similar performances. In agreement with Saad et al. (1998), the Slow-Backprop (backpropagation), Slow-Jordan, and Fast-ARTMAP networks all had similar risk-adjusted performances that outperformed the random walk. The networks can generate high gains, but the transaction costs and the volatility reduce much of the benefits. The prior studies reviewed did not typically include transaction costs or risk adjustment in their analyses.

The novel Echo ARTMAP network strongly outperformed all other benchmarks on the sample of five stocks, with a mean 10-year annual gain net of costs of 9% and a Sharpe Ratio of 1.5. This quantitatively shows that neural network topology can have significant empirical effects and that adding context can greatly improve fast learning neural network performance on financial decision making. To examine the effects of context sensitivity further, Figure 6 shows a detailed comparison between Fast-ARTMAP and Echo ARTMAP behaviors on an excerpt of trading data.

The Echo ARTMAP model can more accurately determine the underlying context and modulate its prediction behavior accordingly, which leads to better cumulative gains. To further quantify these effects this paper re-runs the simulation for Echo ARTMAP and Fast-ARTMAP all 30 current members of the Dow Jones Industrial Average over the ten years period 2000-2009. The Sharpe ratio for Fast-ARTMAP remained unchanged. The Echo ARTMAP average annual rate falls to 6%, but the Sharpe ratio increases to 2.1. This shows that the results from Table 1 are likely to be replicated in a larger portfolio of stocks.

To more closely examine the effects of combining context sensitivity with fast learning, this paper breaks the final discussion into three parts: the individual quantitative effects of delay, the effects of decay, and the distinct properties of output-to-input recurrence with fast learning.

Time delay relates to the size of the pattern, or how many periods are required to determine the trend or context. If the time delay is too short, it may not capture an existing pattern. If the delay is too long, it may capture non-pattern noise and over-fit. The Echo ARTMAP results in Table 1 were based on an arbitrary delay period of 10 trading days. Figure 7 shows Echo ARTMAP with varying delay periods, absent decay or output-to-input recurrence, averaged on all five stocks over ten years.

Figure 6: Detailed Comparison view of ARTMAP vs. Echo ARTMAP

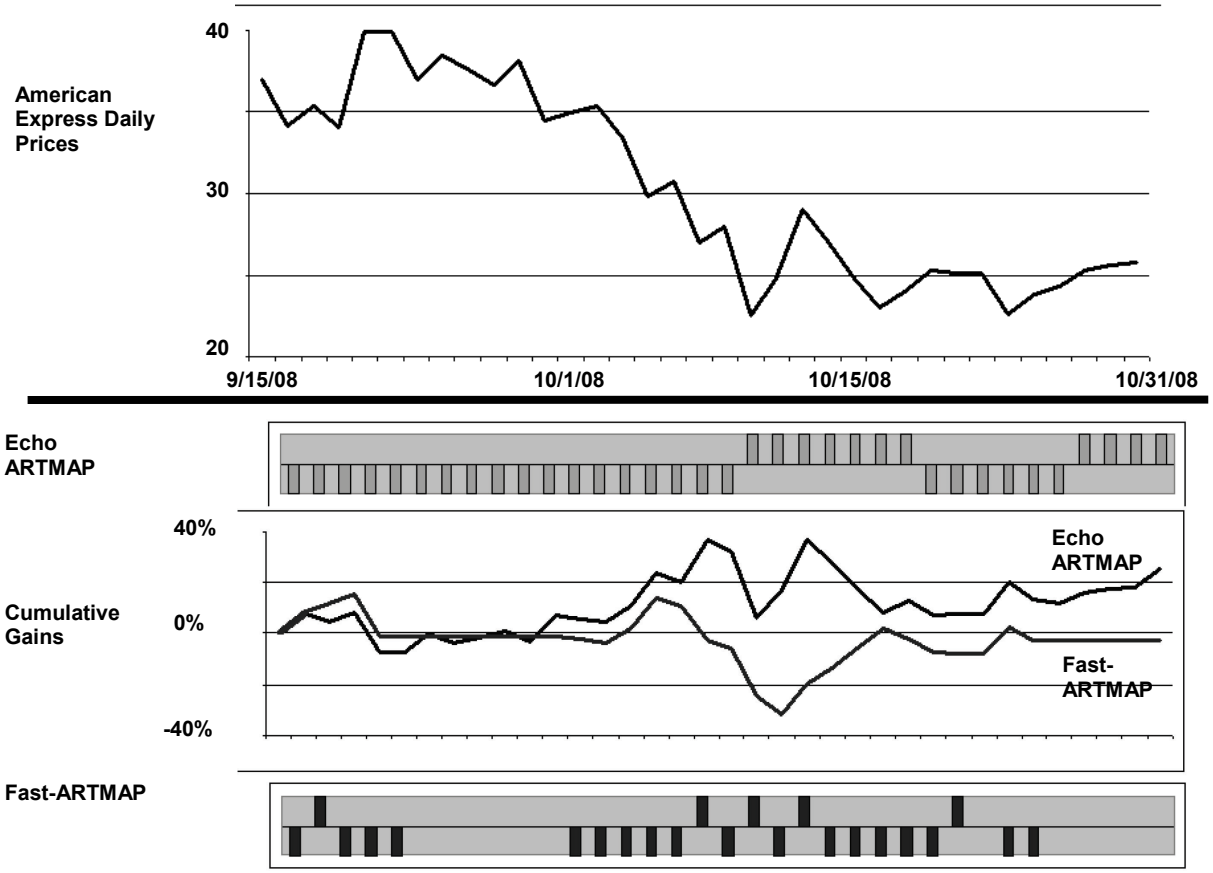


*Figure 6: Excerpt of daily decisions to compare Fast-ARTMAP vs. Echo ARTMAP, which differs only in allowing the network to base decisions on past history of the same input features, as per Figure 4(d). (top) These are the daily prices for American Express, showing a rough downtrend with mini-uptrends in mid and late October. (bottom) The Echo ARTMAP decisions above, in blue, and the Fast-ARTMAP decisions below, in red, their cumulative respective gains from the decisions. A spike above the line indicates Buy, a spike below the line indicates a Sell, and no spike indicates No Trade. Note the more consistent trading decisions in Echo ARTMAP as it tracks downtrending and uptrending contexts, albeit imperfectly. The cumulative gains also quantitatively support that tracking context can improve prediction performance. Trading costs are included. In other time periods, Echo ARTMAP can predict No Trade.*

The performance appears to show multiple peaks at the 12- and 24-period delays. This roughly coincides with prior empirical financial research favoring 12- and 26-period delays via moving averages (Appel, 1999). The peaks indicate that as the delay increases from zero to approximately 12, the period size better captures a small scale pattern. Further increases begin to capture non-pattern noise until a larger scale pattern manifests itself.

Time decay allows the network to capture multiple pattern scales simultaneously. Traders often need to consider both short term periods (e.g. 12-day periods) and longer term periods (e.g. 26-day periods) (Schwager, 1994; Appel, 1999). While the context may have changed on the short time scale, the context may remain the same on a longer time scale. To combine these two scales with differential influences, decay can reduce the influence over time. The Echo ARTMAP results in Table 1 are based on a fixed,

slow decay value of 0.9. Figure 8 shows Echo ARTMAP with varying decay rates, with fixed 10-day delay and absent output-to-input recurrence, averaged on all five stocks.

Figure 7: The 10-year Echo ARTMAP Average Annual Gains by Period Delay

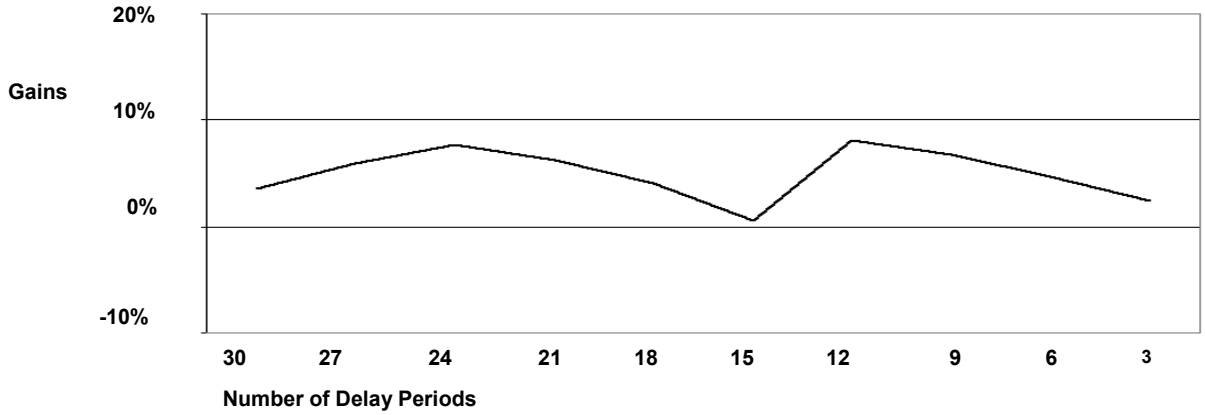


*Figure 7: Echo ARTMAP cost-adjusted gains with varying delay parameters. There is neither feedback nor decay for this plot. The gains appear to show an inverse-U shape, with minor peaks. The smaller values on the right indicate smaller delay windows and are more suitable for data with short temporal patterns.*

Figure 8: The 10-Year Echo ARTMAP Average Annual Gains by Decay Rate

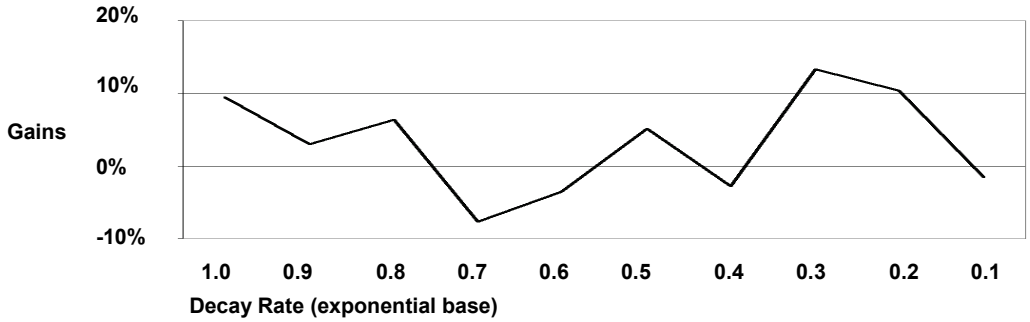


*Figure 8: Echo ARTMAP cost-adjusted gains with varying decay rates. The delay period is fixed at 10 and there is no feedback. The gains appear highly variable. The smaller values on the right indicate faster decay and are more suitable for more heteroskedastic data.*

The performance exhibits a highly variable and chaotic behavior over varying decay rates, with peaks near the non-decaying base of 1.0 and near a fast decay base of 0.3. The peaks indicate that combining different pattern scales for different stocks for different years may be a delicate procedure that is not very amenable to pre-selected, static values. If an automatic and adaptive method can successfully apply time decay rates, then the potential returns may be greatly improved.

Output-to-input feedback on a fast learning neural network allows automatic and dynamic adaptation to multiple pattern sizes without the need for pre-selected delay and decay values. The strong Echo ARTMAP performance with output-to-input feedback in Figure 6 shows it can capture some of this effect with delay and decay values of 10 and 0.9, respectively. To explore why this feedback has empirically not performed as well on a slow learning Jordan network per Table 1, this paper examines this issue with a seminar detection problem. Figure 9 shows the benchmark performances on correctly detecting seminars while minimizing the number of false detections. Detecting a seminar can be thought more generally as detecting an underlying context.

Figure 9: The Event Detection Data Set Information Values by Benchmark

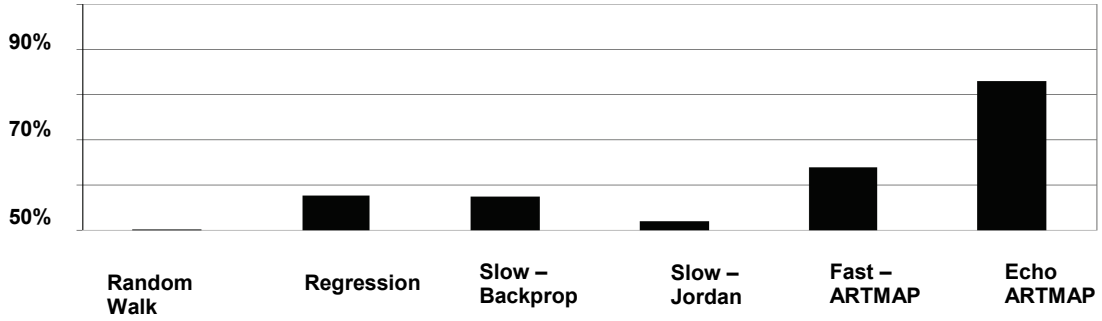


*Figure 9: The six-month, two-class seminar detection data set as a function of area under the receiver operating characteristic curve. 50% indicates the benchmark is equivalent to constantly predicting one class or a random guess, as per random walk. Similar to the financial decision problem, Echo ARTMAP strongly outperforms all other benchmarks. The regressive models are combined for simplicity due to similar results.*

The results from figure 9 again highlight the strong performance of Echo ARTMAP above all the other benchmarks, particularly that of the slow learning Jordan network. Figure 10 contrasts the Jordan network with the Echo ARTMAP.

Figure 10: Theoretical Differences between Fast Learning Echo ARTMAP and Slow Learning Jordan Model

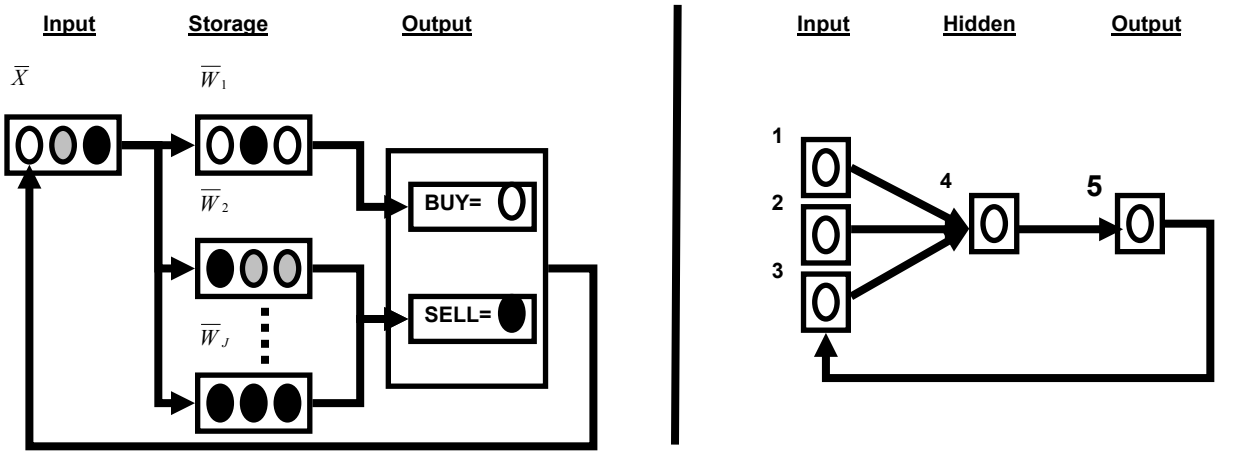


*Figure 10: A comparison of output-to-input feedback network topologies. (left) The fast learning Echo ARTMAP, repeated from Figure 3 for convenience. (right) The equivalent slow learning Jordan network. Boxes represent nodes and circles represent pattern components.*

While the two networks superficially appear similar, there are fundamental differences. Echo ARTMAP has a storage layer, each node of which contains a complete, separate pattern. The kernel matches each input to the most similar storage node. The storage node maps to a specific output node. Per equation (2), the $\overline{A}$ vector modifies the kernel. If a vector component approaches infinity, a storage node would be rejected if its related component differs even slightly from that of the input node. The storage nodes become more discerning.

In contrast, Jordan networks possess a hidden layer, each node of which contains one component of a pattern (for simplicity, only one hidden node is shown). Each input node also contains only one component. The input values multiply with the node connections to generate the hidden node value,

which multiplies with its node connection to generate the output node value. The output node value dictates the response.

If the absolute value of the product of the node connection multipliers from node 3 to 4 to 5 and back to 3 exceeds one, this introduces vulnerability to positive feedback and network saturation. As in the positive feedback loop with a speaker outputting to a microphone (Armstrong et al, 2009), output intensities continually increase towards infinity regardless of other microphone inputs, with the practical result being that the speaker produces its maximum output – a maximum volume screech. Similarly, in a Jordan network with a typical thresholded sigmoid transfer function for each node, each node transmits the product of its maximum thresholded value (e.g. typically one) and their node connection (e.g. up to infinity) to the next node.

When the output node does this, the classifications remain static (e.g. output of one) regardless of the other input values. The saturated Jordan network becomes biased towards the same class from prior time steps and cannot react quickly or at all to changes in the input. The only solution in this case is the use of notch filters, dampeners, and their biologically inspired network counterparts of negative feedback inhibition to prevent saturation (Haykin, 2001; Kandel et al, 2000). This has the effect of constraining the viable node connection multipliers to near zero. A zero value in the loop means there is no feedback. To demonstrate these differences in output-to-input recurrence with slow learning vs. fast learning, figure 11 shows a detailed view of the traffic pattern over two days, one of which contains an event.

Figure 11: Empirical Differences between Fast Learning Echo ARTMAP and Slow Learning Jordan Model

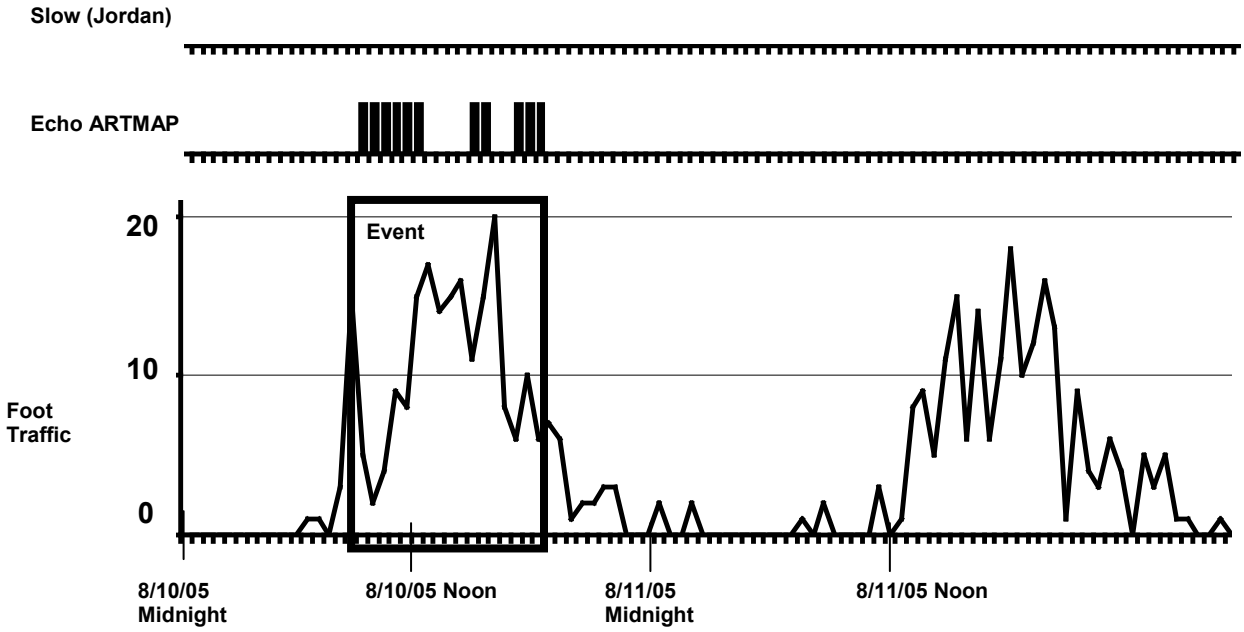


*Figure 11: A two-day excerpt of the seminar detection problem. On 8/10/05 at 11:00 AM, there was a three-hour event, indicated by the box. The foot traffic exhibits a specific pattern that the benchmarks need to distinguish from the normal daily traffic, as shown on 8/11/05 in absence of an event. At top are the event predictions from the slow learning Jordan network and the fast learning Echo ARTMAP. A spike indicates the network predicts an event is in progress.*

The Jordan network consistently predicts no event since the feedback continually biases the network towards prior periods with no events. Events are relatively uncommon. Echo ARTMAP, in comparison, can and does react rapidly by correctly indicating the presence of an event. The $\overline{A}$ vector values operate

on the kernel rather than on the input values directly. Echo ARTMAP has fewer constraints regarding positive feedback loops vs. slow learning networks and can therefore more fully explore optimal output-to-input feedback connections.

As a final note on context sensitive models, Figure 12 shows the benchmark performances on a context-free, purely spatial data set. Temporally context sensitive models should exhibit difficulties attempting to track non-existent temporal patterns in the circle-in-the-square problem.

Figure 12: The Non-Temporal Data Set Information Values by Benchmark

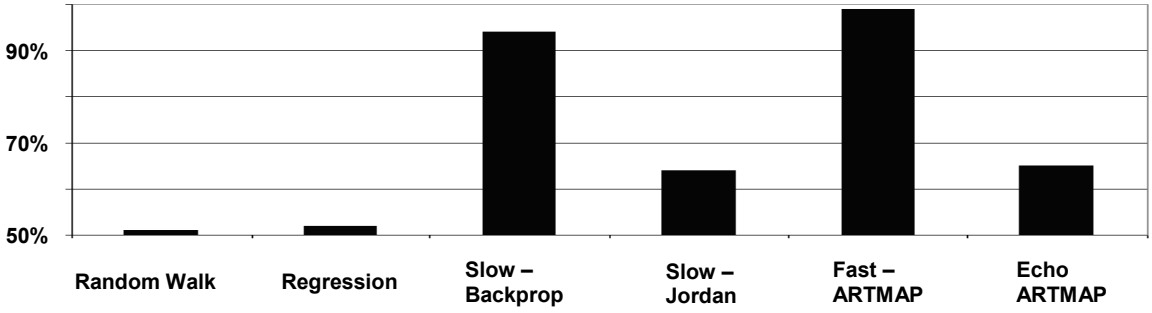


*Figure 12: The benchmarks and their information values on the purely spatial circle-in-the-square data set. Regression and auto-regression showed only slight differences.*

The Slow-Jordan and Echo ARTMAP perform poorly compared to their context blind counterparts (Slow-Backprop and Fast-ARTMAP, respectively). These context sensitive networks are unable to automatically adapt to the fact that each input in the data set is completely independent and there is no context. The network settings were identical as for the financial data set; that is, Echo ARTMAP was pre-selected with a delay period of 10, a decay base of 0.9, and with output-to-input feedback. Regression and auto-regression still perform poorly on this data set because the circle-in-the-square data set is non-linear.

## CONCLUDING COMMENTS

In a financial time series, decision makers are best served by being cognizant of past and current indicators. This builds context into trading decisions. For automated systems like neural networks to emulate and assist in the decision-making process, they should be context sensitive. For neural networks to be adaptive and reactive to fluid changes in the environment, they should also rely on fast learning rules. The goal of this paper is to develop a novel fast learning context sensitive Echo ARTMAP neural model that quickly and transparently incorporates the current market conditions into its decisions.

To empirically test this novel model, this paper uses five randomly selected stocks from the Dow Jones Industrial Average over ten years of post-selection data. Trading costs are included into the risk-adjusted, annualized performance measures. For comparison, this paper applies six industry standard alternatives on the same data including random walk, regression, auto-regression, a slow learning backpropagation neural model, a slow learning context sensitive Jordan network model, and a fast learning ARTMAP.

Echo ARTMAP empirically outperformed all alternatives over the ten year study, under varying market conditions. While context-blind models cannot modulate their decisions based on extant environments and slow learning models react very slowly and poorly to ever-changing environments, the theory behind the enhancements in a fast learning, context sensitive model supports the Echo ARTMAP empirical findings. This supports the concept of working memory as a means of extracting the context that disambiguates feature inputs over time and leads to more intelligent decision-making.

More research is needed for exploring the effects of varying working memory spans. While this paper found periodicities corresponding to prior research on the effects of varying time delayed input data, it remains to be seen if this is a general finding across longer memory spans, different input features, and with different scales (e.g. hourly, real-time, weekly, etc.). There is also a general dearth of research into examining the effects of varying levels of time decay to measure how rapidly the information contained in a current data point loses value. Future work will focus on how feedback and neural model learning rules can dynamically adapt and adjust these contextual parameters to real-life data.

## APPENDIX

Appendix I. Detailed Example of Echo ARTMAP Input Decay Scaling Using the same 1-dimensional example from Figure 2, Figure 13 details the effects of different *A* vectors.

The Echo ARTMAP kernel (equation (2)) follows the first three steps of equation (1), namely to normalize, complement code, and fuzzy min. Collecting terms for each component assigns individual similarity scores per dimension. Since this example uses one dimension, there is one similarity score.

The $\overline{A}.*\overline{X}'$ term applies the A vector to these dimensional similarity scores. Vector *A* values larger than 1 increase the influence of a dimension such that Echo ARTMAP becomes more discerning and only accepts very similar matches between the input and storage vectors. If *A* = (2), for example, then $\overline{A}.*\overline{X}'$ = (2)(0.8) = (1.6).

To complete the process, term $(1-\overline{A})$ = (1-2) = (-1). Adding the two terms together yields an Echo ARTMAP similarity of (0.6). This similarity is less than the original (0.8) from Figure 2, making the output associated with this storage node less likely to form the response. Closer matches between input and storage are required.

Figure 13: Detailed Example of the Echo ARTMAP Kernel

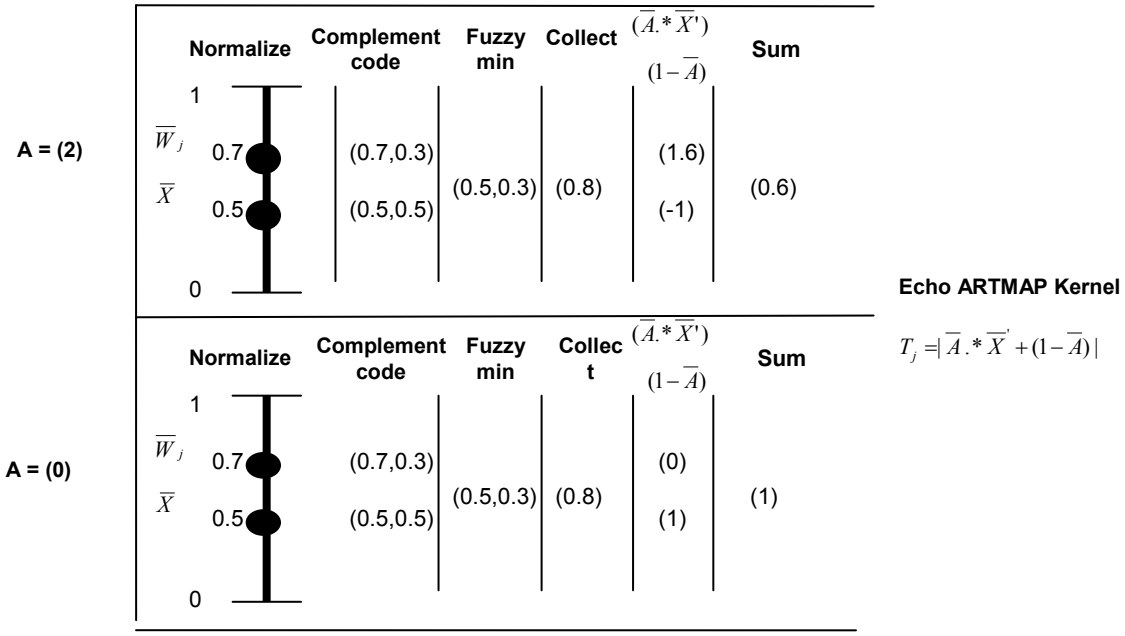


*Figure 13: The example from Figure 1 demonstrated with the Echo ARTMAP kernel using two different A vectors. See text for details.*

Vice versa, $A$ values less than 1 decrease the influence of a dimension such that Echo ARTMAP is less discerning and tends to accept any storage node. If $A = (0)$, then $\overline{A}^T \overline{X}' = (0)$ and $(1 - \overline{A}) = (1)$, which together sum to 1 regardless of input or storage values. In essence, this dimension has no effect and is ignored.

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# EVIDENCE ON THE IMPACT OF INTERNATIONAL FINANCE CORPORATION TOURISM INVESTMENT ON LATIN AMERICAN AND CARIBBEAN ECONOMIES

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Andrea Cindrić, University of Rijeka

**ABSTRACT**

*The International Finance Corporation (IFC) as a member of World Bank Group is the largest multilateral source of loan and equity financing for private sector projects in developing countries. Particular focus of International Finance Corporation is to promote economic development by encouraging the growth of productive enterprise and efficient capital markets in its member countries. The purpose of this article is to show the correlation between International Finance Corporation investments and economic development of the region, country, national economies and private enterprises or companies that make partnership with International Finance Corporation. The main object is to evaluate in details the connection and difference between International Finance Corporation and investments in different projects and the difference if the Organization is not investing in some projects or in the specific country. The research objective is to determine the role and significance of International Finance Corporation investments in tourism and hospitality industry on the example of Latin America and Caribbean, and analyze interrelationship between investments and development of specific country in which investments are made, and development of its whole economy and to draw attention on need for stronger implementation and importance of International Finance Corporation as a source of investment funds.*

**JEL:** F21; L83; O1; O16; P45

**KEYWORDS**: International Finance Corporation, investments, tourism, hospitality, economic development, Latin America and Caribbean

## INTRODUCTION

Tourism, a vital sector of the world economy, accounts for over 25% of the world's trade in services. Since its foundation more than 50 years ago, the mission and vision of the International Finance Corporation is focused on the development of developing countries in the way to finance private sector projects, and maximally up to $ 100 million. Of course, it does not invest in projects without any criteria, but it has priority sectors or those who have a high impact on developing country economies. International Finance Corporation has developed for this purpose Development Outcome Tracking System, an instrument that serves to track properly the progress of the project in which it invests. This tracking System allows the feedback to invest better and more precisely where is needed in the future, without unnecessary wastage of financial resources. Just mentioned DOTS system allows tracking the indicators for development of the country, region or specific economic sectors. Tourism and hospitality industry is a part of industry of Global Manufacturing and Services, and to show the correlation between IFC investment and economic development of the region it is important to present data that show how much is the development outcome by region specifically for this sector.

The tourism industry has shown consistent growth over the past three decades with the developing world capturing an ever increasing share of tourism receipts. Continued growth of tourism is forecast although the rate of such growth varies significantly by destination. The financing of leisure-oriented hotels in

countries which have few resources other than natural beauty, and few immediate alternatives for economic development besides tourism, has an important developmental impact. Resort developments can also promote economic development of a country's less developed regions.

To demonstrate the role of IFC investments in tourism and hospitality industry and what impact the investments have in the economic development of entire regions or countries, Latin America and Caribbean region has been the subject of research. Given that this is a region where there are more than 500 million people, of whom 25% live in extreme poverty, the more the role of the IFC increases in these conditions and it is important to show a link how this region can potentially develop. IFC specifically for the LAC region has the strategic objectives which primarily include the creation of a positive economic environment for entrepreneurial development and for development and construction of infrastructure that is essential for the further development of the region, both for tourism and as for other industries. The combination of developmental impact, investment risk, and lack of other sources of long-term finance is a natural argument for IFC's catalytic and investment role in hotel and resort investments. Moreover, future demand for IFC financing is expected to be strong due to continued growth in the tourism industry, the opening of new regions to international travelers, and increasing government interest in the sector. Since 1956, IFC has invested over $2 billion in 220 hotel projects in more than 80 countries. Tourism brings great potential for job creation, growth in tax revenues, improvements in foreign exchange earnings, and opportunities for related smaller businesses. This ability to facilitate local, regional, and national economic growth, thus helping reduce poverty, is the reason why IFC is deeply committed to the industry. IFC's commitment extends to environmental protection and cultural preservation, with investments in hotels and touristic resorts that complement unique natural habitats and enhance the attractiveness of historically remarkable sites.

## LITERATURE REVIEW

Over recent decades some countries from Latin America and Caribbean region have experienced an important development due to the positive effect of tourism on the services sector (Aguayo, Exposito& Lamelas, 2001). According to Aguayo, Exposito & Lamelas (2001), industry and tourism should be the primary goal of the development of the region, because with their development will come to the development of the sector they belong to, and it will cause the creation of new jobs and increasing of production. Mavrotas (2002) wrote about the importance of investments in the private sector and investigated the significance of IFC in investing in private enterprises. Such kinds of investments benefit the economy, promote a sound environment and social well-being, and are examples of good business for other entrepreneurs.

A World Development Report (2010b) says that the tourism industry is having a big impact on local people and local economies in many developing countries. In recent years, the role of tourism has become more recognized in the context of the sustainable use of natural resources and the sector's potential contribution to the country's economic growth. For this reason, development of tourism is essential to the economic development of developing countries. Therefore, Oyewole (2009) has demonstrated that tourism is a major source of foreign exchange inflows, which gives the momentum to national economy.

Region of Latin America and the Caribbean is a region of great diversity and region with a huge number of poor populations. According to Kos-Stanisic (2009) a substantial proportion of the population of Latin America and Caribbean are people who are on the margins of society, about 40 million which represents about 10% of the total population. Krtalic & Tomic (2006) are mentioning that this area is one with the largest and the constant economical inequalities in the world. But on the other hand, the Region has perhaps the greatest natural predispositions and richness of resources. Christie and Crompton (2001) have also researched many projects on tourism that were supported by the IFC.

Te Velde and Nair (2006) investigate whether and how developing countries can use foreign investment for their development. They refer to the Caribbean whose tourism is the most important services sector. While the case is shown for the FDI (foreign direct investment), not only for IFC, they also emphasize how the investments are critical for further development of the sector, so it is important to understand what drives it. Additionally, Wilkinson (2009) in the case of the Caribbean came to realize that there is still a huge space for improvement. Tourism in the LAC region and the Caribbean Islands has yet to begin to develop properly because the islands still have disorganized system of government and lack of clear development strategy, there is no integrated plan for national development and countries are focused on attracting as many tourists instead of the more tourist spending .

Besides these shortcomings, lack of regional cooperation and local funding sources are negligible (Wilkinson, 2009). In spite of this, Ashley & Mitchell (2007) identifies in The Overseas Development Institute review of 3 main pathways through which tourism affects poverty reduction: tourism is more labor-intensive than other non-agricultural, tourism direct effects on wages and earnings of those who participate directly in the sector as workers or entrepreneurs and it also uses a relatively high proportion of unskilled or semi-skilled labor. For these reasons, in some countries, tourism is an important source of employment for poor people (Bertola, 1993). Because of this, Latin America and Caribbean need to invest into tourism and hospitality industry. Moreover, in his article Oyewole (2009) made projections to 2020 in which he explored the potential of tourism development for the LAC countries in the region.

The projection came to a result that till 2020 the number of tourist arrivals in the LAC region should increase to a maximum of 100 million people, and in 2004 (which was last year of research) was achieved a total of 51,21 million of tourist arrivals. Mentioned projection anticipates an increase to 50 million or an increase of 100% by the end of 2020th year. Additionally, tourist arrivals are simultaneously monitored by the inflow of foreign currency which is anticipated to be increased from $ 34,11 billion by 2020 to $ 75,79 billion. This kind of projection also anticipates increasing revenue more than 100% (Oyewole, 2009). Tourism in the LAC region will be highly sensitive to economic changes that will eventually happen in the region precisely because tourism is closely linked to future income and employment growth (Strizzi & Meis, 2001). They believe it is time that LAC countries of the region began to develop significantly, because if they remain in place there will not be opportunities for growth and thus will be difficult to attract new tourists and restore existing ones.

Right here there is a space for IFC to operate and to create the potential for its impact on tourism development in Latin America and Caribbean, and through the development of tourism there is the opportunity for development and progress of the entire region.

## PORTFOLIO OF INTERNATIONAL FINANCE CORPORATION

IFC highlight report (2009b) reported that the core business of IFC is financing private sector projects, helping private companies in finding financial resources in international capital markets and providing advice and technical assistance to enterprises and governments.

The vision of this organization is to give poor countries the possibility of improving their lives and ability to exit from poverty. IFC promotes private sector investment in developing countries and it is actually the largest multilateral source of financing for private sector projects in developing countries. Specifically, in the IFC Corporate Overview (2009c), their purpose is clear "*To create opportunity for people to escape poverty and improve their lives by:*

- Promoting open and competitive markets in developing countries;
- Supporting companies and other private sector partners where there is a gap;
- Helping to generate productive jobs and deliver essential services to the underserved. "

International Finance Corporation promotes sustainable economic development through private sector. IFC's strategy is reflected in the investment sector and in countries with unfavorable economic situation. Priority sectors for the development of IFC are the ones who have a high impact on the economy of developing countries, and they include the financial sector, health and education, infrastructure, information and communication technologies, and investments in small and medium enterprises. Together they represent about 70% of IFC investments. International Finance Corporation is the largest single source of direct financing private sector projects in developing countries. While IFC's investments and loans granted under market conditions, it doesn't compete with private capital.

IFC finances projects to cover risks in countries that otherwise cannot get enough funds, and under reasonable terms from other sources. Since the IFC does not require government guarantees, it is involved with the partners in the division of project risk. Funds and other investors, financiers are attracted by the IFC so the Corporation is actively seeking partners for joint ventures and for collecting additional funds loans or investments from other institutions for projects that intend to support. These investments range 1-100 million $ with a limited number of investments. IFC continues to develop new financial tools that enable companies to manage risk and expand their access to foreign and domestic capital markets. As mentioned in the IFC Corporate Overview (2009c), IFC has 5 basic forms of its financial commitment: *A loans; Participation in share capital; B loans; Partial credit guarantee; C loans*. Impact of International Finance Corporation is huge. In Doing Business Report (2010a) it is said that about 85% of the world's economies have made it easier for entrepreneurs to operate in the past five years.

IFC's Participation in Investments

To ensure the participation of investors and lenders from the private sector, International Finance Corporation limits the total amount it can give. For new projects the maximum is 25% of the total estimated project cost, or in exceptional cases up to 35% for small projects. For expansion projects IFC may provide up to 50% of project costs, provided that the investments do not exceed 25% of the total capitalization of the company's project. If the project is accepted by the IFC, it enters into a cycle. The project cycle illustrates the stages through which a particular project is passing. Project cycle begin with sending requests for funding of the proposed project until the end when it ends the cycle of investment. That International Finance Corporation itself could follow its own investment and positive effects of exercise in the region or Member State, IFC has developed a Development Outcome Tracking System (DOTS) to monitor results. DOTS system provides a realistic assessment of the extent to which it is achieved to promote sustainable private sector investment in developing countries, all aimed at reducing poverty and increasing prosperity of human life. The specificity of the system established in 2005 was also that he surveys the investment while the project is still active and allows him to make any changes and to continuously monitor the progress and if something goes wrong, allows immediate response. Using standard performance indicators DOTS system allows to monitor the overall development and to compare it with the regions and industries.

IFC investments in the financial year 2009 amounted to $ 14,5 billion in comparison with the previous record in 2008 ($ 16,2 billion) were reduced by almost 2 billion (IFC, 2009a). Of this amount, $ 10,5 billion the IFC invested for its own account and mobilized an additional $ 4 billion from other sources. More than 50% of the projects in which IFC has been involved were the world's poorest countries. In FY2010 this trend has continued (Table 1).

Table 1: Total IFC Investments ($ millions)

| IFC Investments | 2010 | 2009 | 2008 |
|---|---|---|---|
| Total project number | 528 | 447 | 372 |
| Total number of countries | 103 | 103 | 85 |
| IFC own funds | 12,664 | 10,547 | 11,399 |
| IFC mobilized funds from others | 5,377 | 3,962 | 4,752 |

*Table shows a comparison of IFC investments for the last 3 financial years.*

In FY2010 the year, IFC has participated with a total of $ 12,664 million of its own funds to 528 projects and has mobilized $ 5,377 million of funds which is far the most funding (IFC, 2010). In 2009, the IFC was involved with investments totaling $ 10,5 billion, compared with $ 11,4 billion in 2008. Although there has been a reduction in spending, compared to 2007 the investments increased by more than $ 2 billion which represents a positive trend. In addition, IFC in 2009 mobilized resources for a total of $ 4 billion compared with $ 4,8 billion in 2008. Although the investment amount is less compared to 2008, the number of projects increased. In 2008, IFC has participated in 372 projects, in 2009 in 447 projects and in the 2010 in a record 528 projects. Also, the number of countries in 2010 which the IFC collaborated with stagnated in comparison to 2009, but with the comparison in 2008 there were only 85 partner countries.

Development Outcome of IFC Investing

Despite the impact of financial crisis that started in developed countries and it was present in the larger part of the developing countries during the financial year 2009, IFC has managed to maintain relatively the same level of promoting the economic development (World Bank, 2009). Although the overall result of IFC's development remained the same as last year, different regions have passed through the ups and downs because they were affected by the economic crisis in different ways and with different intensity (Table 2).

Table 2: Development Outcome by Regions for FY2010 ($ millions)

| | Development outcome | IFC investments | Rated projects |
|---|---|---|---|
| IFC | 71% | 15,431 | 493 |
| Sub-Saharan Africa | 66% | 1,069 | 62 |
| Europe and Central Asia | 66% | 4,954 | 126 |
| Middle East and North Africa | 70% | 975 | 43 |
| East Asia and the Pacific | 72% | 2,237 | 85 |
| Latin America and Caribbean | 77% | 4,818 | 120 |
| South Asia | 79% | 1,167 | 47 |

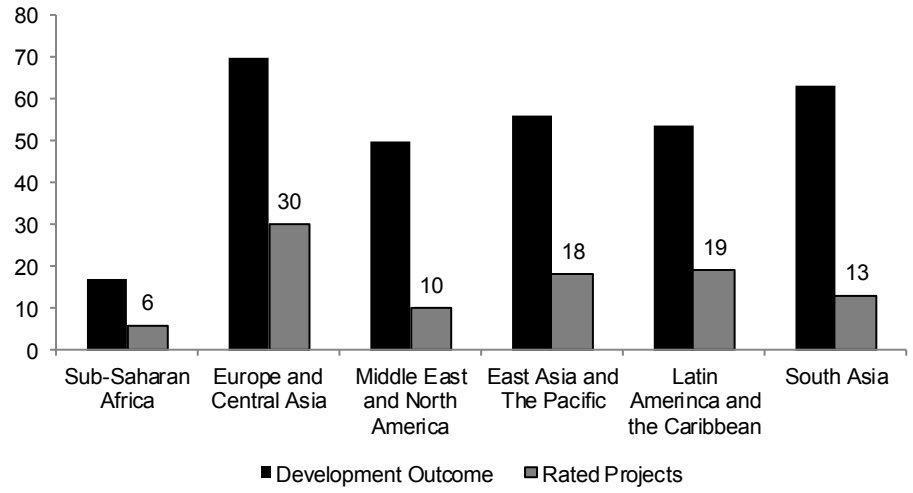
*This table shows development outcome for every region where IFC invested, number of rated projects in the region and the amount of invested funds that IFC has made. The data is shown for financial year 2010.*

In 2010, 71% of the total IFC investments were rated high. Development results of IFC investments overall have remained quite stable over the past two years, at 71% in FY2010 again, the same as in previous two years, despite the most serious financial crisis in decades that has impacted all the regions. The region in which are the most highly rated projects is South Asia, 79%, and least judged regions regarding their development results were Europe and Central Asia and Sub-Saharan Africa, which had about 66% positively assessed the results of development. In 2010, the most positive effects of

development were achieved in South Asia, but are followed by Latin America and Caribbean with 77%. IFC investments: in 2010 IFC invested a total of $ 15,431 million. However, the difference can be observed in regions where the regions of Europe and Central Asia and Latin America and the Caribbean invested over 50% of the total amount or $ 9,772 million. This year, least funds were invested in the region of Middle East and North Africa, $ 975 million, which seems small compared to other regions. Rated projects show the height of investments followed by the number of projects and the expected two regions that have the largest IFC investment have the largest number of projects, a total of 226. Other regions do not have anywhere near the accepted projects, so their investments are smaller. The difference between the regions with the highest and lowest number of projects is quite noticeable.

The manufacturing and services sector plays a vital role in creating economic opportunity and reducing poverty in developing countries. Investments in the sector create jobs, increase the availability of affordable goods and services to consumers, and support the growth of small and medium enterprises along the supply and distribution chain (Ashley and Mitchell, 2007). Tourism and hospitality industry is situated in industry of Global Manufacturing and Services. In FY2010 there were some differences in this industry when comparing Regions (Figure 1).

Figure 1: Development Outcome by Industry of Global Manufacturing and Services by Regions




*This figure shows Development Outcome by regions for FY2010 (%) and number of rated projects. The presented data shows the difference of investments between every region. Also, figure shows the results and numbers of rated projects where Europe and Central Asia has the most rated project, and Sub-Saharan Africa has the leas rated projects.*

Overall results for the development outcome of this sector were estimated with 57% efficiency compared to earlier 2009th year when they were assessed with 54%. This sector is much diversified and includes: nonmetallic mineral product manufacturing (19%), tourism (14% of projects), industrial and consumer products (14%), pulp and paper (13%), chemicals (10%) and wholesale and retail trade (9%). Europe and Central Asia was the region with most Global Manufacturing and Services projects, 30 projects. Region with the least projects was Sub-Saharan Africa with only 6 projects. These two regions were also the best and worst performing: 70% of projects in Europe and Central Asia were rated high, and only 17% of projects in Sub-Saharan Africa were rated high. Other regions were rated between 50% and 62%.

IFC plays a significant role in development by financing in many developing countries (Mavrotas, 2002). The following table shows the relationship between 2 years and the extent of the IFC's influence on the

development of countries, and thus indirectly on the development of the region, economic development and a better standard of living.

Table 3: IFC Development Outcome for Countries US$

| Investments | 2008 | 2009 |
|---|---|---|
| Employment provided (million) | 2,1 | 2,2 |
| Microfinance loans (million) | 8,5 | 8,5 |
| Amount ($ billions) | $ 90,63 | $ 101,32 |
| **Customers reached with services (million)** | | |
| Power generation | 153,4 | 132,2 |
| Power distribution | 28,5 | 29,4 |
| Water distribution | 21,6 | 34,6 |
| Gas distribution | 12,5 | 15,7 |
| Patients reached | 5,5 | 7,6 |
| Students reached | 1,2 | 1,4 |

*Table shows impact of IFC for developing countries for years 2008 and 2009.*

IFC's investments have generated directly or indirectly about 2 million new jobs in these recession times (Table 3). Manufacturing clients tend to create or maintain more employment and generate more local purchases than any other sector. The purchasing had a further multiplier effect in the local economies through the support for SMEs, indirect job creation, and increased tax payments. Microfinance loans: in both years, there have been 8,5 millions of loans entirely worth of about $ 100 billion. Customers reached with services: services are divided into power generation, power distribution, water distribution, gas distribution, patients and students reached. These kinds of development outcome are important for every single people and through them IFC can monitor economic growth of the country. Power generation has reduced in comparison of 2008 but still there were 132,2 millions of new customers who reached with service. Power distribution has slightly increased from 28,5 in 2008 to 29,4 millions of customers in 2009. Positive trend has continued also on water and gas distribution. Also there were 5,5 millions patients reached in 2008 but in 2009 the number of patients increased to 7,6 millions. The number of students has slightly increased, for 200,000 new students in the year 2009, compared with the year 2008.

IFC effectiveness of investing for private sectors are (Mavrotas, 2002): they have generated greater benefits for customers, employees, suppliers and taxpayers; investments in targeted high-risk countries performed better developmentally.

## LATIN AMERICA AND CARIBBEAN REGION

The region of Latin America and the Caribbean is marked by myriad problems of the economic system which, together with the problems of the tax system prevents significant economic progress and poverty reduction, which is one of the main features of the area. Latinos live in a complex economic system, in which people are ranked from too rich to those on the edge of existence (Aragao, 2005). Economically speaking, natural resources and agriculture are still of utmost importance to the economies of these countries. This region is home to 569 million people (Mowforth, 2008). About 75% of the population lives around the city and therefore LAC region is one of the most urbanized among developing countries. Around 128 million (24.5%) of people are living in poverty. Their average income is less than $ 2 per day. Out of 128 million who are living in poverty, 50 million (9.5%) are extremely poor and their average income is less than $ 1 a day.

In this region, IFC is the most focused on key development challenges faced by countries in Latin America and the Caribbean, and its strategic priorities include improving the business environment, infrastructure projects that include residents who are most exposed to poverty, those at the bottom of the economic pyramid (BOP), increasing the focus on fewer countries, especially countries in Central

America and the Caribbean, promote investment in "clean" technology to allow mitigation of climate change, support private sector participation in infrastructure development and increase access to finance, with emphasis on micro, small and medium enterprises.

Investments in 2009 reached the amount of $ 2,721,000 (IFC, 2009b). This amount was divided into a total of 124 projects which are implemented in 21 countries within the region. In comparison to 2008, funding was reduced by about $ 200 million which represents a decrease from the number of projects. So before there were fewer projects in the region but the funds which IFC provided was higher. However, in financial year 2009 the number of countries with which IFC cooperates increased, even for the 4 countries. Considering that 2009 was affected by the global crisis, in other regions the majority came to reducing the number of partner countries because some projects are implemented and have become inactive, but for this region that is not the case. IFC is continuing investments in this region. Investments are increasing, particularly in Central America, the Caribbean and Peru State. The explanation can be found in IFC's strategy for the region that is more focused on the areas of Central America and the Caribbean, probably because there is a high concentration of very poor population (Morley, 2001).

Table 4: Development Outcome by Industry by all IFC and LAC Region US$

| Development outcome by industry | IFC | | | LAC | | |
|---|---|---|---|---|---|---|
| Oil, Gas, Mining and Chemicals | 79% | 38 | 1,546 | 100% | 7 | 879.3 |
| Health and Education | 85% | 13 | 127 | 100% | 5 | 106.5 |
| Agribusiness | 78% | 37 | 1,172 | 92% | 12 | 816.9 |
| Infrastructure | 70% | 61 | 1,719 | 89% | 28 | 1,094 |
| Global Financial Markets | 73% | 177 | 7,202 | 70% | 37 | 2,639.5 |
| Private Equity and Investment Funds | 74% | 47 | 592 | 67% | 12 | 102.7 |
| Global Manufacturing and Services | 70% | 20 | 2,659 | 53% | 19 | 924.5 |

*This table shows data about all IFC investments by industry and all investments that IFC has made in LAC region also by industry. The data is for FY2010 (Fiscal Year 2010 starts July 1, 2009 and ends June 30, 2010).*

The table shows the amount of development results achieved by sectors, the number of projects that participated in the assessment and the amount of IFC investment in them. Results are presented for the IFC as a whole and for the region of Latin America and the Caribbean. Development Outcome by industry: In those results are included a total of 493 projects with total value of $ 15,431 and positive ratings were 71% of projects in FY2010. IFC's development results remained strong as in FY2009 and FY2008, compared to 63% in FY2007. Most progress has been achieved in education and health where the success of investments rated high 85%. During the year, IFC has invested in 13 projects totaling $ 127 million.

The amount of investment compared to other sectors is relatively low, but the investment has reached the expected results. Oil, Gas, Mining and Chemicals and Agribusiness were the second and the third strongest industry departments, consolidating their performances of last year. Sector that has completed a minimum expectation was Manufacturing and Global Services, only 57%. As the past year, results varied significantly on regional basis (70% of projects were rated high in Europe and Central Asia but only 17% in Sub-Saharan Africa). However, in these sectors were invested over $ 2,5 million more than in education and health, a total of $ 2,659 million. Other sectors have all maintained a similar value within 10 percentage points, from 70% to 80%. In the region of Latin America and Caribbean, the sectors of infrastructure, agribusiness, health & education, and oil, gas & mining industries performed best with

high developments results scores near or above 90%. On the other hand, manufacturing investments were doing poorly at just 53%. IFC's total investment in the LAC region have totaled $ 6,7 billion in relation to the previous year, the investments were for $ 555,000,000 higher. The largest investments are in the financial sector, amounting to 2,6 billion dollars and also for infrastructure investment, which amounts $ 1,09 billion. These two sectors together account more than 50% of total investment in Latin America and Caribbean. Minimum investment of IFC in the region is for sectors such as local funding, which amounts to only $ 3,800,000 million. Also, education and health is at the bottom of the scale and costs in relation to other investments "only" $ 106 million.

IFC Financing in Tourism for Latin America and The Caribbean

This ability to facilitate local, regional, and national economic growth is the reason why IFC is deeply committed to the tourism and hospitality industry. Investing in it, IFC helps reduce poverty in this area (Markandya, Taylor & Pedroso, 2005). Commitment does not stop here, IFC also extends to environmental protection and cultural preservation, with investments in hotels that complement unique natural habitats and enhance the attractiveness of historically significant sites.

The projects in which IFC invests its resources and mobilize other people covering the region of Latin America and the Caribbean are included in Sector Accommodation & Tourism Services. Project categories include A, B and C, whether they are still active or are completed. Since the establishment of IFC, there are totally 21 projects for LAC region in Accommodation & Tourism Services (Table 5).

Table 5: IFC Investments in Accommodation & Tourism Services in LAC Region

| Project Name | Country | Total Project Cost (USD) | IFC Financing (USD) | Envir. Category | Beginning of cooperation |
|---|---|---|---|---|---|
| Oasis Complex | Haiti | 29,000,000 | $7,500,000 A and C Loans | B | June 2010 |
| Brief project description: The proposed project is to complete the construction of a hotel/mixed use development – Oasis Complex. The first phase of the project includes the development of: a 132 room business hotel; a retail component; a conference center; 3 restaurants and a lounge bar; a central courtyard; parking facility. | | | | | |
| City Express II | Mexico | / | $20,000,000 equity investment | B | June 2010 |
| Brief project description: The aim of IFC investments is capital increase that will help the Company consolidate its leading position in the budget business hotel sector, accelerate existing growth plans and initiate its expansion outside of Mexico. The project consists of the development of new hotels. City Express will benefit from IFC's experience and knowledge in emerging markets, particularly in its proposed expansion plans to other countries within Latin America. | | | | | |
| Crane | Barbados | / | $10,000,000 A Loan $10,000,000 C Loan | B | June 2010 |
| Brief project description: The project aim is expansion of the largest employer in Barbados' east coast. The proposed project is to: continue construction at the Company's existing site, commence construction at a site owned by the Company and to acquire new land for continued growth. IFC is expected to help in providing and catalyzing long-term financing to support the Company during difficult credit markets; to help to promote the development of the tourism and construction industries in Barbados. | | | | | |
| Hospiteum | Central America Region | 30,500,000 | 11,000,000 A Loan 3,000,000 C Loan 9,000,000 mobilized funds (7,000,000 senior loan, 2,000,000 Subordinated debt) | B | June 2009 |
| Brief project description: The aim of the project is to facilitate Hospiteum's entrance into the budget hotel segment in Central America by providing a long term financing solution to the Company. The project is expected to add to the country's business and tourism infrastructure by expanding and improving the existing base of accommodation facilities and business services. The project will create opportunities for economic links between tourism and other sectors. In addition, the project will create both direct and indirect jobs | | | | | |
| City Express | Mexico | 39,500,000 | 17,500,000 A and C loans | B | May 2009 |
| Brief project description: The project includes financing of 5 new hotels and refinancing of one existing hotel, located in Mexico City. | | | | | |

| | | | | | |
|---|---|---|---|---|---|
| Peru OEH II | Peru | 29,000,000 | 13,000,000 A loan | B | June 2007 |
| Brief project description: The IFC role in this project is refinancing existing loans. It will encourage local banks to lend. The proposed project will continue to contribute to Peru's tourism infrastructure, raise the level of competition and service standards, and improve the offerings to meet the evolving tourism demand | | | | | |
| Courtyard Caribe | Caribbean Region | 78,000,000 | 23,000,000 A loan | C | May 2007 |
| Brief project description: The projects aim is to support greenfield development of five hotels. Development impact: It will make a contribution in the improvement of the business hotel infrastructure; The expansion of business hotel chains will support local trade and business development. | | | | | |
| OEH Mexico | Mexico | 19,000,000 | $7,500,000 A Loan | B | May 2007 |
| Brief project description: The project includes investing in the renovation and expansion of operations of Casa de Sierra Nevada, Mexico, a boutique hotel in San Miguel de Allende, Mexico from 33 rooms to 60. It is expected that this project will lead to more jobs, increased foreign exchange earnings and strengthened links with tourism in this area. | | | | | |
| Occidental DR | Dominican Republic | 92,000,000 | 10,000,000 A Loan<br>40,000,000 B Loan<br>20,000,000 C Loan | B | August 2004 |
| Brief project description: The project consists of establishing a new company using three existing properties fully owned by Occidental, refurbishing the facilities of one hotel to rebrand it to a higher standard and upgrading the fire and life safety systems of another hotel. The proposed project aims to improve the capital and financial structure of the Company. | | | | | |
| Marriot Courtyard – Port of Spain | Trinidad and Tobago | 11,000,000 | 1,600,000 A Loan<br>2,000,000 C Loan | B | December 2003 |
| Brief project description: The project entails the construction and operation of the 124-room Marriott Courtyard Hotel in Port of Spain, by Caribe Hospitality of T&T (CHTT). | | | | | |
| Occidental MEX | Mexico | 150,000,000 | 30,000,000 A Loan<br>40,000,000 B Loan<br>10,000,000 Convertible C Loan | B | March 2003 |
| Brief project description: The project is aimed at spinning off four Occidental's hotels in Mexico in one company (the company) that will become the main vehicle for Occidental's future developments in Mexico and the region. | | | | | |
| Bel Air Planton Ltd. | Grenada | 6,300,000 | 1,500,000 senior loan<br>500,000 income participating loan | B | December 2001 |
| Brief project description: The tourism resort that will be constructed and operated will consist of 24 villas and a central complex which will group the reception area, offices and lounges, a restaurant building, a spa and a swimming pool. | | | | | |
| Parque Ecoturistico Canon del Sumidero, S.A.de C.V. | Mexico | 8,600,000 | 2,150,000 equity investment | A | July 2001 |
| Brief project description: The project will consist of the construction of: restaurant and launch facilities, theater, kitchen swimming pool, small animals' zoo, butterflies and birds areas, museum and botanical garden. | | | | | |
| Inka Terra, Peru S.A.C. | Peru | 18,000,000 | 5,000,000 A Loan<br>3,000,000 C Loan | B | December 2000 |
| Brief project description: The project will include expansions of hotels at several sites. Two of the projects will be renovation of existing structures, two will be additions to existing lodges, and two will be entirely new structures. | | | | | |
| Peru Orient Express Hotel | Peru | 22,500,000 | 6,000,000 A Loan<br>4,000,000 C Loan | B | August 2000 |
| Brief project description: Refurbishing an existing 3 and 5 star hotels; converting a building adjacent to the Monasterio Hotel to a 58 suite, 5 star hotel; the purchase and installation of the furniture, fixtures, equipment, and required environmental and fire and safety features; and the allocation of funds for pre-opening costs, interest during construction, working capital, and contingency costs. | | | | | |
| Grupo Posadas S.A.de C.V. | Mexico | 185,600,000 | 25,000,000 A Loan<br>30,000,000 B Loan<br>10,000,000 C Loan<br>15,000,000 equity investment | B | June 1999 |
| Brief project description: The project consists of: the construction of five new hotels in Mexico, bringing in a total of 685 additional rooms and the implementation of a debt retailoring program to replace the bridge financing incurred for the acquisition of the Caesar Park chain in South America. | | | | | |
| Puras do Brasil Sociedade Anonima | Brazil | 48,000,000 | 13,000,000 senior loan<br>2,000,000 convertible loan | B | August 1999 |
| Brief project description: Most new cafeterias/restaurants will be opened at industrial firms in the Northeast and North of the county. Puras' goal is to seek contracts serving meals to large numbers of factory workers. Cafeterias are generally located in buildings near factories. | | | | | |
| Multiplaza | Honduras | 40,120,000 | 10,000,000 senior loan | B | June 1998 |
| Brief project description: The project consists of a mixed-use development including a 157 room hotel and an adjacent shopping mall in Tegucigalpa. The proposed hotel will be the first 5-star chain hotel in the city. The Multiplaza which will be located at the same site will be one of the largest shopping centers with four anchors, a supermarket, local stores, a large food court and movie theaters. | | | | | |

| | | | | | |
|---|---|---|---|---|---|
| Flamenco Bavaro | Dominican Republic | 56,000,000 | 6,300,000 senior A Loan<br>21,700,000 senior B Loan<br>7,700,000 quasi equity investment | B | April 1998 |
| Brief project description: The project will consist of the construction of the Flamenco Bavaro resort, an 853 room four star hotel to be located near Punta Cana. The hotel will be built, owned, and managed by companies affiliated with Occidental Hotels, a leading Spanish hotel chain which is active in the Dominican Republic. | | | | | |
| SEF Cara Lodge | Guyana | 1,400,000 | 700,000 long term debt | B | January 1998 |
| Brief project description: The project consists of the following key elements: refurbishment to parts of the existing property and completition of the two existing suites; purchase of about 8,000 sq.ft. of adjoining land at the rear of the building; construction of an additional 20 rooms, addition of a small conference facility and expansion of the central facilities; and provision of working capital. | | | | | |
| Grupo Posadas III – Swap | Mexico | 60,000,000 | 50,000,000 | C | December 1994 |
| Brief project description: The major component of the project consists in the financing of: the construction of three new hotels in Leon, Ciudad Juarez, and Colima; a new communication and reservations system; and a debt maturity retailoring program. | | | | | |

*Table shows 21 touristic projects that IFC had invested from 1995 to 2010, for Latin America and Caribbean region. Of totally 21 projects that are in the Accommodation & Tourism Services, a state that has the most tourism projects is Mexico, a total of 7. The next state is Peru with 3 projects, followed by the Dominican Republic with 2 tourism projects, and 1 project have been realized in countries: Barbados, Guyana, Trinidad and Tobago, Grenada, Brazil, Honduras, the region of Central America, Caribbean and Haiti.*

Peru Orient Express Hotel project began in 2000 and is still active. The company that owns this hotel gained it during the privatization of the hotel by the government of Peru. Peru Real Estate SA holds 60% ownership. Within the enterprise, other than hotels, they owned more shopping centers and homes on the coast of Lima. The total project cost is estimated at $ 22,5 million. IFC's investment consists of a loan amounting to $ 6,000,000 and a loan of C $ 4,000,000. The proposed project includes: renovation of resting categorized with 3 stars and its 32 rooms which are both within Machu Picchu; refurbishing the existing 123 rooms in a 5-star hotel, Hotel Monasterio in Cusco, converting the existing building to the Hotel Monasterio, which will consist of 58 apartments and will be categorized as a 5-star hotel; purchase and installation of furniture, inventory and equipment purchase and installation of the necessary environmental and safety equipment, and the allocation of funds for interest during construction, working capital and contingency costs. Conceptually the project makes sense for this kind of tourism because they are attracted to this field: cultural enthusiasts and others interested in seeing the ruins of Machu Picchu and the city of Cusco. IFC's involvement in the proposed project will provide long term financing for projects of this kind, at a reasonable price. For the project is expected to generate an additional 200 jobs directly, but a significant number of indirect employments. The positive effects will be visible on the regional economy, such as restaurants, agriculture and sightseeing tours. State tax revenues will also increase. In addition, the company will invest in improving human resources professional training to become a world-famous hotel. Also, the fact that this project restores a historic monument (Nazarenas Convent) is an important part of the project.

Occidental DR is a project between the Dominican Republic and the IFC signed October, 6th 2004 and is still active. It belongs to the category B of environmental standards. The project consists of establishing a new hotel company with the 3 existing buildings owned by the company Occidental, aimed at renovating buildings and rising to a higher standard and upgrade the fire safety system. The proposed project aims to improve equity and financial position of the Company to continue the capital program in the Dominican Republic. The total project cost is estimated at $ 92 million. OHM has requested IFC's assistance to mobilize up to $ 70 million to finance the project. The proposed IFC investment would include a loan amounting to $ 10 million B loan of up to $ 40 million and C loan of up to $ 20 million. A loans and B loans will be invested directly in Occidental subsidiary in the Dominican Republic; a C loan will be invested in OHM, the holding company Occidental group. Tourism in the Dominican Republic is of great importance and is responsible for the strong growth in the economy of which in the 90s they opened directly or indirectly more than 554,000 jobs (16.2% of total employment), contributing $ 5,6 billion of economic profit.

Most investments of the IFC are concentrated in building new capacity, about $ 339,500,000 that is 15 out of 21 projects (71%) and at least a portion of the funds is intended to build new capacity.

Modernization and reconstruction of existing buildings is planned in only 4 projects, and the amount for that is about $ 36,000,000 or 7.7% of overall IFC investments for the projects inside the Region. $42,600,000 is taken for 6 projects which included the expansion of their own capacities. This amount consists of 9% of the total funds which IFC has invested in tourism projects LAC region. The remaining amount of approximately $ 80,000,000 is intended to restore the debt and refinance companies that have entered into business with the IFC. In total there were 4 (19%) of the overall project. However, it should be noted that companies that have received funds to restore the debt or refinance did not receive funds solely for debt repayment and refinancing. They cooperated with the IFC primarily to build new capacity and they parallel received additional funding for financial restructuring.

Table 6: Total Worth of Touristic Projects in Region and by IFC Funds

| | **Total worth ($)** |
|---|---|
| All projects (Own funds + IFC funds ) | 800,000,000 |
| IFC funds | 464,000,000 |
| - A Loan | 173,400,000 |
| - B Loan | 131,700,000 |
| - C Loan | 84,448,000 |
| - Other | 74,240,000 |

*Table shows the total value of all tourism projects in the region of Latin America and the Caribbean, and the division of shares or with how the funds IFC participated in their development. IFC funds are divided by type of financing.*

The total value of projects of LAC region is estimated at approximately to $ 800,000,000 (Table 6). From that amount, the total IFC financing consists of $ 464,000,000 which represents 58% of total assets. A loans make up $ 173,400,000 and make the 37.4% of total IFC loans. They also have the largest share of loans to this sector. B loans constitute 28.4% of total loans, or $ 131,700,000. C loans are not as frequent as the first two and they make up 18.2% of total IFC loans. The remaining 16% belong to other species such as long term debt, quasi equity investment and other species (Figure 2).

Figure 2: IFC Funds Invested in Tourism Projects for the LAC Region ($)

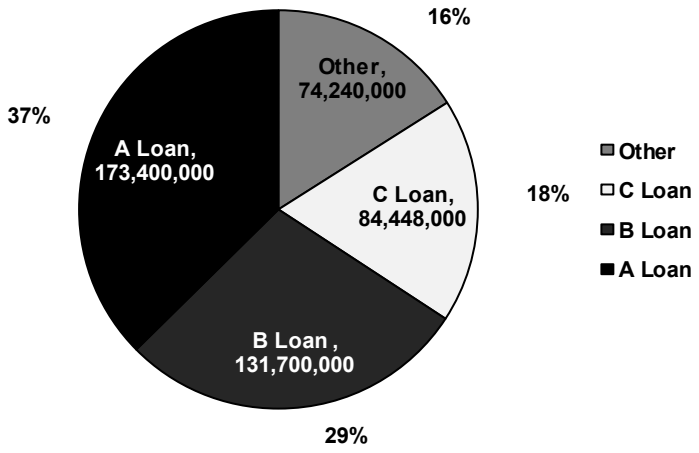



*Figure shows the amount of funds that were invested to finance the projects. Presented in form of its financial commitment and shows their share of the overall participation of IFC in project financing.*

Tourism projects have a big role in stimulating private sector development mainly through their linkages with the local businesses as well as through induced demand for other tourism related activities (tour

guides, restaurants, etc.). IFC investments have a strong demonstration effect in the development of the tourism sector (IFC, 2007). Through the tourism sector, the objective of developing the economy locally, nationally and regionally is achieved and it is also achieved greater development of population, development of new and better standard of living for developing countries which actually is the purpose of action of International Finance Corporation (IBRD, 2003). Besides the obvious investments of IFC and mobilized resources which the Organization moves, it comes also to other positive developments, such as creating new jobs. Also by investing in tourism and hospitality industry it is possible to generate foreign currency income and also promotion of the whole Latin America and Caribbean region as a good value for money tourist destination (Aragao, 2005). More additional positive things that IFC is generating is transfer of resources and technology, improvement of domestic management skills, fostering of broader public participation in company ownership and promotion of the economic integration of Latin America and Caribbean. Financing tourism projects makes possible to monitor the work, promoting development and providing technical assistance to economic operators in the tourist region. Any help is appreciated, whether it is of a financial or advisory nature. It allows you to resolve the current problems, and other common economic interests.

## CONCLUSIONS

The main goal of this article was to show the correlation between International Finance Corporation investments and economic development of the Latin America and Caribbean region through the tourism and hospitality industry. The fundamental purpose of existence of the International Finance Corporation is actually to help countries that have not been able to finance projects that have positive effects on the entire country: the development of good business ideas, development of new jobs, the development of the economy and thus the development of higher standards for all citizens living in the country.

The primary data used in this study were researches carried out by the International Finance Corporation. All data and information contained in tables and figures are part of IFC's Annual Report (2009, 2010) and its supporting documents (IFC, 2009b, IFC, 2009c). Data used for analysis are mostly for FY2009 and FY2010. The fiscal year for the IFC starts on 1 July and ends 30 June next year. In addition to primary data, secondary data sources from World Bank reports, published literature, reports and publications (The International Bank for Reconstruction and Development, 2003, World Travel and Tourism Council, 2006) were compiled and presented. At the beginning of the work general data were analyzed such as the scope of the corporation and its interests and amounts of funding with which it participates in selected projects. After presenting DOTS, which is used in the data relevant to the LAC region, follows an introduction to the LAC Region. The focus is exclusively on tourism and in this part of the region there are 21 projects. Brief descriptions about each particular project are mentioned, such as: Project Name, Country, Total project cost, the share of IFC financing, Environmental category, Beginning of cooperation and all the data are synthesized in the form of Table 5. Globally, the number of projects in which IFC participates increases each year by about 80 more projects, taking part with about $ 10 million of its own funds. This information is not negligible and it is obvious that such a large capital needs to run the economy. In some sectors of the LAC region was reached 100% of the effect that the IFC had expected (Oil, Gas, Mining and Chemicals, Health and Education). These results indicate that realized IFC's investments had the impact.

The research objective was to determine the role and significance of International Finance Corporation investments in tourism and hospitality industry on the example of projects in Latin America and Caribbean. With developing and investing in the tourism sector should result with long-term positive changes, such as generating new jobs, increasing of production and starting the economy at both national and regional levels. IFC's investments in the tourism sector confirmed that. As for investment in tourism of LAC region, the International Finance Corporation has invested its funds or those mobilized. Most investment has been invested in building new capacities ($ 339,500,000). Through the construction of

new capacities came to the launch of other industries, like construction, food and others, and through involvement comes to starting capital and to the creation of new investments. Through the tourism sector, the objective of developing the economy locally, nationally and regionally is achieved and it is also achieved greater development of population, development of new and better standard of living for developing countries which actually is the purpose of action of International Finance Corporation. Yet in this area there are many problems such as random systems, vague strategy of development, lack of regional cooperation and local sources of financing are too small. Because of that there is such a need in order to draw attention on necessity for stronger implementation and importance of the International Finance Corporation as a source of investment funds.

In this research we did not focus on a particular country and on the impact that the International Finance Corporation has to a certain country. We analyzed every touristic project in the region since the establishment of IFC to present and then the data were synthesized in order to see the impact of projects on the region as a whole. In this sense we are talking about the total tourism investments in LAC region, about the number of new working places and how much is economic growth and productivity. There was also a possibility that parallel, in some other industry, arrived some unknown development or investment, so it is possible that the data are interpreted as if tourism was the one that activated it but it was actually something else triggered the positive trends of the economy. In the future, instead of synthesizing the data on an industry level (in this case the industry of Global Manufacturing and Services) it could be possible to collect and display the results only for the tourism sector so then we would be able to see more clearly their influence on the development of the region, their impact in reducing poverty, the inflow of foreign currency and other side effects that the development of tourism is carrying. Also the focus could be put on the arrangement of institutions at the national level and on developing clear strategies for tourism development.

In 2009, IFC's portfolio companies provided over 689,000 jobs in Latin America and Caribbean, served 1,8 million patients and over 916,000 students, generated power for over 67 million customers, and distributed power, gas and water to 31 million customers. Regardless of whether talking about projects relating to tourism or only on projects that include infrastructure, agriculture, etc. They all have potential for development, not just the local area, regional or national spaces, but by investing in development of a tourism project it represents the investment in the full development of specific region. Of course it is very long and difficult path of developing countries that are just beginning their development. They now have a great potential for success, but also for failure if they do not succeed in their development. Therefore, the IFC is in such cases the key organization that actually provides the potential for advancement. Yet in the end, International Finance Corporation must have an interest in investing because then there would not be economically justifiable reason for its existence. Although the ultimate goal of the Corporation is successful and profitable business, her role is extremely important in respect of investment projects in developing countries and because it is such a unique and irreplaceable, in the world and in the funding for tourism in the region of Latin America and Caribbean.

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# THE INFLUENCE OF ULTIMATE OWNERSHIP ON EARNINGS MANAGEMENT: EVIDENCE FROM INDONESIA

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**ABSTRACT**

*Governance of public companies in Indonesia is concentrated in a particular group of controlling shareholder. The group is constituted in various ways like family, government, widely owned financial institutions, widely owned companies or others as a controlling shareholder. The controlling shareholder has two rights, control rights and cash flow rights. Differences between the two rights affect agency problems. Siregar documents that 99% of public companies in Indonesia have a concentrated ownership structure with a cut off of 10% control rights. Febrianto (2005) suggests that 92% of public companies have concentrated ownership structures in Indonesia at a cut off of 20%. Based on this phenomenon, the objective of this study is to investigate whether cash flow rights and leverage influence earnings management. This study collected data from Indonesian Stock Exchange regarding manufacturing companies during the period 2001-2007. There are 786 firms year at a cut off of 10% control rights. The results suggest that the cash flow leverage rights positively influence earnings management. The result indicates that larger differences between control rights and cash flow rights, imply it is easier for the controlling shareholder to manage earnings for his/her personal benefit. The controlling shareholder manipulates earnings to hide the acquired private benefits through expropriation.*

**JEL**: G32; M41

**KEYWORDS:** Ultimate Ownership, Control Rights, Cash Flow Rights, Cash Flow Right Leverage, and Earnings Management

## INTRODUCTION

The objective of this research is to investigate whether the cash flow right leverage of controlling shareholders influence earnings management. This issue is most important because ownership of public companies listed on the Indonesian Stock Exchange (IDX) is concentrated (Claessens, Djankov and Lang, 2000; Febrianto, 2005; and Siregar, 2006) and low protection for non controlling shareholders (Johnson et al., 2000; and Leuz, Nanda and Wysocki, 2003). Therefore, this condition is opportunity for controlling shareholder to manage earnings.

According to Claessens, Djankov and Lang (2000), most public companies in Indonesia are owned by a single controlling stockholder. A controlling shareholder ultimately owns the largest portion of the firm. Febrianto (2005) suggests that 92% of public companies are owned ultimately. The finding is consistent with Siregar (2006). He documents that 99% of public companies in Indonesia are owned ultimately at a 10% cut off of control rights. The concentration generates separation between cash flow rights and control rights. The separation is termed cash flow right leverage.

Leverage entrenches controlling shareholder to expropriate non controlling shareholders. A case in point is Bank of Century. Tbk is an expropriation by controlling shareholder in Indonesia. Expropriation happened because the controlling shareholder has lower financial incentives compared with his/her control to the company. The situation indicates the agency problem between controlling and non-controlling shareholders. The controlling shareholder can make decisions exclusively for her/his benefit. According to Fan and Wong (2002) when the controlling shareholder is entrenched by a large separation of control rights

and cash flow rights, credibility of the accounting information decreases. This results because the controlling shareholder effectively controls the firm and also controls the process of financial reporting.

The remainder of the paper is organized as follows. Section 2 discusses the relevant literature. The research methodology is described in Section 3. Section 4 provides the results and Section 5 concludes the paper.

## LITERATURE REVIEW

La Porta, Lopez-de-Silanes and Shleifer (1999) were the first researchers to conduct research of ultimate ownership. Based on a cut off 20% of control rights, La Porta, Lopez-de-Silanes and Shleifer (1999) find 36% of world companies are owned widely. Family controls 30% of companies and 18% of companies are controlled by the state. The controlling shareholder controls 26% of companies through a pyramid in the case of family control. Managers in 69% of companies are part of the controlling shareholder family. Claessens, Djankov and Lang (2000) develop La Porta, Lopez-de-Silanes and Shleifer (1999). Claessens, Djankov and Lang (2000) investigate separation of ownership and control in nine countries of East Asia. Claessens, Djankov and Lang (2000) find that control rights of controlling shareholder were larger than cash flow rights in Indonesia. More than 2/3 of companies are controlled by a single controlling shareholder.

Faccio and Lang (2002) develop a study of La Porta, Lopez-de-Silanes and Shleifer (1999) and Claessens, Djankov and Lang (2000). Faccio and Lang (2002) find that 37% of companies were owned dispersedly and 44% were controlled by family. Demirag and Serter (2003) investigate ultimate ownership on the Istanbul Stock Exchange and find that most companies are owned by ultimate ownership and controlled by a family through a pyramid. Siregar (2006) investigates ultimate ownership in Indonesia and shows that most companies are controlled by a controlling shareholder. Based on a cut off of 10% control rights, 99% of public companies have ownership concentration on single controlling shareholder. Based on a cut off of 10%, Siregar (2006) finds 66% of companies are controlled through a pyramid.

There are consequences of concentrated ownership. Claessens, Djankov, Fan and Lang (1999) show higher cash flow rights increase firm value and higher control rights reduce firm value. A larger wedge between control rights and cash flow rights reduces firm value. Faccio, Lang and Young (2001) find that a higher O/C ratio implies increasing dividends. La Porta, Lopez-de-Silanes, Shleifer and Vishny (2002) and Claessens, Djankov, Fan and Lang (2002) show that higher cash flow rights increase firm value. However, Claessens, Djankov, Fan and Lang (2002) also show that higher control rights reduce firm value. Lins (2003) also finds that higher control rights reduce firm value. Lemmon and Lins (2003) show higher exceeding control rights and cash flow rights reduce firm value. Higher cash flow rights positively affect firm value. Siregar (2006) finds higher cash flow rights increase firm value and dividends and higher control rights negatively effects dividends. Cash Flow right leverage interacted with management of controlling shareholder to negatively affect dividends.

Schipper (1989) defines earnings management as a purposeful intervention in the external financial reporting process with the intent of obtaining some private gain. Healy and Wahlen (1999) define earnings management to occur when managers use judgment in financial reporting and in structuring transactions to alter financial reports for the purpose of either misleading some stakeholders about the underlying economic performance of the company or to influence contractual outcomes that depend on reported accounting numbers. Scott (2006) defines earnings management as the choice by a manager of accounting policies so as to achieve some specific objective.

According to Healy and Wahlen (1999) and Scott (2006), there are motivations to manage earnings. There are bonus motivations (Healy, 1985; Gaver, Gaver and Austin, 1995; Holthausen, Larcker and Sloan, 1995; and Guidry, Leone and Rock, 1999), contractual motivation (Sweeney, 1994; DeFond and Jiambalvo, 1994), political motivation (Jones, 1991; Cahan, 1992; Na'im and Hartono, 1996; Key, 1997; and Navissi, 1999), tax motivation (Dopuch and Pincus, 1988), changing of CEO motivation (DeFond and Park, 1997), capital market motivation ( Perry and Williams, 1994; Burgstahler and Dichev, 1997; Teoh, Welch and Wong, 1998a; Teoh, Welch and Wong, 1998b; Rangan; 1998; Erickson and Wang, 1999). Cash flow right leverage is the difference between the value of cash flow rights and control rights. The value of cash flow right leverage can be positive or zero because control rights are higher or equal to cash flow rights. Agency problems will be reflected at value of cash flow right leverage. The higher cash flow right leverage, the higher agency problems will be.

Higher cash flow right leverage is an incentive and opportunities for controlling shareholders to expropriate non controlling shareholders (Gugler and Yurtoglu, 2003). It is based on the argument of negative entrenchment effect (Yeh, 2005). It means that higher cash flow right leverage causes higher expropriation. Expropriation is conducted by controlling shareholder to increase the private benefit. Higher private benefits effects higher earnings management. Two empirical studies (Kim and Yi, 2006; and Haw, Hu, Hwang and Wu, 2004) showed that higher cash flow right leverage motivates controlling shareholder to manage earnings. This research estimates that the higher cash flow right leverage effects the higher earnings management. The estimation is based on the argument of negative entrenchment effect (NEE). NEE suggests that a controlling shareholder is interested in using his/her control rights to obtain private benefits by expropriating non controlling shareholders (Yeh, 2005). In this situation, the controlling shareholder manages earnings to avoid the non controlling shareholders observation. The following is hypothesis about cash flow right leverage and earnings management.

$H_1$: Cash flow right leverage of controlling shareholder positively influences earnings management.

## RESEARCH METHOD

The samples of this research are manufacturing industrial companies listed on the Indonesian Stock Exchange (IDX) from 2000 to 2007. The samples include large and small companies to avoid sample selection bias (Jogiyanto, 2010). Data Collected for this study was archival data. One of the forms of archival data is secondary data. The secondary data in this study was as follows. 1. Indonesian Stock Exchange for audited financial statements. 2. OSIRIS Database for the data of ultimate ownership. 3. The Data Centre of Indonesia Business for ultimate ownership. Table 1 shows process of collecting data.

Table 1: Process of Collecting Data

| | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | Firm Years |
|---|---|---|---|---|---|---|---|---|
| **Numbers of manufacturing companies listed at IDX** | 149 | 145 | 145 | 139 | 139 | 141 | 143 | 1,001 |
| **Incomplete financial statement** | (2) | (1) | (1) | - | (2) | (3) | (5) | (14) |
| **No data ownership** | (1) | - | (2) | (1) | - | - | (1) | (5) |
| **Unaudited report** | - | (2) | (2) | (1) | (1) | (2) | (1) | (9) |
| **Immediate ownership** | (5) | (5) | (6) | (6) | (6) | (5) | (5) | (38) |
| **Cut off less than 10%** | (2) | - | (1) | (1) | (1) | - | - | (5) |
| | | | | | | | | 930 |
| **Outlier** | | | | | | | | (144) |
| **Data can be processed at cut off 10% of control rights** | | | | | | | | 786 |

*The table shows the process of collecting data. The final samples can be processed are 786 observations at 10% cut off. When this research uses cut off 20%, the sum of observations are 739 and 640 firm years at cut off 30%. The samples of this research are all manufacturing companies listed at Indonesian Stock Exchange (IDX).*

Ownership of public companies is classified into dispersed and concentrated ownership. This study classifies dispersed and concentrated ownership at 10%, 20%, and 30% cut off control rights.

Variables of this research include independent variables, a dependent variable, and control variables. The independent variable is cash flow right leverage. The dependent variable is earnings management. Control variables include non-discretionary earnings, size, and leverage. Cash Flow right leverage is difference between control rights and cash flow rights. The cash flow right leverage value is calculated as control rights minus cash flow rights. Some researchers mention leverage as the ratio of cash flow right to control rights (Faccio, Lang and Young, 2001; Lemmon and Lins, 2003). Earnings management is proxied by discretionary accruals. This study uses model of Kang and Sivaramakrishnan (1995). The model is as follows:

$$Total\ accruals_{i,t}/Asset_{i,t-1}= \varphi_0+\varphi_1\left(\delta_1 Revenue_{it}/Asset_{i,t-1}\right)+\varphi_2\left(\delta_2 Expenses_{it}/Asset_{i,t-1}\right)+\varphi_3\left(\delta_3 Gross\ plant\ property\ and\ equipment_{it}/Asset_{i,t-1}\right)+\varepsilon_{it} \quad (1)$$

Where:

$\delta_1 = Account\ Receivable_{i,t-1}/Revenue_{i,t-1}$

$\delta_2 = Account\ balances\ related\ to\ expenses_{i,t-1}/Expenses_{i,t-1}$

$\delta_3 = Depreciation_{i,t-1}/Gross\ plant\ property\ and\ equipment_{i,t-1}$

$Total\ accruals_{i,t} = Net\ income_{i,t} - Operating\ cash\ flow_{i,t}$

$Net\ income_{i,t} =$ $Net\ income\ before\ extraordinary\ item, discountinued\ operation, and\ changes\ of\ accounting\ policies$

$Account\ balances\ related\ to\ expenses_{i,t-1} = Current\ asset - account\ receivable - cash - current\ liabilities$

Non discretionary accruals are obtained from the following equation:

$$Non\ discretionary\ accruals_{i,t}=\varphi_0+\varphi_1\left(\delta_1 Revenue_{it}/Asset_{i,t-1}\right)+\varphi_2\left(\delta_2 Expenses_{it}/Asset_{i,t-1}\right)+\varphi_3\left(\delta_3 Gross\ plant\ property\ and\ equipment_{it}/Asset_{i,t-1}\right) \quad (2)$$

Discretionary accruals are obtained from difference between total accruals minus non discretionary accruals. Discretionary accruals are obtained from residual of equation 3. The equation is as follows:

$$Discretionary\ accruals_{i,t} = Total\ accruals_{i,t}/Asset_{i,t-1} - \left[\varphi_0 + \varphi_1\left(\delta_1 Revenue_{it}/Asset_{i,t-1}\right) + \varphi_2\left(\delta_2 Expenses_{it}/Asset_{i,t-1}\right) + \varphi_3\left(\delta_3 Gross\ plant\ property\ and\ equipment_{it}/Asset_{i,t-1}\right)\right] \quad (3)$$

Earnings management is conducted for bonus motivation (Healy, 1985; Gaver, Gaver and Austin, 1995; Holthausen, Larcker and Sloan, 1995; and Guidry, Leone and Rock, 1999). According to Yang and Krishnan (2005) non-discretionary earnings are a proxy for bonus plan. The earnings are accounting earnings minus discretionary accruals. Leverage is total debt divided total assets. According to Sweeney (1994) and DeFond and Jiambalvo (1994), companies with large leverage tend to manage earnings. Companies might be sensitive to political problems. They tend to manage earnings to reduce political expense (Jones, 1991; Cahan, 1992). According to Johnson and Ramanam (1988), size of the firm negatively influences earnings management. Table 2 shows descriptive statistics.

The empirical model used to test $H_1$ is as follow:

$$Absolute\ discretionary\ accruals_{i,t}=\beta_0+\beta_1 Cash\ flow\ right\ leverage_{i,t}+\beta_2 Non\ discretionary\ earnings_{i,t}+\beta_3 Leverage_{i,t}+\beta_4 Size_{i,t}+\varepsilon_{i,t} \quad (4)$$

Table 2: Statistic Descreptive

| | N=786 | | | | N=739 | N=640 |
|---|---|---|---|---|---|---|
| | **Mean** | **Maximum** | **Minimum** | **Std. Dev.** | **Mean** | **Mean** |
| Absolute discretionary accruals | 0.0627 | 0.1992 | 0.0002 | 0.0467 | 0.0629 | 0.0634 |
| Cash flow right leverage | 0.0376 | 0.4251 | 0.0000 | 0.0786 | 0.0396 | 0.0429 |
| Non discretionary earnings | 0.0878 | 0.7496 | -0.3468 | 0.1457 | 0.0609 | 0.0932 |
| Leverage | 0.5755 | 2.982 | 0.0170 | 0.3364 | 0.5781 | 0.5860 |
| Size | 27.298 | 31.782 | 24.215 | 1.494 | 27.291 | 27.356 |
| Dummy | 0.1526 | 1.000 | 0.0000 | 0.3599 | 0.1515 | 0.0312 |

*The table shows sample description. The sample is collected from Jakarta Stock Exchange especially for manufacturing companies. The table also shows absolute discretionary accrual as proxy of earnings management and cash flow right leverage presenting agency conflict in Indonesia between controlling shareholder and non controlling shareholders.*

At a 10% cut off of control rights, the average of absolute discretionary accruals is 0.0627. The minimum value of absolute discretionary accruals is 0.0002. The value indicates all manufacturing companies do not manage earnings. Excess control rights to cash flow rights are shown on cash flow right leverage. Average of cash flow right leverage is 3.76%. The variable dummy is to control for heterocedasticity problems to test hypothesis. Before testing of hypothesis, this research tests the classical distributional assumption. The result shows normal distribution. There are not heterocedastity, autocorrelation, and multicoliniarity.

## EMPIRICAL RESULTS

This section presents the empirical results. The results in Table 3 show that the coefficient of cash flow right leverage is positive and significant at the 5% level. The results indicate that higher cash flow right leverage increases earnings management. The results show that for every 1% increase of cash flow right leverage earnings management increases 2.830% at a cut off of 10%. Based on these results, hypothesis $H_1$ is supported. Higher values of cash flow right leverage indicate larger agency problems.

According to Kim and Yi (2006), divergences between control rights and cash flow right are an incentive for controlling shareholders to expropriate the company's asset for private benefit and the expense of non controlling shareholders. To hide private benefits, controlling shareholders choose the method and accounting policies that hide expropriation. According to Gugler and Yurtoglu (2003), higher cash flow right leverage offers incentives and opportunities for controlling shareholder to expropriate non controlling shareholders. Therefore, the condition motivates controlling shareholders to manage earnings. The results of this research are consistent with the study of Haw, Hu, Hwang and Wu (2004) and Kim and Yi (2006).

Haw, Hu, Hwang and Wu (2004) document that earnings management is influenced by a wedge between control rights and cash flow rights in countries with low protection for non-controlling shareholders such as Indonesia. Kim and Yi (2006) also document that controlling shareholder tend to manage earnings when high control rights and low cash flow rights. Kim and Yi (2006) document controlling shareholders managing earnings to hide his/her self-serving behavior and to avoid the other consequences such as disciplinary judgments. This happens when the wedge between control rights and cash flow rights is large. With domination of control rights to cash flow rights, the controlling shareholder exploits the assets of the company for his/herself benefits. Decreasing company financial condition motivates controlling shareholders to manage earnings opportunistically through increasing earnings. The results are consistent at a cut off 20% in Panel B and 30% in Panel C on Table 3.

Table 3: Results

| Variable | Coefficient | t-statistic |
|---|---|---|
| **Panel A** | | |
| *Constant* | 0.1283 | 6.519*** |
| Cash flow right leverage | 0.0283 | 2.086** |
| Leverage | 0.0027 | 0.8154 |
| Non discretionary earnings | -0.0007 | -0.0987 |
| Size | -0.0030 | -4.173*** |
| Dummy | 0.0029 | 32.829*** |
| *Adjusted* $R^2$ | 0.591 | |
| F-Statistic | 228.57 | |
| Prob. F-Statistic | 0.0000 | |
| **Panel B** | | |
| *Constant* | 0.1232 | 6.175*** |
| Cash flow right leverage | 0.0275 | 2.008** |
| Leverage | 0.0020 | 0.5876 |
| Non discretionary earnings | -0.0011 | -0.1440 |
| Size | -0.0028 | -3.823*** |
| Dummy | 0.0987 | 31.803*** |
| *Adjusted* $R^2$ | 0.5906 | |
| F-Statistic | 213.96 | |
| Prob. F-Statistic | 0.0000 | |
| **Panel C** | | |
| *Constant* | 0.1291 | 6.044*** |
| Cash flow right leverage | 0.0260 | 1.845* |
| Leverage | 0.0024 | 0.6546 |
| Non discretionary earnings | 0.0031 | 0.3681 |
| Size | -0.0030 | -3.855*** |
| Dummy | 0.0991 | 29.296*** |
| *Adjusted* $R^2$ | 0.5868 | |
| F-Statistic | 182.51 | |
| Prob. F-Statistic | 0.0000 | |

*This table shows the influence of cash flow right leverage on earnings management. In panel a, number of* observation *are 786 firm years at cut off 10% of control rights. More increased cash flow right leverage indicates more increased agency problem between controlling shareholder and non controlling shareholders. Panel B shows the result of influence cash flow right to earnings management at cut off 20% of control rights. When this research uses the cut off, the sums of observation are smaller than 10%. The sums of observation in Panel B are 739 firm years. In Panel C, this research uses cut off 30% of control rights. Therefore in Panel C, the sums of observation are smaller than observation in Panel B.*
***, ** and * indicate significance at the 1, 5 and 10 percent level respectively.

## CONCLUSION

The objective of this research is to investigate whether cash flow right leverage influences earnings management. Data were collected from the Indonesian Stock Exchange. The study uses archival data and multiple regressions to test empirical hypotheses. The primary finding of this research is that cash flow right leverage positively influences earnings management. The conclusion implicates a entrenchment effect.

The private benefit is obtained by controlling shareholder through expropriation and is difficult to measure. This research does not measure the private benefit motivating controlling shareholder to manage earnings. The results of this research will be robust if private benefit is measured. If activity of expropriation is documented, private benefit will be easily measured. The limitation of this research is a low level of generalization. The sample used in this research is manufacturing firms. The results should not be generalized beyond this point. Future research can improve limitations of this research. Future research can measure private benefits. Future research can consider corporate governance in Indonesia. Good corporate governance is expected to prevent expropriation and opportunistic earnings management. Future researchers can research the role of an independent commissary to prevent

expropriation by controlling shareholders. Future researchers can also examine non-manufacturing companies.

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# A ROAD TO FINANCIAL STABILITY

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**ABSTRACT**

*This article provides a road map to financial stability. The roadmap is created by analyzing successive episodes of financial crisis at various points in time and the regulatory-cum-supervisory responses devised to reduce the chance of future threats to systemic stability. This article provides a glimpse of historical events that led to the establishment of Basel Committee and then critically evaluates committee's efforts to make financial markets more certain and secure. This article also highlights the efforts of supervisory authorities in creating an effective regulatory framework through the Basel Capital accords. A critique of the Basel accords is sketched showing how Basel I and Basel II did not help contain successive episodes of financial crisis. This paper also draws upon Basel III regulations currently under deliberation and highlights vulnerable areas that may continue to threaten systemic stability even after the implementation of Basel III.*

**JEL:** G01, G15, G18, G28

**KEYWORDS:** Financial Crises, International Financial Markets, Government Policy and Regulation, Regulation of International financial Institutions

## INTRODUCTION

The regulation of financial markets is a continuing task. As financial markets expand, new and innovative products continue to develop; therefore, it is always difficult if not impossible to apply a "one size fits all" formula in regulation and supervision of international financial markets and institutions. The history of financial crisis is as old as the market itself (C. Kindleberger, 1989). It depicts common patterns of behavior in aggravating crisis, including the lack of coordination between host and home country supervisors, the tendency of supervisory authorities to be more reactionary to the eruption of crisis rather than proactive in their approaches to predict issues and hence take appropriate measures in advance, and last but not least, ineffective enforcement mechanisms to secure implementation of financial regulations across the board between all sovereign state actors in an efficient way. The Basel Committee on Banking Supervision, hosted by the Bank for International Settlements (BIS), was constituted to fill in these gaps by G-10 Central Bank Governors for setting standards for international financial markets (G10 Governors, Communiqué, September 1974).

Over the past three decades, according to a range of reviews, there have been at least 42 systemic banking crises in 37 countries and there were at least nine major financial crises during the 1990s and 2000s in emerging market economies (Kawai 2010; Laeven & Fabian 2002). Such banking crises are becoming more frequent in the post-Bretton Woods period and are occurring on average after every 20 to 25 years in both industrial and emerging market countries, with the annual probability of crisis about 4-5%, according to a recent analysis (Stefan Walter, Secretary General, Basel Committee on Banking Supervision, 2010). It is safe to make an assumption from the frequency of repetition of crisis episodes that if the financial regulators remain unable to address the basic systemic problems swiftly and effectively, the world may continue to be traumatized by shocks from recurring episodes of financial crises.

Currently, there are many developments taking place especially as the Basel III regulations have been made public in November 2010 and are being processed for implementation and adoption. Policy makers all over the world are searching for the best avenues that can ensure stabilization while simultaneously not overburdening financial markets with unnecessary increased regulations and implementation costs. On one hand, the goal is to prevent any failure of the international financial system while on the other, to support smoother economic and financial development in future without fear of systemic threats. This paper is an attempt, precisely at the time when all these developments are occurring, to highlight certain areas of potential risks that have historically contributed to weaken the international financial architecture. This analysis has been done with specific instances from history, beginning with the example of how the collapse of Bankhaus Herstatt redefined the concept of interconnectedness of international markets.

The organization of the paper commences following a historical journey over the regulatory developments taking place during the last century. It discusses how Basel I and then Basel II attempted to make this world a safer place through better regulations. We will see through this paper to what an extent the supervisory authorities through the Basel Capital Accords remained successful in making financial markets more predictable and controlled while at the same time, we will identify the issues that hindered effectiveness of these controlling mechanisms. Finally, this paper concludes by making some recommendations towards a safer way forward.

## LITERATURE REVIEW

Under the laissez faire economy, it is generally believed that the financial regulations are largely based on the theory of rational and self-correcting market principles (Larson 2009). Similarly, at the heart of the libertarian dogma is: "*the belief that markets know best and that those who compete well will prosper, while those who do not will fai*l."(Kaufman 2009). As we have seen, regulations over the past few decades have rested on the notion that markets are essentially rational and highly efficient at allocating resources and that markets are generally self-policing and self-correcting (Schooner & Taylor, 2010). However, from the repetitive episodes of financial crisis in Latin America, in East Asia, and most recently, in 2008-2010, we have witnessed failure of this theory that markets offer symmetric information and hence always act rationally (Blundall 2008; Ackerlof & Schiller 2009). Thus, it became evident that unregulated or non-regulated free markets can pose devastating threats to the smooth functioning of financial markets, and so emphasizing on the need to have regulated regimes (Paletta & Scannell 2010).

Schooner and Taylor (2010), while talking of regulatory regimes, criticized Basel I which remains by a large margin the most comprehensive set of regulatory policies so far. They note, first, that Basel I was unable to differentiate credit risks under the formula for risk-weighting categories or buckets because risk was evaluated on loan-by-loan basis rather than portfolio level. Second, the OECD/non-OECD distinction was arbitrary and politically driven. Finally, they identify the failure to recognize that risk through diversification as one of the major criticisms of Basel I. It is often the carried forward mistakes and lapses in required responses that serve as the breeding grounds for the next crisis. Importantly, for the 2008 global financial crisis, many of the underlying factors arose from responses to previous crises, dating back to the reform of the US financial regulatory system during the Great Depression. However, significant effects arose primarily from reactions to the financial disruptions that took place in the 1980s and 1990s (Arner 2009). This historical evidence reinforces the review though the international regulatory approaches once again, at a minimum to address issues underlying the most recent crisis while at the same time endeavoring to avoid laying the foundations for the next crisis. While the former is certainly possible, unfortunately, the latter is probably not. In relation to Basel II, due to pro-cyclicality trends, Basel II underestimates the risks in good times while overestimating them for bad times (Blundell 2008). Hence, the system of banking regulation requires a thorough overhaul (Hellwig 2010). The recommendations given in the last section highlights these areas where improvements and revisions are necessary.

## HISTORICAL EVIDENCE

While initially restricted after World War II, since the collapse of the Bretton Woods international monetary system in the early 1970s, international financial markets witnessed unprecedented growth and expansion. With the establishment of cross border branches and subsidiaries of financial institutions, the international financial markets became more interconnected and dependent on each other. Following the collapse of the fixed exchange rate system and the rapid liberalization of capital flows in the West, international financial markets were exposed to new uncertainties arising out of hybrid transactions and new capital and interest rate risks which emanated from the emergence of floating exchange rates and increases in cross-border capital flows. In this initial period of rapid liberalization, excessive borrowing and lending fuelled by massive amounts of petrodollars coupled with interest rate hikes in US led to the realization of systemic risk as a factor which can cause systemic crisis. The situation was aggravated further with the collapse of a number of big financial institutions such as Franklin National Bank in the US and Bankhaus Herstatt in Germany. Therefore, the Basel recommendations and Capital accords came as a response from the regulators of the world to cater for future incidents.

However, the Basel I accord and recommendations did not prevent the outbreak of the Asian financial crisis in 1997-1998, which in fact in many ways laid the foundations for the unprecedented 2008-2010 global financial crisis. In response to the Asian financial crisis, the regulatory bodies came up with amended capital accords by incorporating market risk into the risk management criteria and Basel II was offered as a solution to any foreseeable systemic crisis in 2006, for banks. At that time, the supervisory authorities were fully aware of the fact that the cross border exposures and inter dependency of financial institutions have given birth to a new banking model "universal banking" where, due to extreme connectedness and interdependency of banking markets and operations, runs on one bank in one part of the world could cause the collapse of other financial institutions in the rest of the globe.

The Basel Committee began its journey with the issuance of its initial recommendations, commonly called the First Concordat, in 1975. The first concordat was important in the sense that it was first time in the history of international financial regulation that the principle of joint responsibility between home and host supervisors was established for the supervision of foreign banking establishments. It was stated that the supervision of liquidity shall be the responsibility of host supervisors and the supervision of solvency of foreign branches shall be the responsibility of home supervisors and an emphasis was placed on information sharing and cooperation between home and host authorities. Following the collapse of Banco Ambrosiano in 1982 and keeping in view the problems identified in regulation of holding companies and mixed activity groups, the Basle issued the revised concordat in 1983 (Walker, Kluwer Law, 2001) wherein, in addition to earlier principles, it was stated that the authorities should adopt the principle of consolidated supervision and the health of financial institutions should be judged on both stand-alone and consolidated basis. The revised concordat further made an important recommendation that the home and host authorities should monitor the effectiveness of supervision conducted by the other and should step in to extend supervision or to take necessary action if the supervision is not properly done by the other. The 1983 revised concordat was subsequently examined by the Basel Committee to issue an information supplement (Walker, International Banking Regulation, 2001).

The year 1988 was an important one in the regulation and supervision of international financial markets. The Basel Committee was successful in creating an agreement among supervisory authorities on the application of minimum capital rules, commonly called the Basel Capital Accord or Basel I. The Basel I fixed a minimum capital ratio of 8% to total risk adjusted assets and provided a tiered definition of the capital and divided the assets of banks into different risk buckets on the basis of underlying risks involved (Alexander & Dhumale 2006). The factors behind its universal acceptance and application were its relative simplicity and minimum costs. However, subsequently, it became subject of increased criticism as the focus of these rules was only counterparty default or credit risk and the market and operational risk

were not given any weightage in calculation of minimum capital ratios for any bank (Walker, International Banking Regulation, 2001). Another point that worked to its disadvantage was its failure to create a level playing field for all international financial institutions through its classification system as it assigned a zero percent risk figure to the OECD Governments and central bank credits; while a 100 percent risk figure for all other claims irrespective of the credit standing of counter party concerned (Walker, "So close but so far," 1999).

However the Basel Committee did not stop regulatory attempts here and continued its efforts to fill in the gaps in the regulation and supervision of financial markets. It again made significant achievements in the form of establishment of minimum standards in 1992 and the core principles for effective banking supervision in 1997. Though a market risk charge was also included in Basel I through the Market Risk Amendment in 1996 (following the failure of Barings), due to its crude classification system and failure to adjust to subsequent changes in the structure and operation of financial markets, the single measurement mechanism became outdated and need was felt to overhaul the whole system. Therefore, the Basel Committee started working to devise a more risk sensitive and adaptable-to-change mechanism. After extensive consultations, a new capital framework, commonly called Basel II, was introduced in 2004. The purpose of this framework was to improve the safety and soundness of financial system through a three pillar structure; (i) capital adequacy, (ii) supervisory review, and (iii) market discipline through necessary disclosures (Walker, International Banking Regulation, 2001).

This new system under Basel II was considered to be highly risk sensitive as more risk buckets were included in the calculation of minimum capital requirements. Furthermore, new operational risk charge was introduced to cater for the losses caused due to a failure of internal control systems, processes and staff corruptions. This effort to strengthen internal controls and systems was complemented by new supervisory review mechanism and market disclosure requirements. On the whole, the new system was kept flexible, innovative and adaptable to changing banking structures, operations and products. The Basel Committee offered banks a choice between two broad methodologies for calculating their capital requirements for credit risk which were: (1) the Standardized Approach, to be used to measure credit risk in a standardized manner**,** supported by external credit assessments; and (2) the Internal Ratings-based Approach, which subject to the explicit approval of the bank's supervisors, would allow banks to use their internal rating systems for credit risk (Valdez & Molyneux 2010).

Unfortunately, this new framework failed to prevent the next crisis. Importantly, the Basel Committee had limited participation with no formal status (Walker, Law, Policy and Practice, 2001). The structure was weak in the sense that it remained ineffective in devising binding international standards in the regulations of financial markets and banks. While surprisingly on the other front, it worked remarkably well in developing consensus on application of minimum standards in the supervision of financial markets. Though the standards were formulated, harmonious and across the board enforcement remained unrealized. This gap in implementation and discretion in adoption of regulatory principles contributed to the outbreak of the most recent crisis, allowing a global interbank run and contagious losses of confidence. Thus Basel II, which was supposed to be a bulwark, was in fact much weaker than believed.

The financial system is a system of promises. A basic problem with the Basel Capital Accords which has not been addressed even in the proposed Basel III, lies in its failure to establish a regulatory system which should treat the same promises in the financial system in the same way regardless of wherever they are passed or shifted (Blundell-Wignall & Atkinson, OECD Journal 2010). This different treatment of similar promises makes it very easy for banks to transfer financial promises to a less regulated sector and enable them to hold less capital against actual risks.

Pro-cyclicality is also one of the factors that have hampered the effectiveness of the Basel II framework. This, however, is not a new issue, as many analysts during the discussions of Basel II voiced concerns

about its procyclical potential (Taylor, Ashley, Goodhart, 2006). Though a certain degree of procyclicality may be inevitable and even appropriate (Saurine, June 2008), we have witnessed during the recent crisis that this procyclical tendency exacerbated the crisis. The corrective measures taken in the light of concerns of analysts could have controlled at least part of the damage caused by procyclical nature of the Basel framework.

## RECOMMENDATIONS

Bank runs of whatever form are always serious events and require immediate and effective control measures because they have the potential to spread through contagion and can lead to systemic risks, as the events following Lehman Brothers collapse witnessed. A timely support might have avoided the loss of confidence that spread due to the perception of authorities (that Lehman would not be sporadic for systemic crisis, so let it be allowed to fail). There it depicted not only Basel II failure but a complete loss of faith on all the existing regulatory or supervisory bodies including the G-7's comprehensive statement (Oct 2008) as endorsed by full membership of IMF, World Bank and then Financial Stability Forum (FSF). It was followed by the G-20 Declaration to support an open global economy by laying the foundations for reforms in Action Plan to ensure such a crisis never happens again (November 2008).

The year 2009 kept policy makers occupied in redesigning and modifying the financial supervisory-cum-regulatory structures to ensure transparency, accountability and across the board adoption and enforcement. In this context, the Basel Committee issued Basel III in September 2010, which enhances the minimum capital (common equity) requirements from 2% to 4.5%, along with a conservation buffer of 2.5%. These capital enhancements are supplemented by a non-risk based leverage ratio. To address procyclical concerns, Basel III proposes to introduce new measures which include long term calibration of the probability of default in the modeling of risk, forward looking provisioning and holding buffers of capital above the regulatory minimum (Blundell-Wignall & Atkinson, OECD Journal 2010). These are the additional measures proposed and being discussed and debated over for adoption to help address issues arising in the global financial crisis and to prevent future global systemic financial crises. Bank of England Governor Mervyn King suggested to split up banks and separate riskier activities from more stable businesses such as taking deposits (utility banking). He criticized the implicit support of taxpayers to these financial giants and said that: "the financial sector takes on risk with the support of the tax-payer's money and that reflects not genuine risk-bearing" (King 2010). However, Nout Wellink, Chairman of the Basel Committee feels the proposed measures would serve the right requirements, "the combination of much stronger definition of capital, higher minimum capital requirements and the introduction of new capital buffers will ensure that the banks are better able to withstand periods of economic and financial stress, therefore supporting economic growth" (Wellink 2010).

Basel III has recently introduced "bail-in" measures; (this falls in line with the ideas of Mervyn King when he criticizes reliance upon the support of taxpayers) which would force creditors to share the cost of propping up large banks before taxpayers have to become involved. (BIS Press Release Oct 2010) This idea is quite controversial because the US FDIC chairwoman, Sheila Bair said that the idea of contingent capital (Cocos) is a kind of convertible debt, it is intriguing and this option would not always resolve the underlying crises of confidence in the institutions (Eaglesham 2010). Against the backdrop of the Euro zone debt crisis, it may not be a good idea to presume that West' debt is risk-free and there lies a fatal flaw under the Basel III that top-rated government bonds, (such as those of the US and the UK), despite having long been among the few asset classes against which financial groups need not hold capital because they are deemed certainly not to default (Duyn Macenzie). A deeper analysis and comparison reflects that the Dodd-Frank legislation, by contrast, is better to address systemic wide issues than the "bail-in" measures. It incorporates the idea of "living wills" that would make it easier to wind up such falling institutions in case of failure (Turner Review 2009).

Finally, Lord Turner of the UK Financial Services Authority (FSA), advocates the use of new capital and liquidity requirements rather than a "structured" solution – such as the clear institutional separation between classic bank services to the real economy ("narrow banking" or "utility banking") and risky propriety trading activities ("investment banking" or "casino banking"). John Gapper endorses the point in Where there's a Will there's a Way. However, Mervin King, Governor of the Bank of England said that "Living will' is a misnomer, since the term means a plan drawn up by a bank for how it can be broken up if it becomes insolvent. It would be simpler and more accurate to use the term 'will'.

## CONCLUDING COMMENTS

We have seen through this paper that though the efforts have been made by world supervisory authorities to devise a strategy to avoid financial shocks but the lack of coordination, slow response time and the failure to ensure across the board implementation shed a fatal blow to the success of Basel regulatory-cum-supervisory regime. The goal of this paper has been to see that whether the efforts of world supervisory authorities through Basel are actually leading us towards a point where we can expect stability and certainty in financial markets. Also, most importantly, this paper was not limited to the task of identification of gaps but to suggest the measures that can help remove those gaps in supervision and regulation of financial markets. This paper has highlighted amongst others, the efforts of Basel committee for a dynamic and stable international regulatory regime, the strengths and weaknesses of regulations that came from time to time, and identified the areas/factors which reduced the effectiveness of risk measures during boom period and finally, the resulting controlling measures to tackle systemic risks in recent crisis. This has been done by analyzing the workings of the Basel since its inception to date by taking instances from crisis and in doing this analysis, a keen study of Basel recommendations and accords has been conducted. As Basel III is still being discussed for adoption and implementation, so this article cannot fully appreciate how Basel III would be successful in making the financial world a safer and predictable place. Future researchers may be able to give a critical account of how far Basel III has made a difference.

The Financial Stability Board (FSB, successor to the FSF) and the Basel Committee provide supervisory forums for regular cooperation to design acceptable and enforceable universal risk-based management mechanism. However, there is a need to elevate the status of this forum to devise not only acceptable but truly enforceable universal mechanism. In view of the recent increase in globalization, regulators should co-operate with each other and each of them may base on the lowest-common denominator approach in resolving systemic wide issues for a sustained and predictable behavior of globally systemically significant financial institutions. This belief that higher level of capital provides a buffer against risks and makes financial markets more resilient may be correct but the FSB and Basel Committee need to take care of the fact while suggesting any increase in capital requirements that it does not unduly hinder growth and innovation. In addition to focusing on much needed capital requirements, an equally pressing need is to ensure that other two important pillars of Basel II, i.e. supervisory review and market disclosure, are given due weightage and are properly implemented so that three pillar structure can bring much needed stability in the financial markets. Capital adequacy, unless truly complemented by supervisory review and adequate market disclosures will not be able to establish any effective regulatory-cum-supervisory regime, capable to detect market distortions, to ensure compliance and identify problem areas. Market discipline is an essential step towards strong and resilient financial markets and unless and until comprehensive regulatory structures prescribing market discipline, an effective corporate governance code, and an effective mechanism to protect financial institutions in the event of any failure are not materialized and adopted by all the influential market players, the road to financial stability would continue to prove increasingly rough during the years to come. Thus, establishing a financial code for all the major actors would ensure progress and smoother running of today's highly advanced and complex financial markets. Finally, Nout Wellink, Chairman of the Basel Committee, speaking at the 16th International Conference of Banking Supervisors said, "While painful and costly, the crisis has

nonetheless presented an opportunity to put in place longer term reforms that are needed to make banks and the financial system more resilient to future periods of stress" (Wellink, 2010).

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# EVIDENCE ON INTERNET COMMUNICATION MANAGEMENT STRATEGIES FOR LUXURY BRANDS

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**ABSTRACT**

*Luxury brands and the Internet communication media seem to be inconsistent at first sight. On the one hand, luxury brands have to maintain the control of their elitism and their image; on the other hand, Internet is defined as a mass media of communication that is basically not selective. However, some years ago, all the luxury brands started to set up their own websites and some of them have gone as far as opening online shops. Then, regarding these paradoxes and a literature review, the purpose of this article is to analyze how luxury brands can manage scarcity and the use of Internet. To answer this question, a structural semiotic methodology on luxury brands and their communication is used. The purpose is to bring about a better understanding of how luxury brands use Internet in their communication strategy and how this media may or may not fit into a luxury brand's management of the values of rarity. The methodology analyses factors that can impact the success or the failure of Internet communication for luxury brands. The results show that Internet is not entirely incompatible with luxury. It all depends on how it is used. Internet can strengthen the core values of brands thanks to original and interactive applications. But sometimes if not enough attention is paid, Internet may dilute the brand values. So many precautions have to be taken to avoid the dilution of brand narratives and some managerial implications are developed in this article, especially concerning e-shopping.*

**JEL:** M31, M37

**KEYWORDS:** Brand management, Internet, Communication, Luxury, Semiotic analyses.

## INTRODUCTION

Brands are cultural imagery whose consumption is mainly based on desire and emotions (Belk and Askegaard, 2003). They are narratives and values shared by groups of consumers (Levy, 1981; Stern, 1995; Thompson and Holt, 1997). They represent the entrance into legends or myths. Their implementation is made through all kind of supports that help to give meaning, that is to say, through all their communication tools. Brand communication can be carried out through multiple channels and is not limited to advertising (Hasting, 1990). Particularly, it seems important to consider new media to follow socio-cultural changes. Brands have to stay in step with their times to avoid becoming outmoded. While evaluation of communication techniques has to be taken into account in both cases, the thinking, the strategies and the purposes are not the same for brands in the mass market and brands in the luxury market.Mass market is synonymous with profitability and effective values. It focuses on a large number of products and low prices. For brands in this mass market, the purpose of communication is visibility. Accordingly, the Internet appears to be the media that consumers use the most.

Conversely, the luxury market has to show an image of selectivity and rarity. The challenge of these brands is to appear to send a message accessible only to a very small part of the population (Vigneron and Johnson, 2004). The choice of the communication tools is very important and has to fit with that. Along those lines, the Internet, defined as a mass media, does not seem to be consistent with the luxury universe. However, for some years, all the luxury brands have set up their own website and some of them have gone as far as opening online shops.

Previous research has mainly set the focus on the one hand, on the incompatibility between luxury and Internet and on the other hand on the opportunity this new media brings up (Roux and Floch, 1996; Dall'Olmo Riley and Lacroix, 2003; Nyeck, 2004). However few have brought a better understanding over the way to optimize Internet communication for luxury brands and how to minimize the incompatibility.

Then, faced with these paradoxes, the purpose of this article is to analyze how luxury brands can manage scarcity and the use of Internet. Particularly, we want to answer the following questions: (1) how do luxury brands develop their values on the websites? (2) Are these value in line with those developed on traditional communication support? (3) And what are the factors that may reinforce the value of these brands on the Internet in order to keep the consistency of the brand?
To answer these questions, this paper is structured around five sections. The first part is about the literature review. It highlights the concept of luxury and its paradoxes. Research focusing on links between communication, Internet and luxury are explained. This literature review leads to research propositions. In the second part, the research methodology is developed. A structural semiotic analysis is used to understand how luxury brands use Internet in their communication strategy and how this media may or may not fit into a luxury brand's management of the values of selectivity and rarity. The third part of this paper presents the results of tested brands. Then, we discuss the main contributions of this article, and in the last part of concluding comments the managerial implications, the research limits and further research are developed.

## LITERATURE REVIEW

The definition of luxury is very subjective and includes various connotations. However, it can be broadly defined today as a way of being, a way of life but also a way to buy, consume and use, rather than know-how or a way to do something (Roux and Floch, 1996; Nyeck, 2004). In luxury, intangible values are very important (Bechtold, 1991) To be more precise, several types of luxury have been defined.

Lipovetsky identifies two broad categories: eternal luxury and emotional luxury (Lipovetsky and Roux, 2003). While traditional luxury includes values such as superfluousness, know-how, and the desire to make a certain impression, emotional luxury emphasises values of personal pleasure, feelings and affective and experiential features. This distinction is close to those established between interpersonal luxury and personal luxury (Vigneron and Johnson, 2004). Interpersonal luxury includes strong social motivations. Personal luxury appeals to the values of pleasure seeking and emotion (Dubois and Paternault, 1996). Luxury is therefore plural and addresses several aspects, primarily related to personal values and interpersonal values.

Luxury brands, as other type of brand needs to be managed with consistency (Kapferer, 2004). It is required the brand to broadcast the same message through the different media (Aaker, 1996; Keller, 1999; Kapferer, 2004). The continuity of its value is essential for the brand development and the brand strength (Semprini, 1996; Keller, 2003; Kapferer, 2004). Consistency is at the heart of luxury brand management as well as selectivity, legitimacy, creation and perfect quality (Roux, 1991) Other special features at the heart of luxury brand management, including those related to the inherent paradoxes, are to be analysed and highlighted. The management of luxury brands has contradictions that other brands do not (Roux and Floch, 1996; Nuemo and Quelch, 1998). These include the paradoxes related to brand management and the various elements of the marketing mix, which do not fit with the basic principles of profitability. For example, in terms of product distribution, their goal is not to be the more accessible but to control distribution and choose their locations for their symbolism.

The communication of luxury brands is perhaps the most important and most difficult paradox to manage. Indeed, like all brands, those in the luxury sector have to develop awareness in the buying public. They

need to communicate to show they exist, that they are present and strong in the competitive world. However, at the same time, luxury brands try to protect their selectivity and remain discreet (Bechtold, 1991). Thus, in particular through their communication policy, luxury brands need to combine selectivity and diffusion, rarity and enlargement, elitism and increased awareness.

According to this perspective and this observation, in the following section we want to analyse the main characteristics of this new channel; consider its place in the luxury sector; understand how this mass media may be part of a strategy for luxury brands. Internet has become an essential part of branding strategies and communication for companies whose products range from consumer goods to luxury goods (Dall'Olmo Riley and Lacroix, 2003). Parallel to the increasing number of brands with their own website, there has been an increased interest in the literature regarding the use of the Internet in brand management. This interest has led many authors to develop their interest in brand management online (Chen, 2001; de Chernatony, 2001; Clauser, 2001). They agree that the basic rules of branding and the essence of the brand itself are the same online and offline (Dall'Olmo Riley and Lacroix, 2003).

According to Nyeck (2004), the Internet is a complementary tool in communication strategies and its triple objective is to inform, remind and persuade. The web can help to establish links between consumers and brands. In contrast to other media, the Internet allows a dual interaction with and through the tool itself (Nyeck, 2004). The web creates a central positioning among other communication tools, with, on the one hand, interpersonal and personal aspects and on the other hand, a communication mode that is somewhere between static and dynamic. Internet can have different impacts on brand. This technology can be used in different ways (Chen, 2001). Marketing practices that are made possible by the Internet can be classified into three types (Chen, 2001). First, browsers and search engines provide access to a wide range of information on the Internet in terms of products and services.

Then by integrating websites with consumer databases, it becomes possible to use more information on consumers and their needs. Finally, the Internet is distinctive because not only it enables consumers to communicate with suppliers but also it allows them to communicate with each other. Firms that have success on the Internet are those that have proved they are capable of getting into virtual communities (Chen, 2001). However, with these forums, brands must accept some loss of control because consumers become active co-producers of value (de Chernatony, 2001; Ind and Riondino, 2001). Internet constitutes a very wide communication tool with a very strong power in terms of worldwide diffusion, able to reach a large audience and enabling to implement a bilateral communication with the stakeholders of the brand. According to these characteristics and their impact on brand, it is well founded to wonder if the use of such a tool is appropriate in the luxury market, especially regarding the e-market.

Demand for the sale of luxury on line is growing at a global level. Recent studies show that the "rich" are now likely to be connected and are happy to make purchases online (Okonkwo, 2007). However, luxury goods, clothing, leather goods and fine jewlery are categorized as products with a good deal of "sensory" character. Their aesthetic features can be assessed through the five senses. Several researches have shown a resistance from luxury brands to sell online (Seringhaus, 2005; Kapferer and Bastien, 2009). However, more and more brands seem to take the challenge by opening their own e-shop on their website. Then, in the process of buying luxury products, point of sale plays a crucial role (Okonkwo, 2005, 2007). Nevertheless, is it realistic to think that the magic of these places can be reproduced on the web?

According to Kapferer (2004) and Dall'Olmo Riley and Lacroix (2003), the e-market represents at the same time an opportunity, an inevitable development, and a threat to luxury brands. Indeed, the Internet offers purchasing opportunities to consumers who have no close access to one of the few distributors of the luxury brand, or to those who feel intimidated by the fact of entering these stores (Seringhaus, 2005). Furthermore, for brands whose images are based on a very selective distribution, there is a real threat with this democratization. Internet brings together the "high class" and "mass class". This is why previous

research has shown an apprehension of the brand regarding online sells, and some author recommends avoiding E-shopping for some type of luxury brands (Seringhaus, 2005; Kapferer and Bastien, 2009) According to this literature review, oppositions between traditional luxury universe and the Internet world have been pinpointed (Bechtod, 1991; Roux, 1994; Nuemo and Quelch, 1998). However, regarding socio-cultural changes, luxury brands had no other option than integrating this new media in their communication policy. It is required that all communication support send the same message, the same values in order to stay clear in the consumer's mind. This is what authors named consistency of the brand value and this is largely emphasized in the literature (Aaker, 1996; Keller, 1999; Kapferer, 2004).

These elements should also be taken into account regarding e-shopping (Okonkwo, 2005).
This leads us to the following research propositions:

P1: Maintaining the consistency of the luxury brand value between traditional communication support and Internet support could minimize the paradoxes between selectivity and diffusion

P2: For e-commerce, the paradoxes between diffusion and selectivity could be mitigated by maintaining the codes of the brand and its universe.

## METHODOLOGY

Faced with the research problem and the analysis of the literature, the objective of this study is to explore how luxury brands use Internet in their communication strategy and how this medium can or cannot fit to manage the values of selectivity of luxury brands. More precisely, we want to compare Internet communication with other tools like posters, the press and window-shopping. In order to do that, a structural semiotic methodology is implemented. Structural analysis tries to understand the relationship of a number of elements under the principle of solidarity of the terms of a structure (Barthes, 1964; Eco, 1970; Floch, 1990). It analyses procedures to describe systems of meanings. Structural semiotics is based on the concept of sign. This is formed by the relationship between a noticeable element, the *signifier* (i.e. expression), and the meaning given to that signifier in a more or less structured code, the *signified* (i.e. content) (Barthes, 1964, Mick, 1986; Courtès, 1991; Greimas and Courtès, 1993; Alreck 1994). All symbols relevant to the subject of study should be considered: the words and language, all types of visuals, gestures, concepts (Barthes, 1964; Eco, 1970).

The study of the confrontation between these signs and symbols and their interactions helps to create a structure of meaning. Floch (1990) speaks of the principle of "bricolage" (from the French – "do-it-yourself" or "handiwork"). The structural semiotic approach is particularly relevant when studying the deeper signification of brand narratives and their invariants (Floch 1990; Courtès 1991).

The process of the analysis is structured in several parts. First, corpuses of communication are established for each brand studied. The corpuses are divided into two parts: one on traditional media (press advertisements and posters - old and new -, images of storefronts and shops and images of the product) and one on the Internet. . Data were collected during 2009, thanks to an extensive research on the Internet and via screenshots. Many communications have been sent via managers of luxury brands.

Then, respectively, with traditional media and on the Internet, an analysis grid is prepared. It serves to highlight the elements that shape the meaning. The grid is divided into three parts: an analysis of the plastic message (medium of communication, frame, composition, shapes, colours, lighting and texture), an analysis of the pictorial message (motifs, figures, objects and characters) and an analysis of the linguistic message (typography, colours, shapes of letters and meaning) (Courtès, 1991).

To highlight the structure of meanings of each brand, the meanings of the various communication media

are grouped together. Their relationships, overlaps and redundancies are analysed. The invariant meanings are put forward in forming the narrative of each brand.

This analysis is done in parallel for the traditional media of communication and for the Internet. In a final step, a comparison between these two parts of the communication policy is made. To improve the internal validity of the study, all the analyses are first made by the two authors of this paper. Then their results are compared and confronted. A match rate of about 90% was found. Following this confrontation, slight adjustments were made to refine the analysis.

Six luxury brands are considered in the methodology: Goyard, Hermès, Louis Vuitton, Boucheron, Cartier and Van Cleef & Arpels. This choice was motivated by several factors. First, to improve the external validity of the study, two sectors of activity were considered: leather goods and jewlery. Moreover, we chose brands with a high level of awareness and the same level of development according to a small study on 30 luxury consumers and previous research on luxury brands (Dubois and Laurent; Okonkwo, 2007). Finally, selected brands have all developed a website for over two years. To make comparisons, some of these brands have developed an e-commerce, while others do not.

## RESULTS

The results of the study are presented as follows: first, the analysis of each brand is made. Then, a discussion is developed and some implications are deduced.

Hermès

Table 1: Hermès Communication

| Brand values | Traditional communication | Internet communication |
|---|---|---|
| The Know-How related to the job of Saddle maker | Stores: sign bearing the effigy of a horse and saddle maker<br>Product Names: "Amazon"<br>Text: "Under the sign, the hand", "Everything changes, nothing changes"<br>Hermes Magazine: illustration of the craft | Home Page: Logo with the carriage and horse<br>Hermès "Universe" and "Expertise"<br>Presentation of 4 tabs related to the saddle maker (Leather, Silk, Horse, Know-how) |
| *Contribution of Internet: Interactivity of know-how and originality* | | Tab "Expertise": Videos shifted that focus somewhat / not on the mastery of traditional brand craft<br>Presentation of figurative elements out of step with traditional know-how (helicopter, kiwi, pink flamingos, slot machines) |
| « Savoir Vivre à la française » | Text: "Elegance and comfort with Hermès" "24, Faubourg Saint Honoré" "Paris"<br>Products related to « Savoir Vivre à la française »: tableware, scarves, gloves reflecting elegance<br>Visual symbols of Paris, cobblestone streets, golf, picnic in the park | |

*This table shows the values of the brand identified through both traditional and internet communication*

*Brand values:* The brand narrative of Hermes is « savoir-vivre à la française », a state or a way to grasp the moments of life, with delicacy and distinction. It also highlights product quality, with two noble materials: silk and leather, symbols of the French equestrian spirit. This Know-how is related to the original skills of the brand: the saddler. The brand maintain its craftsmanship tradition, and handmade its products. We can see some pictures of craftsmen working on leather, which reinforce the place of the brand in the leather sector.

*Consistency of means of communication:* There is an inconsistency in this narrative between the classic communication channels and the Internet. Although there are a few evocations of traditional expertise of

the brand through a video on Internet, other applications are not coherent with the values of the brand and generate more confusion. The website architecture is very complex, its contents is shifted, somewhat traditional and modern at the same time.

*Internet contribution:* In the case of Hermès, the Internet does not reinforce the brand values. It goes against the overall communication policy of the brand. Namely, the Internet does not refer to the « savoir-vivre à la française », a fundamental value of the brand since its creation. The use of Internet in this case is creative but leads to confusion regarding Hermès values.

*E-shopping:* E-shopping is present on the Hermes website. Already on the home page, you can click either on "Hermes Universe" or on "E-Shopping". Therefore, there is an immediate focus on the purchase as the viewpoint of the mass market. Also as before (i.e. for about one year), the site was only focused on e-shopping and did not have the part about the universe of the brand.

The presentation of e-shopping is like a product catalogue. It is relatively limited. The vocabulary and architecture are those of a site for the mass market. There are expressions like "your account", "buy", “How to pay for your purchases". The inconsistency between the brand values in the traditional channels of communication and the Internet is reinforced through e-shopping.

Louis Vuitton

Table 2: Louis Vuitton Communication

| Brand values | Traditional communication | Internet communication |
|---|---|---|
| The expertise trunk extended to leather | Text elements: " Louis Vuitton bags surprise since 1854"<br>Shop: at the entrance and ground floor, presence of trunks<br>Close-up of bags and suitcase | Home Page: Bag put forward on the photo<br>Service tab: Videos and photos of manufacturing and traditional manufacture<br>Tab Universe with: "Heritage, Family House, Know-how" |
| *Internet contribution: Personalisation of the know-how* | | Tab Universe: headings "Special Orders; customisation" |
| The travel | Text: "Love to learn," "Soul of Travel," "Necessary travel" "The Spirit of Travel"<br>Visuals: sailing, swimming pool, sea, boat, train, taxi<br>Landscapes: New York, desert<br>Products related to travel: trunks, logbook | Home Page: Integration of the bag in the travel universe (boat, beach, scooter)<br>Textual elements: "The Art of Travel", "The passenger in history", "Travel with Coppola"<br>Presentation of City guides |
| *Internet contribution : Interactivity of travel* | | Creation of an application: MP3 audio to various cities such as Paris, Beijing ... |

*This table shows the values of the brand identified through both traditional and internet communication*

*Brand values:* The narrative of the Louis Vuitton brand is the spirit of travel (both real and spiritual). The brand offers its expertise to attain this state of escape through both trunks and leather goods. This also refers to the original skills of the brand. The brand expose trunks and purse in these shops (in the entrance) and in its advertising. The Brand sets the focus on its “tradition” and its “innovation”.

*Consistency of communication support:* A real coherence emerges between the values expressed by the brand’s traditional channels of communication and those conveyed via the Internet. We find the same types of staging of the brand’s know-how and its narrative of travel.

*Internet contribution:* In the case of Louis Vuitton, the Internet strengthens the message of the brand and its values. Internet offers the opportunity to develop interactive applications. The use of explanatory videos to support the expertise of the brand, and the "Soundwalk" (audio guide application for major cities around the world) to bring the cybernaut into the world of travel are some examples.

*E-shopping:* E-shopping is on the Louis Vuitton website but it is not dominant in its first display (the e-shopping only appears in the last tab of five). Indeed, there is a desire to stage the universe and the brand's identity.
Concerning the specific e-shopping pages, the format is like a product catalogue with descriptions of items and prices. The products for sale online are mainly those related to leather, which reflects the will to focus on its main expertise. This consistency in setting forth the know-how of the brand is also enhanced by the possibility to customize products ordered.

The e-shopping is fully integrated into the site and does not give rise to a new Internet window when clicking on the tab. This sequencing helps to strengthen the consistency of the brand and its commitment to integrate e-shopping in the larger universe of the brand's identity.

Goyard

Table 3: Goyard Communication

| Brand values | Traditional communication | Internet communication |
|---|---|---|
| The expertise trunk | Advertising: presentation of products in large size<br>Focus on quality<br>Text: "Malletier since 1853"<br>Goyard shop: Rue Saint Honoré in Paris<br>Authenticity of the store decorations | Focus on brand expertise with special orders<br>Presentation of the brand history<br>Brown color to sow the brand authenticity |
| *Contribution of Internet* | | Only a reinforcement of the values |

*This table shows the values of the brand identified through both traditional and internet communication*

*Brand values:* The Maison Goyard puts forward in its communication expertise trunk maker "Malletier since 1853". All bags, accessories and bags are the finest materials.
Its shop is located on Rue Saint Honore in Paris since its creation and strengthens its history. The decorations demonstrate the authenticity of the brand. The presentation bags close to the center of advertising highlights the details of products and their quality.

*Consistency of means of communication:* There is a consistency in this narrative between the classic communication channels and the Internet. Indeed, the brand know-how is highlighted not only through the press advertising and other traditional media (shopping) but also on the website with the presentation of the history of the brand and special orders.

*Internet contribution:* For Goyard, the Internet allows it to strengthen its values (related to its know-how). However, the website is not particularly developed and is very simple and traditional. This element can fit with the brand authenticity and the willingness of not being too modern.

*E-shopping:* Goyard website does not have an e-commerce part. The brand does not sell online at this time.

Cartier

*Brand values:* The narrative of Cartier is based on jewelry know-how (extended to watch making) in a world of elite social status. Prestige, domination and demonstration of social values are highlighted.

*Consistency of means of communication:* There is a consistency between the values communicated via traditional media and the Internet. The visual codes and the figurative language are the same. Jewelry know-how and high social status are dominant in all means of communication.

*Internet contribution:* The use of explanatory videos supports the expertise of the brand. The originality of one application, called "Enter a unique place", reaffirms and reinforces the brand narrative on the prestigious social position. It allows the net surfer to visit the online shops. This application can be perceived as a paradox with respect to the elitist values of the brand. It can be seen as a desecration of the act of entering a fine jewelry store, but may also remind users that the visit on the Internet is still only virtual.

*E-shopping:* Cartier's website does not sell jewelry online. There was thus no e-shopping. However, the brand leaves the possibility of requesting additional information and creating a "wish list". This service and these "privileges" are reserved only to Cartier Club members. This exclusivity again reinforces the elitist values of the brand.

Table 4: Cartier Communication

| Brand values | Traditional communication | Internet communication |
|---|---|---|
| The Expertise of Jewelry (and watchmaker) | Visual Elements focused on jewelry close-up<br>Textual elements: "Jeweller since 1847"<br>In store: no staging of the product, minimalist presentation of the jewels | Home Page: Focus on products<br>Cartier House tab: "Heritage", "Excellence"<br>Textual elements: "Through Time", "Expertise Jeweller", "Wizard of Stone"<br>Films of the brand trades and craft |
| *Internet contribution: Personalisation of the jewels choice* | | Tab Universe: section "precious moments", proposal of a purchase guide: buying advice for a special occasion (birth, engagements) |
| Social elite position | Textual elements: "The art of being unique"<br>Visual Elements: jewelry boxes synonymous with protection of precious and rare things<br>Red colour representing strength and domination<br>Visuals of panther, symbol of majesty | Home Page: red background<br>Visuals: box partially open and closed, reflecting exclusivity<br>Tab Collection: "Panther of Cartier, Caresse d'Orchidee"<br>"Jeweller kings, King of Jewelry" |
| *Internet contribution: Social elitist desecrated by the application "Enter a unique place"* | | Interactive visit of a boutique: paradox between democratisation and limitation of a virtual world only |

*This table shows the values of the brand identified through both traditional and internet communication*

Van Cleef & Arpels

Table 5: Van Cleef & Arpels Communication

| Brand values | Traditional communication | Internet communication |
|---|---|---|
| **Expertise in Jewelry** | Visual Elements: close-ups of the jewelry, always staged.<br>Dark backgrounds to highlight the brilliance of the stones<br>Textual elements: "Jeweller"<br>Store: presentation of exceptional pieces | Home Page: Focus on one jewel<br>Tab Collection: Focus on products, directed and animated on a dark background<br>Tab « La Maison Van Cleef&Arpels »: "Craft, Memory" "Exceptional Pieces", « watchmaker art and crafts » |
| ***Internet contribution: Interaction between the brand and products*** | | Watches tab: focus on the technical characteristics of the brand and its expertise with the possibility to download a manual Existence of an I phone application |
| **Magical and fairylike universe** | Visual elements: Decor that focuses on the fairies and nature<br>Predominance of an imaginary world where the jewels are put on display<br>Store: Presence of fairies and flowers | Website animated around the theme of magic and nature.<br>Tab « Jewelry Collection »: Poetic product names: "A day in Paris, Midsummer night's dream, Butterflies, Fleurette & Snowflake" |

*This table shows the values of the brand identified through both traditional and internet communication*

*Brand values:* The brand narrative of Van Cleef & Arpels is based on jeweller expertise in a universe of magic and fairies. The brand offers a world of unrealistic characters and spaces. In its classical advertising, the brand presents its jewels in close-up in a fairy world to put forward the quality of its jewelry. In the brand shop, few pieces are exposed in order to reinforce the selectivity and the scarcity.

We can pinpoint the permanent presence of the nature in the advertising of the brand.

*Consistency of means of communication:* In the case of Van Cleef & Arpels, the use of Internet is consistent with the other more traditional communication tools. The Internet brings the user into the know-how and the magical world of the brand. A focus is made already on the home page on nature and fairy world.

*Internet contribution:* Internet reinforces the values of Van Cleef & Arpels, by explanatory videos to support the know-how of the brand. You can also enter more easily into the magical world of the brand thanks to lyrical and enchanting animations. The magical world is hence close to the virtual world offered by the various possible applications of the Internet.

*E-shopping:*The Van Cleef & Arpels website does not have an e-commerce part. The brand does not sell online at this time. We can also note that there is no possible interaction with the brand except via the newsletter.

At this stage, we can highlight that the jewelry sector uses Internet as a brand image tool and takes advantage of it namely using interactive and original applications to reinforce brand values. However, regarding E-shopping, none of the two brands we have analysed has an E-shopping part.
In order to check if this desire not to use e-commerce is related to the sector of these brands we have examined whether there were other jewelry brands that practice e-shopping. Several have emerged including Tiffany and Boucheron. To continue with fine jewelry brands, we decided to analyse Boucheron.

Boucheron

Table 6: Boucheron Communication

| Brand Value | Traditional Communication | Internet Communication |
|---|---|---|
| Expertise of the Jewelry | Visual elements : close up of jewels<br>« *Jeweler since 1857* »<br>In the shop :minimalist presentation of the Presentation of Paris and place Vendôme<br>Dark blue color to improve presentation of the products | Home page : Focus on Place Vendôme<br>« *Boucheron Paris* », « *Haute Joaillerie* », « *La Maison Boucheron* », « *Bijoux* », , « *precious moments*», (related to the craftsmanship tradition of the brand)<br>Focus on products, no staging<br>Dark color: put the jewels forward |
| Innovation | Advertising with staged jewels in the mouth of sexy men and women | |
| *Internet contribution : Presentation of all innovation of Boucheron* | | Home Page: E-shop for each country<br>Sell of jewels « *Boucheron and you* » |

*This table shows the values of the brand identified through both traditional and internet communication*

After analysing this brand, we can highlight the consistency between the values communicated via traditional media and the Internet. More than for the other jewellers, Internet reinforces the message and the values of Boucheron.

E-shopping is very present on the website of Boucheron but, as for Louis Vuitton, the presentation of e-shopping is completely integrated in the website. There is no distinction between the brand universe and the sale of products by Internet. The vocabulary and architecture are those of a site for the mass market. There are expressions like "your shopping bag", "Your favourites". Boucheron sells extravagant, very expensive jewelry (up to 40 000£). Despite this type of strategy, the presentation of the products remains classic and prestigious. Then the e-shopping mixes tradition and innovation, the two narratives of the brands.

## RESEARCH CONTRIBUTIONS

The purpose of this article was to analyze how luxury brands can manage scarcity and the use of Internet. The literature review that we have conducted has led us to these research propositions:

P1: Maintaining the consistency of the luxury brand value between traditional communication support and Internet support could minimize the paradoxes between selectivity and diffusion

P2: For e-commerce, the paradoxes between diffusion and selectivity could be mitigated by maintaining the codes of the brand and its universe.

In order to test these propositions a structural semiotic analysis has been implemented through six notorious brands which websites have been created at least 2 years ago. Here is the discussion of the primary findings resulting from our research. From a general overview, for five on the six brands we have analysed, their core central values are reinforced through the utilization of the Internet and its interactive applications. Internet is used as a brand image tool for both leather goods and jewelry sectors. Actually using Internet as a brand image tool makes it possible to avoid inconsistency emerging from the use of a mass media in a luxury strategy.

This is in line with literature recommendations about maintaining consistency of brand values on the different communication support (Kapferer, 1991; Aaker, 1996; Keller, 1999). Only Hermès set the focus on the e-commerce part, thus neglecting the brand image aspects and therefore the luxury atmosphere. From a brand sector point of view, Richemont Group's Jewellers choose a risk-free approach by allowing limited interactions with the consumers, which avoids loss of control regarding brand values. This approach seems not to be related to the brand sector since our control case, Boucheron, which does not belong to Richemont, uses original interactivity with its consumers and e-commerce too. This risk-free approach may result from a consistent group strategy.

The leather goods sector uses Internet as an interactive platform with consumers and takes advantage of the original opportunities Internet brings in the communication world. They are willing to establish a bilateral communication strategy. This technique is more risky in terms of loss of control regarding the content of information. The dominant craftsmanship aspect in the jewelry could explain this difference between jewelry and leather goods. Overall, this analysis is consistent with the research proposition:

P1: Maintaining the consistency of the luxury brand value between traditional communication support and Internet support could minimize the paradoxes between selectivity and diffusion.

Focussing on the E-shopping aspects, three brands (Goyard, Van Cleef & Arpels, Cartier) have not (yet?) taken up the challenge of e-commerce. Three brands (Hermès, Louis Vuitton, Boucheron) have decided to integrate this part as much as possible in the context of the brand image tool so that the core values are omnipresent and the luxury atmosphere is preserved. One brand (Hermès) has positioned itself differently from other brands by offering a particular website where e-commerce is dominant and where mass market flirts with luxury. It means that E-shopping is present for both sectors we have analyzed. Regarding further on the other brands of these sectors like Gucci, Longchamp or ST Dupont (Leather goods) or Tiffany & Co and Mauboussin (Jewelry), E-shopping is also used by these.

This leads us to moderate the vision of Kapferer and Bastien (2009) stating that luxury brands should always communicate through the Internet but never sell through it on web 2.0. We think that selling through the Internet is not impossibility but a real opportunity to be considered by luxury brands and their managers if they go for a completely integrated strategy respecting the holy rules of luxury

communication, such as highlighting the values of selectivity and rarity. Then, this analysis is consistent with the research proposition:

P2: For e-commerce, the paradoxes between diffusion and selectivity could be mitigated by maintaining the codes of the brand and its universe.

## CONCLUSIONS

The results of this research and the previous discussion lead us to make several recommendations for managers of luxury brands. First, brands have to consider the Internet as a fundamental communications tool. Because of the several applications that can be created, Internet gives brands the opportunity to express all the values of their identity in an original way and to maintain brand narratives consistency. This will allow consumers to better understand the brand values and to discover them through funny applications. In order to achieve that, each part of the website should be created to highlight the brand universe. In order to maintain the consistency of the brand on the Internet, it is important to resume on all pages on the website the same color codes, the same universe, the same word as used in other communication media.

The use of many innovative applications can also be a means to strengthen the brand values.
Regarding e-shopping, managers should consider the opportunity of Internet as a selling platform as stated above. The success of such a strategy will depend on the way it is implemented. Brands should absolutely maintain their selective image on the E-shopping by namely using luxury codes in terms of content, layout of the website.

Brands have to use a mass-market platform and turn it into a luxury world. Moreover, besides the turnover generated by the E-shopping, this really constitutes an open window to the world for the brand, regarding the fact that consumers take now a lot of information online. Another implication of this research concerns structural semiotics. It constitutes a new trend for managers and researchers to analyse and identify their brand values. The description in this research of the several methodological steps can be a basis for further research.

Some limits and furthers research can be highlighted. Despite the fact that many cautions have been taken, we could broaden the scope of the research namely by analysing more different sectors like fashion, cosmetics or table arts in order to improve the external validity and to know if the Internet communication strategies selected by the brands are in some way related to the sector they belong to.
In addition, in order to achieve an acceptable internal validity, the analysis was conducted by the two researchers independently, after which they confronted their results. A request for an expert point of view has been made. To continue this work, a quantitative analysis will compare the results of this research with consumer perceptions of luxury. The study of their attitudes toward e-shopping and these various arrangements constitutes the next step in this research.

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# DIFFERENCES IN TOURISM IMAGE AMONG CRUISE PASSENGERS ACROSS THE TAIWAN STRAITS

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**ABSTRACT**

*This study conducts an investigation of cruise passengers across the Taiwan Straits in an attempt to compare travel destination features among the three major port cities of Shanghai, Hong Kong, and Taipei (Keelung), and to obtain findings regarding passengers profiles. Data were collected in two phases, 2006 and 2010; 163 statistically valid samples were obtained. The results show that up to 66% of cruise passengers have distinct impressions of these three cities. In addition, the cross table of indicators in this study shows that the 10 indicators of destination attractions are evaluated positively. However, differences exist. Cruise passengers put more emphasis on 'reasonable expenses', 'convenient transportation', 'sufficient fundamental facilities', and 'abundant cultural and historical landscapes' than on other impression indicators. 'Passionate and friendly residents', for example, is evaluated as relatively less important. The results of this study provide research findings for the shipping and tourism industries in both China and Taiwan. This study also hopes that some new directions be established for future studies of cruise passengers.*

**JEL:** M31

**KEYWORDS:** Cruise Port, Cruise Passengers, Tourism Image

## INTRODUCTION

This paper investigates the experiences of cruise passengers across the Taiwan Straits to provide research findings for the shipping and tourism industries in both Taiwan and China. Currently, Taiwan and China are in the process of negotiating policies on Asian cruise lines. Thus, studies of cruise lines across the Taiwan straits are still in development, and official statistics documenting the consumption and contribution of passengers from various countries of the world are difficult to obtain. This study systematically lists the data of the major cruise ports in Asian countries. Table 1 shows that China, Japan, Malaysia, and Singapore have finished establishing wharfs exclusively for cruise ships. From the statistics of all the international cruises that go through these ports, it is apparent that there is a tremendous gap of supply and demand between cruises anchoring and the tourists who visit these destinations.

Table 1: Asia Main Cruise Ports

| Caters / Ports | Berth | Depth; m | LOA; m | Tonnage | Walkway | Terminal |
|---|---|---|---|---|---|---|
| Yokohama, Japan | 4 | 12 | 900 | 70,000 | yes | yes |
| Yangshan, China | 4 | 15 | 880 | 110,000 | yes | yes |
| Xiamen, China | 2 | 17 | 460 | 110,000 | yes | yes |
| Hong Kong, China | 2 | 10 | 700 | 50,000 | yes | yes |
| Port Klang, Malaysia | 3 | 12 | 660 | 50,000 | yes | yes |
| Singapore | 2 | 12 | 580 | 110,000 | yes | yes |

*Source: adopt from port's websites (Kelang, 2009; Singapore, 2008)*

According to a study by Douglas & Douglas (2004), the Asia-Pacific region has experienced strong growth in the cruise markets, mainly because of its investments in Malaysia's Star Cruise Company. Star Cruises used to be a small and regional company. In 1993 they were able to afford to buy a Scandinavian

casino ship, and since 2004 they have ranked as the world's third largest cruise group. In Shanghai Port on November 2002, Star Cruises held a maiden voyage ceremony for their two super-star cruises. In fact, for several years Star Cruises has been planning the itineraries for cruises departing from Shanghai that originate in various regional areas, including Vietnam's Ho Chi Minh City, Thailand's Bangkok, and Phuket Island. Thus, the Star Cruise Company is gradually opening the market share in Asia, which it began to do in 2003. The study also points out that after Star Cruises acquired the Norwegian Cruise Line and the Orient Line in 2000, it became an influential large cruise group company in the world's cruise markets, with 26,000 beds and 20 cruises. Over the past decade, cruise traveling in the Asia-Pacific region has experienced a growth rate of 123% on the basis of very few markets. Douglas & Douglas (2004) suggests that the cruise markets in Asia will improve year after year and that Star Cruises will soon occupy a significant market number in the cruise traveling markets in Asia-Pacific countries. Among Taiwan's cruise markets, Star Cruises already serves as the major company, offering a regular itinerary for sailing from Taiwan to Japan since 1993 (Star Cruises, 2007).

Chao (2005) points out that a decisive influence on the development of the cruise industry in Taiwan will be whether it carries out the plan to have three direct links of cruises across the Taiwan Straits. According to the related empirical findings of Cruise Line International Association (CLIA), the cruise industry has been frequently accompanied by economic benefits (CLIA, 2006). Furthermore, Taiwan belongs to an island country and all the ports have the potential for developing cruise tourism. Thus, exploring the trends of development in cruise markets has already become a top priority.

This study takes as a premise that Taiwan is promoting its cruise industry internationally. Accordingly, the study focuses on the differences in tourism images among the Sino-Asian cruise passengers in the major cities across the Taiwan straits, including Taipei, Hong Kong, and Shanghai. It also considers the differences between Sino-Asian cruise passengers and international passengers. By analyzing these differences, this study hopes to provide future researchers with a reference for instituting product marketing and market positioning.

## LITERATURE REVIEW

### Cruise Passengers

The UNWTO (2009) Statistics Journal shows that the number of international tourists in Taiwan during the 2008 financial crisis was the lowest among the countries in the Asia-Pacific region, although Taiwan still had a growth of 11.6% (Table 2).

Table 2: International Tourists Arrivals in the Asia Pacific Region (thousands)

| Regions | 2007 | 2008 | Growth (%) |
|---|---|---|---|
| China | 54,720 | 53,049 | -5.8 |
| Hong Kong | 17,154 | 17,320 | -5.6 |
| Japan | 8,347 | 8,351 | -25.3 |
| South Korea | 6,448 | 6,891 | 14.9 |
| Macau | 12,942 | 10,605 | -7.9 |
| Taiwan | 3,716 | 3,845 | 11.6 |

*Source: UNWTO World Tourism Barometar, Interim September 2009*

This figure indicates that there are much room for growth in the number of Taiwan's international tourists. At present, however, the environment across the Taiwan Straits and the trend of economic boom are most suitable for developing local tourism industries. In the short term, the industry most likely to be associated with tourism will be the transportation industries. While there has been little discussion of marine tourism and passenger transporting, this can partly be attributed to the very small number of international tourists entering customs through ocean shipping. Another difficulty in promoting marine tourism has been the problem of tension across the Taiwan Straits, which has persisted for years. In addition, according to the

2008 annual statistics of the Tourism Bureau in the Ministry of Transportation and Communications, Taiwan, the overall number of tourists who travel by ships has been a mere 1.5% on average in recent years. However, according to the data of UNWTO collated by Perucic (2007) as Table 3 shows, the growth rate of cruise tourists has been higher than that of general tourists over the past twenty five years.

Table 3: 1980-2005 World Cruise Passenger Growth

| Year | Tourist arrivals in mil. | Annual growth rate(%) | Cruise passengers in mil. | Annual growth rate(%) |
|---|---|---|---|---|
| 1980-1985 | 285,9-327,2 | 2.3 | 1,8-2,8 | 7.7 |
| 1986-1990 | 338,9-458,2 | 6.2 | 3,3-4,5 | 6.4 |
| 1991-1995 | 463,9-565,5 | 4.0 | 4,92-5,67 | 2.9 |
| 1996-2000 | 596,5-681,3 | 2.7 | 6,5-9,72 | 8.5 |
| 2001-2005 | 680,3-802,0 | 3.3 | 9,92-14,47 | 7.8 |
| 1980-2005 | 285,9-802,0 | 6.6 | 1,8-14,47 | 13.9 |

*Source: Perucic (2007)*

For American tourists, who are the major existing consumers of cruises, the market in the Asia-Pacific region is still an undeveloped territory. According to an annual report of industrial surveys based on samples of American cruise passengers, Southeast Asia and China together with Japan occupy 12% and 6% respectively of the potential market for tourism consumption worldwide (Table 4). Compared with the Caribbean and the Mediterranean region, this is certainly negligible (CLIA, 2008).

Table 4: Appealing Places to Cruise (2008)

| | Rep. | | Cruise Passengers (Cruisers) | | |
|---|---|---|---|---|---|
| **Cruise Types** | **Sample** | Destination | **Luxury** | **Premium** | **Contemporary** |
| Southeast Asia | 1% | 12% | 8% | 3% | 2% |
| China/Japan | 1% | 6% | 10% | 3% | 2% |

*Source: CLIA (2008)*

On the basis of consumer responses, the CLIA (2006) predicts that the number of tourists taking cruises will probably be up to 31,028,000 within the next three years. 79% of cruise tourists show their interest in cruise traveling once again in the future. 71% of cruise tourists look forward to cruise traveling once again within the next three years. Non-cruise vacationers also express their interest in cruise traveling. Among 56% of non-cruise tourists, more than half are interested in cruise traveling and 53% look forward to cruse traveling within the next three years.

Cruise Port Cities

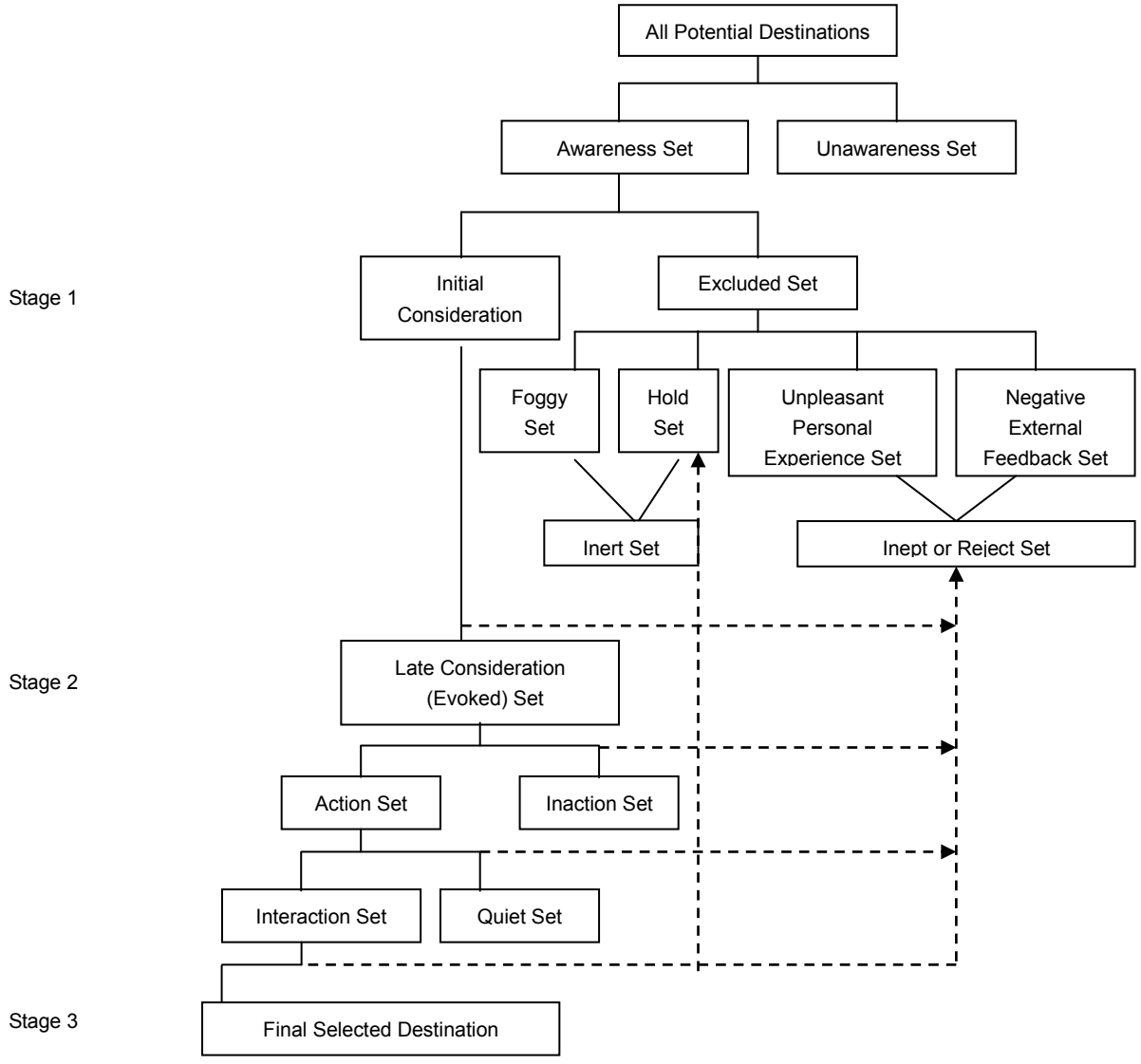
Depending on its attributes, a cruise port city can be a home port, port of call, destination port, repositioning port, or other type of port. Regardless of port type, studies investigating the cruise industry, along with the responses of tourists, indicate that a cruise port city satisfying to tourists has to rank high on various local features. These include, among others, attractiveness, culture, safety, accessibility, and user friendliness (Gibson, 2006). Fogg (2001) divided cruise ports into two categories: Origination Port and Destination Port. He also defined a homeport as adjacent to cruise markets and equipped with the support of air and land transportation. A homeport can carry out its own maintenance and supply to meet visitors' needs for accommodation and tourism. The main purpose of the so-called "port of call" with regard to tourism is to accommodate a voyage with a cruise itinerary of three-to-seven days (Chao, 2005). The peripheral facilities of all port cities must include shopping facilities, beaches, water sports, eco-tourism, historical preservation, international conference accommodations, and other peripheral facilities. In addition, the presence of local tourist attractions will be, for many tourists, a determining factor in whether they will visit the port again (Chao, 2005). However, this may not be as significant

among cruise tourists as among others, since cruises generally insist on a "Total Inclusive Package," which makes the price of cruise tourism products higher than that of general tourism products. For example, the roundtrip air-sea or flight-cruise package, to-and-fro pick-up of the whole journey, accommodation on cruises and lands, full-day meals, onboard activities, entertainments, even port taxes and tips are all included in the cost of the package (Lu & Liu, 2002).

Cruise Product Choice Sets

Crompton (1992), the American scholar, introduced the theory of choice set, which has been verified by the decision-making model of cruise tourists proposed by Petrick, Li & Park (2007). His study adopted the method of focus groups to investigate the tourists on ABC Cruises sailing in the Caribbean. The study discovered that cruise tourists began to make their travel decisions an average of 5.7 months before their departure date. However, they made their final decisions less than one week (5.5 months) later. When they began to make their decisions, most of them decided to take cruises for vacation purposes and to take ABC Cruises. Tourists selected the cruise products that appealed to them from the itinerary they were shown, and from the ship itself. For a few of the respondents who had not considered taking ABC Cruises initially, they finally went with them because the cruise line had its own brand value.

Figure 1: Structure of Vacation Destination Choice Sets (Crompton, 1992)



Among the pattern of destination choice sets that Crompton (1992) proposed, the decision-making pattern is shown as Fig. 1. All brands of a certain product are included in the total set. However, consumers do not necessarily know all the existing brands. The "awareness set" refers to brands that consumers know, and the "unawareness set" refers to brands that they do not know. When consumers consider the purchase of certain brands, those that retain their interest are referred to as the "evoked set" and these are considered positive. Among the brands that are excluded from consideration, those that consumers cannot evaluate due to insufficient information become the "inert set." They are considered neither positive nor negative. The brands that are refused by consumers become the "inept set." One reason consumers might refuse a certain brand is that their experiences with it have been unpleasant. Negative second-hand information can also influence consumers to refuse certain brands. Of course, a brand can change its name, advertise itself differently, and improve its quality, all of which will make consumers believe that it is a new or improved brand.

Crompton (1992) suggested that the concept of choice sets is applicable only to complex decision-making behavior, namely, non-procedure decision-making combined with consumer participation in high involvement products. The other three main types of consumer behavior may not be suitable for this model. These other types are: brand loyalty behavior, which refers to consumer participation in high involvement products coupled with low complexity of information; limited decision-making behavior, defined as participation in low involvement products coupled with high complexity of information; and habitual behavior, understood as participation in low involvement products coupled with low complexity of information (Assael, 2004). In addition, Crompton specifies that choice sets are a tool for analysis, not an explanatory pattern because it cannot explain the internal and external functions of the model. Crompton (1992) and his colleagues proposed a pattern of tourist choice sets. The pattern shows that tourists will go through three stages of decision-making in the process of determining their final tourist destination spot. This means that their decisions can be classified in terms of sets, with three sets in total: the Initial Consideration Set, Late Consideration (Evoked) Set and Final Selected Destination Set.

Economic Contribution via Ports and Cruisers

In recent years, rigorous study has been conducted on the economic contributions of ships calling at ports. Douglas & Douglas (2004) and Dwyer & Forsyth (1996) studied cruises' economic contribution to ports, they proposed four related forms of expenditure: (1) Passenger expenditure, (2) Crew expenditure, (3) Port expenditure, and (4) Operator expenditure (Table 5). Douglas (2004), the Australian scholar, analyzed the contribution of cruise expenditure to one of the Pacific Islands, Vanuatu, which obtains 7.6 Australian Dollars in foreign exchange income in one year. However, Dwyer et al. (2003) indicate that it is extremely difficult to figure out the economic contribution of ships calling at local ports. In 1999, Dwyer analyzed the contribution of cruise tourists in Queensland and Cairns, Australia and found that the economic contribution of a single cruise to the port of call is 108,000 Australian dollars. However, the economic contribution to the homeport can be up to 680,000 Australian dollars. The statistics of Queensland, Australia show that cruise passengers made a contribution of 1 billion Australian dollars to Australia's foreign income when Melbourne Port served as a port of call during the period of 1998 to 2000 (Cruising Victoria, 1999). Also, New Zealand's recent study discovered that every port of call ship makes a contribution of 107,000 Australian dollars, on average (McDermott, 2001).

When Hritz & Cecil (2008) discussed the influence and investment behavior of cruise traveling on the sustainable use of local land in Key West, Miami, Florida, USA, the basis for their study was the Land Use Model (LUM) proposed by Vera Rebollo and Ivars Baidal (2003) and developed for major tourist destinations. According to UNWTO, LUM is the standard indicator for sustainable tourism development. It includes five items: (1) current and potential passenger resources, (2) structure of land use, (3) structure of demography, (4) structure of economy, and (5) tourist demand-supply relationships. This indicator had a major and representative influence on Spain's development of tourist spots in coastal, urban and rural areas. As a result, researchers such as Hritz & Cecil (2008) have adapted the model to determine the indicators of influence in terms of cruise traveling. These are shown in Table 6, the indicators related to ports cover almost all the potential parameter factors of tourist cruise markets, as well as regional ports.

Table 5: Cruise Related Expenditures

| Passenger expenditure | Operator expenditure | Crew expenditure |
|---|---|---|
| Airfares to and from base country | Port expenditures | Local crew |
| | government charges | Port expenditure by foreign crew |
| Internal travel | port charges (including terminal) | Ship maintenance |
| Add-on expenditure: | towage | Marketing in base country |
| Accommodation | Provedoring: | Taxes: |
| meals | stores and provedoring | income tax |
| shopping | bunkering | customs duties |
| excursions | service(waster disposal, water) | departure taxes |
| Port expenditure: | | |
| meals | | |
| excursions and travel | | |
| shopping | | |

*Source: Dwyer & Forsyth (1996)*

Table 6: Land Use Model Indicators and Parameters of Cruise Tourism in Key West Florida

| Indicator | Parameters |
|---|---|
| Current resources | Three docking facilities, Mallory Square dock, Pier B and the Outer Mole Pier |
| | Old Town and New Town |
| | Perceived increase in arrivals from shorter cruise itineraries |
| | Steady and unprecedented growth in passenger arrivals |
| Potential resources | Can accommodate additional berths in the harbor |
| | Have the physical means to make another dock |
| | Development plan for Truman Waterfront |
| | Ferry boats viewed as alternative growth |
| Demographics of residents | Low unemployment rate |
| | High living costs |
| | Transient community due to high cost of living |
| Demographics of passengers | Upper scale passengers on smaller cruise lines |
| | Perceptions of passengers on 3-5 day cruises of lower socioeconomic status, who cannot afford to return to destination |
| Economic structure | Rely on an economy based on tourism |
| | Disembarkation fees: have to be used directly in relation to serving cruise ship passengers |
| | How much money can a passenger spend in a short period of time? |
| Changes in land use and structure | Shift in retail, serving only the cruise ship passengers |
| | Hotels converting to condominiums |
| Tourist demand – supply relationship | Crowding |
| | More ships and more passengers affecting the image of destination as laid back |

*Source: Hritz, N., & Cecil, A. (2008); Vera Rebollo and Ivars Baidal (2003).*

Based on the above literature, this study analyzes the attractiveness of port cities in terms of various tourism options, which the study lists as impression indicators. These indicators are primarily based on tourism images of Taiwan that have been developed by Taiwan's Tourism Bureau (2009). Table 7 shows that in terms of shipping, port management practices, and tourist impressions, long hours are needed in cruises for tourists to experience "natural and ecological landscapes" and "original natural features." However, a consideration of these and other factors that contribute to the impressions of cruise tourists is not commonly found in the literature. Therefore, this study is conducted by interviewing cruise passengers, and analyzing to verify the indicators used in this exploratory research area.

Table 7: The Indicators of Harbor Image Development Dimensions

| Evaluation Dimensions | Detailing Indicators | Authors |
|---|---|---|
| | Climate | Crouch and Ritchie (1999) |
| Natural & Ecological Landscapes | Scenery | Swart et al.(1974) |
| | Landscape | |
| | History | Swart et al.(1974) |
| Cultural and historical landscapes | Music | Gibson (2006) |
| | Attractive and Cultural | |
| Modern City Landscapes | Cities Planning | Hritz, N., & Cecil, A. (2008) |
| Original Natural Features | Minerals | Ritchie (1975) |
| Sufficient Fundamental Facilities | Harbor Facilities | Hritz, N., & Cecil, A. (2008) |
| | Population | Hritz, N., & Cecil, A. (2008) |
| | Low unemployment rate | |
| Reasonable Consumption level | High Living Environment | |
| | Temporary Residents | |
| | Community | |
| | Accessibility | Gibson (2006) |
| Convenient Transportation | User Friendly | |
| | Transportation systems | Gallarza et al. (2002) |
| Passionate & Friendly Residents | Safe | Gibson (2006) |
| | Creative activities | Poon & Eliot (1993) |
| Various Tour Selections | Harbor Store Consumption: | Douglas & Douglas(2004) |
| | Food and Shopping | |
| | Shore Excursions | |
| Features different from tourist's Home | Cruise Port Image | Petrick, Li & Park(2007) |
| Town | City Image | |

*Source: adopt from the above literatures*

## METHODOLOGY

This study conducted an investigation of tourism image by distributing a questionnaire survey to cruise tourists in the Sino-Asian region in 2006 and 2010. The 2006 samples were taken from the route of Singapore to the Straits of Malacca and the 2010 samples were taken from the direct route across the Taiwan Strait of RCI and Costa Cruises. 150 copies of the questionnaire were distributed to cruise tourists in the 2006 survey, and 116 valid samples were returned. For the 2010 survey, 60 copies of the questionnaire were distributed and 47 valid samples were returned. Afterwards, some changes were made to the questionnaire due to a re-arrangement and re-analysis of the sample structure for the development of future studies.

This study adopted various tools to analyze the tourism images of Taipei, Hong Kong, and Shanghai, and also to determine whether cross-regional differences exist in the demography of cruise tourists to these three port cities. The tools included SPSS to conduct the descriptive statistics, percentage, and the Chi-Square Test (homogenous test).

## RESULTS

Description of Cruise Passengers

A total of 116 valid questionnaire copies were returned in the 2006 survey, and these were mainly from the multi-national Asian tourists. Tourists from 17 countries were interviewed in the original questionnaire. Singaporeans occupied the major respondents, accounting for 20%. Malaysian was in the second place, accounting for 15 %. The Chinese in both China and Taiwan also accounted for 20%. The

statistics indicated that the Chinese tourists occupied the majority in Star Cruise. The Australian and Indian tourists were in the third place, accounting for less than 10%. These figures show a high degree of internationalization in cruise traveling.

A total of 47 cruise tourists were interviewed in the 2010 survey. These were mainly tourists who took the direct links across the Taiwan Strait. All visitors were from Shanghai, Beijing, Guangzhou or other China cities. Their social and economic status and their consumption power were equivalent to international tourists. Therefore, this study attempted to integrate this sample with the 2006 sample and conduct an in-depth discussion of issues that affected them both.

Table 8 shows that the proportion of male cruise tourists is slightly higher than that of female cruise tourists. With respect to age level, tourists aged 25 to 44 years old occupy the majority, accounting for 40% of all cruise tourists. Tourists 45 to 64 years old are in the second place, accounting for 36%, and tourists under the age of 24 account for 14%. According to previous research, the average age of cruise passengers is 65 years old (WTO, 2003). Perucic(2007) indicated that the percentage of older 60+ passengers dropped from 31% to 22% during 1996 to 2006, while the percentage of younger passengers increased. Elderly tourists over 65 years old account for merely 10 % of respondents in this survey. With respect to education level, tourists with a bachelor's and master's degree account for over 65 %. Tourists with senior high school diploma account for merely 34.8 %. Therefore, it would seem that cruise tourists are more highly educated than general tourists.

The sample of investigation in this study required the respondents to answer questions related to their income. Approximately 14% of the respondents were reluctant to respond to these questions, which is similar to the findings of previous research. Those tourists who answered and had a monthly income of less than 40 thousand New Taiwan dollars or 10 thousand China RMB dollars accounted for 70%, which indicates an enormous misconception about the high consumption level of cruise traveling. Evidently, failing to obtain information about tourist income will lead to potential errors.

To conduct the analysis of the cross table, this study re-collated the findings with the 2006 sample of tourists from 17 different countries. The combined sample was then separated out into different categories based on the resident status of tourists. The sample of tourists who were not residents of Taiwan, China, and Hong Kong accounted for 53.4% of the total. Due to a reclassification of residency, China, the largest source of tourists in Taiwan, currently occupies one-third of Taiwan's tourist population (34.8%). In addition, tourists from Malaysia and Singapore occupied an extremely large percentage in this study, probably because the samples were taken from Star Cruise' Singapore route. The major global source of cruise tourists was the USA, Canada, New Zealand, and Australia, with passengers from these countries occupying 11.8% of the tourists to the Sino-Asian region. As a result of these findings, this study distinguished between tourists from Taiwan, China and Hong Kong, and international tourists, and verified the cross table of tourism indicators with respect to the three port cities of Taipei, Hong Kong, and Shanghai.

Tourism Images of the Port Cities

A total of 131 valid samples of cruise tourists were adopted to analyze whether the residents of Taiwan, China, and Hong Kong think that different images exist in the port cities across the Taiwan Straits, as compared to residents of other countries. Table 9 shows the result of Pearson's Chi-square test, there is a significant difference between these two groups ($X^2$=23.669, p=0.000<.001). 84% port cities residents indicated that the differences of tourism image do exist, 7% perceived there is no difference among these port cities. Among the tourists who were residents of other countries, 60% perceived that different images exist in the port cities across the Taiwan Strait, and 40% thought no difference exists. It is obvious that residents of Taipei, Shanghai, and Hong Kong think that these cities differ from one another. Although many non-residents share this perception, their numbers are less after all.

Table 8: Respondents Profiles

| | | N | % |
|---|---|---|---|
| Gender | Male | 85 | 53.8 |
| | Female | 73 | 46.2 |
| | Total | 158 | 100.0 |
| Age | Under 24 | 23 | 14.2 |
| | 25~44 | 64 | 39.5 |
| | 45~64 | 58 | 35.8 |
| | 65 and over | 17 | 10.5 |
| | Total | 162 | 100.0 |
| Education | High School and under | 54 | 34.8 |
| | College | 84 | 54.2 |
| | Graduate School | 17 | 11.0 |
| | Total | 155 | 100.0 |
| Monthly Income | Unstable | 32 | 22.9 |
| | Under RMB 5,000 | 32 | 22.9 |
| | 5000~10000RMB | 34 | 24.3 |
| | 10000~20000RMB | 27 | 19.3 |
| | Over 20000RMB | 15 | 10.7 |
| | Total | 140 | 100.0 |
| Residence Area | Residents in three port cities | 76 | 46.6 |
| | Not Residents in three port cities | 87 | 53.4 |
| | Total | 163 | 100.0 |
| Nationality/Area | Taiwan | 15 | 9.3 |
| | Hong Kong | 6 | 3.7 |
| | China | 56 | 34.8 |
| | Malaysia, Singapore | 39 | 24.2 |
| | USA, Canada, Australia and NZ | 19 | 11.8 |
| | Japan | 2 | 1.2 |
| | Philippine, Vietnam, Thailand | 11 | 6.8 |
| | India, Sri Lanka, South Africa, Mauritius and Swaziland | 13 | 8.1 |
| | Total | 161 | 100.0 |
| Total | | 163 | |

*Table 8 shows the proportion of cruise passengers in six items including Gender, Age, Education, Income Residence Area and Nationality. With respect to age level, tourists aged 25 to 44 years old occupy the majority, accounting for 40% of all cruise tourists. Tourists 45 to 64 years old are in the second place, accounting for 36%, and tourists under the age of 24 account for 14%. Elderly tourists over 65 years old account for merely 10 % of all cruise passengers. With respect to education level, tourists with a bachelor's and master's degree account for over 65 %. Tourists with senior high school diploma account for merely 34.8 %.*

To conduct a Chi-square Test (homogeneous test) with respect to nationality, the statistics fail to provide an explanation of the results, because of too many samples whose number is less than five. However, the result of the cross tabulation table for the Chi-square indicates that $X^2$=69.388, p=0.000<.001, which means the study findings are significant. Cruise passengers from Taiwan, China, and Hong Kong have different impressions of the port cities significantly. The reason is probably that the tourists from these countries do not have distinct impressions of the port cities in these regions. For future investors who plan to focus on direct links across the Taiwan Straits to realize the potential market of cruise tourism, this study suggests that strengthening the differences among the port cities of Taipei, Hong Kong, and Shanghai will be a major marketing direction.

Changes between 2006 and 2010 During 2006, this study adopted tabulation scales to assess tourists' cognitions of the attractions of different tourist destinations, including Taiwan's current attractions. From the impression indicators used in the 2006 survey, it is apparent that the multi-national tourists of Star Cruise showed much more interest in Taipei than in the other ports, as indicated by the number of indicators in which Taipei ranked comparatively high. An exception was "abundance of cultural and historical landscapes," which was ranked as inferior in Taipei in comparison to Shanghai. However, as

Table 10 shows, "passionate and friendly residents," "natural and ecological landscapes," and "various tour selections," which were among the indicators that ranked highest in Taipei, accounted for 43.1%, 40.8%, and 40.0% respectively. Without a doubt, these attractions were emphasized by cruise tourists and served as the marketing focus of Taiwan's tourism then.

Table 9: The Cross-Tab among Cruise Passengers and Cities Images

| | $\chi^2$ value | Cities Images | | | N |
|---|---|---|---|---|---|
| | | **Difference** | **No Difference** | **Cannot recognize** | |
| **Residence Area** | | 73% | 23% | 4% | 131 |
| Residents in three port cities | 23.669* | 84% | 7% | 9% | 69 |
| Not Residents in three port cities | | 60% | 40% | 0% | 62 |
| **Nationality/Area** | | 73% | 22% | 5% | 129 |
| Taiwan | | 69% | 31% | 0% | 13 |
| Hong Kong | | 100% | 0% | 0% | 4 |
| China | | 87% | 2% | 11% | 53 |
| Malaysia, Singapore | 69.388** | 88% | 12% | 0% | 25 |
| USA, Canada, Australia and NZ | | 75% | 25% | 0% | 12 |
| Japan | | 0% | 100% | 0% | 2 |
| Philippine, Vietnam, Thailand | | 9% | 91% | 0% | 11 |
| India, Sri Lanka, South Africa, Mauritius and Swaziland | | 33% | 67% | 0% | 9 |

*Table 9 shows the result of Pearson's Chi-square test, there is a significant difference between these two groups ($X^2$=23.669, p=0.000<.001). 84% port cities residents indicated that the differences of tourism image do exist, 7% thought there is no difference among these port cities. Among the tourists who were residents of other countries, 60% thought that different images exist in the port cities across the Taiwan Strait, and 40% thought no difference exists. To conduct a Chi-square Test ($X^2$=69.388, p=0.000<.001) with respect to nationality, Cruise passengers from Taiwan, China, and Hong Kong have different impressions of the port cities significantly.* *p < 0.05; ** p < 0.01; ***p < 0.001

Table 10: Respondents' Interests in the Three Cities in 2006

| | **Taipei** | | **Shanghai** | | **Hong Kong** | | **Total** | |
|---|---|---|---|---|---|---|---|---|
| | **N** | **%** | **N** | **%** | **N** | **%** | **N** | **%** |
| Natural & Ecological Landscapes | 53 | 40.8 | 21 | 16.2 | 0 | 0 | 74. | 56.9 |
| Cultural and historical landscapes | 33 | 25.4 | 35 | 26.9 | 7 | 5.4 | 75 | 57.7 |
| Modern City Landscapes | 43 | 33.1 | 11 | 8.5 | 27 | 20.8 | 81 | 62.3 |
| Original Natural Features | 46 | 35.4 | 19 | 14.6 | 6 | 4.6 | 71 | 54.6 |
| Sufficient Fundamental Facilities | 37 | 28.5 | 11 | 8.5 | 31 | 23.8 | 79 | 60.8 |
| Reasonable Consumption level | 41 | 31.5 | 16 | 12.3 | 20 | 15.4 | 77 | 59.2 |
| Convenient Transportation | 45 | 34.6 | 7 | 5.4 | 27 | 20.8 | 79 | 60.8 |
| Passionate & Friendly Residents | 56 | 43.1 | 7 | 5.4 | 7 | 5.4 | 70 | 53.8 |
| Various Tour Selections | 52 | 40.0 | 13 | 10.0 | 9 | 6.9 | 74 | 56.9 |
| Features different from tourist's Home Town | 38 | 29.2 | 11 | 8.5 | 10 | 7.7 | 59 | 45.4 |

*Table 10 shows, "passionate and friendly residents," "natural and ecological landscapes," and "various tour selections," which were among the indicators that ranked highest in Taipei, accounted for 43.1%, 40.8%, and 40.0% respectively.*

However, the result of the investigation of Chinese cruise tourists conducted in 2010 was greatly different from that of 2006, and disappointingly so for Taiwan. Table 11 shows, Hong Kong had better performances on average than either Taipei or Shanghai. These indicators include "modern city landscapes," "sufficient fundamental facilities," "various tour selections," and "reasonable expenses," which accounted for respectively 4.23, 3.97, 3.82, and 3.58. Taipei was in second place on three

indicators. These were "diversified nature and ecology," "original nature features" and "passionate and friendly residents," which accounted for 3.43, 3.73, and 3.90 respectively. Shanghai had better performances on the indicators of "abundant cultural and historical landscapes" and "convenient transportation," and these accounted for 3.46 and 3.72 respectively.

Table 11: Respondents' Interests in the Three Cities in 2010

| | Taipei | | Shanghai | | Hong Kong | |
|---|---|---|---|---|---|---|
| | N | Means | N | Means | N | Means |
| Natural & Ecological Landscapes | 40 | 3.43 | 37 | 2.78 | 38 | 2.79 |
| Cultural and historical landscapes | 41 | 3.27 | 37 | 3.46 | 37 | 3.11 |
| Modern City Landscapes | 38 | 3.08 | 38 | 4.03 | 40 | 4.23 |
| Original Natural Features | 41 | 3.73 | 36 | 2.58 | 37 | 2.76 |
| Sufficient Fundamental Facilities | 39 | 3.05 | 37 | 3.59 | 38 | 3.97 |
| Reasonable Consumption level | 39 | 3.21 | 38 | 3.24 | 38 | 3.58 |
| Convenient Transportation | 39 | 3.44 | 39 | 3.72 | 39 | 4.10 |
| Passionate & Friendly Residents | 40 | 3.90 | 37 | 3.05 | 39 | 3.46 |
| Various Tour Selections | 39 | 3.62 | 37 | 3.41 | 38 | 3.82 |
| Features different from tourist's Home Town | 39 | 3.72 | 36 | 3.06 | 38 | 3.82 |
| Mean | | 3.44 | | 3.29 | | 3.56 |

*Table 11 shows, Hong Kong had better performances on average than either Taipei or Shanghai in the survey of 2010.*

## CONCLUSIONS

The purpose of this study is to find the differences in tourism image among cruise passengers across the Taiwan Straits. Base on the literatures (Crouch & Ritchie, 1999, Douglas & Douglas, 2004, Gallarza et al. 2002, Swart et al. 1974, Gibson, 2006, Hritz & Cecil, 2008), the success of cruse port operation is not only related to harbor authority's facilities and management, but also the destination impression and tourism images of the major port cities. The findings suggest that the tourists from these countries do not have distinct impressions of the port cities in these regions. The results are valuable because of this study demonstrate that cruise tourists who are residents or have sufficient cognitions on the port cities can be able to distinguish differences among these cities tourism images.

This study was a panel study by distributing the same questionnaire survey to cruise passengers in Asia during 2006 and 2010. The 116 valid samples of 2006 were taken from the route of Singapore to the Straits of Malacca and the 47 valid samples were taken from the direct route across the Taiwan Strait of RCI and Costa Cruises. The data conducted by the descriptive statistics of cross-tab analyze and the Chi-Square Test.

The contribution of this study lies in its development of impression indicators which can be used for the development of the port cities. By researching both domestic and foreign literatures, this study conclude that the impression indicators implemented are different from some aspects than those currently emphasized by Taiwan's tourism. Therefore, this study proposes two suggestions. First is the differences tourism images among the major port cities of Hong Kong, Shanghai and Taipei should focus on the resident tourists, especially on marketing. The analysis of the questionnaire items indicates that local residents perceive more dissimilarity among the three cities of Taipei, Hong Kong, and Shanghai than do international tourists, particularly those from Southeastern Asia, India, and Africa. It is therefore suggested that the cruise tourist industries focusing on direct links across the Taiwan Strait make every effort to analyze the differences of tourism image so that these differences can be marketed to advantage.
Secondly, Taipei should enhance its major tourism indicators, due to enormous changes in its image that have taken place in the past four years. The results showed that Taipei has regressed as a tourist

destination spot; therefore, the tourism industries and government in Taiwan need to put more effort in improving this situation. Currently, Taipei is in the lead, as compared to Hong Kong and Shanghai, with three indicators: diversified nature and ecology, original nature and landscapes, and passionate and friendly residents. However, these indicators do not serve as important factors in developing cruise port cities. The reason is with these two indicators in lead, probably that it is difficult for cruise tourists to evaluate them immediately in shore excursion merely one to two days on board. From the aspects of cruise tours and the development of harbors, it is needed to integrate the attractions and marketing content of Taipei and with other indicators of tourist attraction. Recently, Hong Kong and Shanghai have made rich and rapid progress in the development of their cruise ports. It is likely that there will soon be increased competitiveness among Taipei, Hong Kong, and Shanghai. Generally, the efforts made by Taiwan's industries, government and academicians will be the crucial factors in determining the profitability of cruise tourism in this area.

The conclusions of this study are subject to several limitations. First of all, the sample is unrepresentative of the general population among two surveys in 2006 and 2010. Due to time and financial restriction, the researcher selected a convenient sampling on the cruise ship. Therefore, the results have to be clarify with considerable caution. Second, the restriction of the scope of the study to current tourists, therefore, the further research with an emphasis on potential tourists between Taiwan Straits is strongly suggested. According to the research restriction and finding, some suggestions for further investors who plan to focus on direct links across the Taiwan Straits to realize the potential market of cruise tourism, this study suggests that further strengthening the differences in tourism image among the port cities of Taipei, Hong Kong, and Shanghai will be a major marketing direction.

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# PERCEPTIONS OF EUROPEAN MIDDLE MANAGERS OF THEIR ROLE IN STRATEGIC CHANGE

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**ABSTRACT**

*The middle management role in strategy execution remains a critical issue in the success of strategic initiatives. The management literature has viewed middle managers as 1) implementers of top-management defined strategic changes, 2) relationship managers in strategic-change programs and 3) key strategic actors in the emergence of the strategic change. The paper summarizes the development of these three views of the strategic implementation role of middle management. The perceptions of experienced European middle managers are used to validate and augment the three formulations. Conclusions are drawn that yield 1) insights into the middle-management roles in strategic changes, 2) a preliminary typology of these middle-management roles and 3) an exploratory test of the sufficiency of this typology in covering the breadth of middle-management role behaviors in strategic change initiatives. Implications for further research on the role set of middle managers in the implementation of strategic-change initiatives are drawn.*

**JEL:** L25; M14

**KEYWORDS:** Strategy implementation, middle-management roles, middle management

## INTRODUCTION

Management strategy development and implementation is facing unprecedented change from the adoption of new technologies, new interfaces with customers and suppliers, and industry consolidation. Other globalization drivers such as competition, customer and cost (Yip, 2003) are forcing the evolution of global strategies by most companies. In order to keep pace, top management needs to plan, motivate and lead these changes. However, Balogun and Haley (2008) found the failure rate of strategic change programs to be 70%. Little is known about the actual practices of middle managers (Rouleau, 2005) and how their activities can be facilitated (Balogun, 2007). Mayer and Smith (2007) conclude their role is often misunderstood and unsupported by top management. This paper focuses on the role of middle management as one of the key actors in strategic change implementation in order to uncover principles that will improve strategic implementation success. Middle managers face challenges in strategy implementation. They do not define the new strategy. They function in a complex environment where they manage the relationship with top management and face questions and resistance from their teams. They often manage the relationships with internal and external stakeholders. They may face issues and constraints that are often not aligned to the new strategy.

Recent research has expanded the understanding of this problem. Balogun (2007) and Rouleau (2005) point out the importance of managing the day-to-day functions of middle management. Johnson, Scholes and Wittington (2008) define three trends affecting middle-management focus on strategic change including 1) organizational decentralization of strategic initiatives, 2) increased middle manager confidence in the strategic domain due to improved training and 3) operational responsibility and knowledge being pushed onto the middle-management tier. This paper makes three contributions. First it summarizes models and tools used to study middle-management performance in strategic change

initiatives. Second, it explores the complex and demanding role of middle managers in strategic change as seen by members of the sample. Finally, it develops a typology drawn from existing research, and tests its sufficiency in capturing the breadth of middle-management role behavior in strategic change implementation. The key research issue is to enhance the understanding of the role of middle management in strategic change. Four questions drive the research: 1) What is the current view in the literature of middle management in strategy implementation? 2) What is an appropriate typology to use to study the complexity of middle-management role behavior in strategic change? 3) How do the perceptions of practicing middle managers compare with the literature and the typology? 4) Does the typology cover the breadth of role behavior reported by the sample?

In order to lay the foundation for the assessment the perceptions by middle managers of their role in the implementation of strategic initiatives, we need to explore the answers developed by researchers to two questions. First, how is middle management's role in implementing strategic changes defined? Second, what typology will capture the complexity of this role set? We will approach these two questions by first presenting an overview of the strategic process defined in the literature and its impact on middle management's role in strategy implementation. Next we examine three views representing a different conceptions of the middle management role including as 1) implementers of strategies mandated by senior management, 2) networkers that coordinate strategic programs and 3) interpreters of expectations in the implementation process. From this foundation, we explain the data and research methodology used to test the hypotheses and report the results. The concluding section draws future research implications.

## LITERATURE REVIEW AND BACKGROUND

The traditional view of the strategy process is one of a rational, planned, top-down activity leading to an action plan that is passed down to line managers for implementation. Strategy formulation is the task of the CEO and top management. This view was common until the early 1980's, when the complexity of the business environment was incorporated in the strategic-process model. Middle management's main tasks were implementation and control. They were the implementers of top management strategies. In the late 1980's, slower growth drove business priorities toward speed and flexibility. Organizations needed to be more flexible and adaptable to demands of customers that drove the need for more effective implementation methods. More focus was given to effective strategy implementation with strategy seen as an executive-driven activity based upon a balance between hard, quantitative tools and a softer, judgmental approach (O'Shannassy, 2003: p. 60). A view expressed by Floyd and Wooldridge (1994: p. 48) defined middle management and the middle manager as: "the coordinator between daily activities of the units and the strategic activities of the hierarchy." They stress the middle manager's role as "a link, a tie between top managers and operational workers ... more than the 'hierarchical' definitions" (as cited in Vogler, 2007). This view applies across a wide range organization types and organization contexts.

Three different views of the middle-management role in strategy development and implementation have emerged from this traditional foundation. The first from Hrebiniak (2008) sees middle managers as implementers of top-management, defined strategy. The second represented by Floyd and Wooldridge (2000), defines middle management's role as participants in strategic conversations and as boundary spanners between top-management and lower levels. In this view, middle management makes an important contribution both upwards and downwards in strategic-change implementations. In the third view represented by Balogun and Hailey (2008), middle management is the key strategic actor who is "making sense" of the need, plan and actions required to make strategic changes within their team.
The first view (Hrebiniak, 2008) identifies middle managers as implementers of strategies developed by top-management teams. It relates to a traditional view of middle managers as the "linking pin" between

upper and junior-levels of management. By linking the organizational space between strategy and operations, middle managers connect strategic objectives with day-to-day objectives and concerns of personnel at different organizational levels. Maintaining these complex links requires a well-defined, logical approach with planned activities. In Hrebiniak's view, execution represents a disciplined process or a logical set of connected activities that enables an organization to develop a strategy and make it work.

Hrebiniak (2008) talked to hundreds of managers with responsibility for strategy execution. From these discussions, he identified twelve execution challenges in the strategy-execution process. He then completed two surveys of 400 managers in order to rank hurdles according to their importance in strategy execution. His work showed that "lack of upper-management support" and "insufficient financial resources" were not considered to be important hurdles in the process of strategy execution. His explanation of this outcome is that managers do think that top-management support and adequate financial resources are critical, but that these had developed in the planning process and become "givens" in the execution process (Hrebiniak, 2008).

In Hrebiniak's view, a well-defined, logical, structured approach is crucial to the success of strategy execution. Although his view is consistent and provides interesting conclusions, consulting experience in strategy implementation projects (Kuyvenhoven, 2008) leads to the conclusion that this approach may be most effective in complex strategic changes such as a major reorganization or urgent, critical initiatives. Many strategic changes occur on a smaller scale or when a sense of urgency is not present. This type of change often requires a more bottom-up approach that gives freedom to middle management to develop and implement their strategic ideas. In this type of process, strategy formulation and strategy execution are not two separate steps, but emerge as a natural outcome of the implementation of strategy.

This more bottom-up view expands on the middle-manager-as-implementer, top-down perspective. This view is focused internally and does not incorporate management's relationship with the outer world like suppliers, customers, and politics. Neither does this view focus on the "softer" parts of managing change, like how to deal with employee resistance or generate employee empowerment (Beer and Nohria, 2000). The second view augments the top down, hierarchical approach with the implementation role of middle management by viewing middle managers as co-actors in effective strategic changes as represented by Floyd and Wooldridge (1994, 1997). They identify middle managers as "linking pins" between top and bottom, but their view goes beyond the implementation role of middle managers found in View 1 above. In the Floyd-Woodbridge view, middle management involvement is significant in both the definition and the execution of strategy. By performing these dual functions, middle managers contribute to the competitive advantage of the company (Floyd and Wooldridge; 1997, 1994). They view strategic change as an emergent process, rather than "a process of deliberate decisions by top management" (Floyd and Wooldridge, 1997).

Floyd and Wooldridge (1992, 1994, 1997, 2000) define middle-management roles in strategy development and implementation. Middle managers contribute to strategy by the way they behave and how they think. In their model, Floyd and Wooldridge view middle managers as "linking pins" between the top and the bottom of the organization, they connect the overall direction provided by top management with their subordinates" day-to-day activities. Middle managers coordinate strategy and action by mediating, negotiating and interpreting connections between the strategic and operational levels in the organization. Middle managers take actions that have both upward and downward influences on strategy formation. Their upward influence affects senior management's view of organizational circumstances and alternatives to the intended strategic change. Middle managers" downward influence

affects the alignment of organizational arrangements with the strategic context (Floyd and Wooldridge, 1992). Middle management's cognitive distribution can be seen as a continuum with two poles: divergent and integrative. At the divergent pole, strategy is a change process and divergent ideas alter the organization's concept of strategy. At the integrative pole, strategy requires coherent ideas that support a common direction and coordinates and reconciles these views (Floyd and Wooldridge, 1992).

Floyd and Wooldridge define two dimensions of the middle-manager role set including a behavioral or action dimension and a cognitive dimension. The action dimension is defined by whether the middle manager is acting upward in the organization hierarchy or downward. The cognitive dimension depends on whether the middle manager is dealing with ideas that diverge from the planned strategy or whether the ideas are integrated within this strategy. When the action is up the hierarchy, the middle manager may be championing divergent alternatives or synthesizing information for senior managers about the planned implementation. Middle managers engage in two types of downward action including facilitating divergent adaptations to the strategy or implementing the planned strategy directly with minimal adaptation.

The third view of middle management's role in strategic changes is the strategy-as-practice (SAP) view. In this view, strategy is something that organization members are doing, not something an organization has. The focus is at the micro level of the practices and practitioners of strategy (Johnson et al., 2003). Balogun (2003, 2008) focuses on the way middle managers experience their role in making strategic changes. Balogun concludes that middle managers have a complex, demanding role to play in connecting the strategic and operational levels of the organization. The tasks they perform include a translation task, a mediation task, a buffering task and a negotiation task. The translation task involves the communication and interpretations of plans so that subordinates can understand what actions to take and the context for those actions. The mediation task requires the middle manager to reconcile the divergent demands and activities performed by the strategic and operational levels in the organizations. The buffering task requires the middle manager to reduce the emotional shock and negative impact of actions of others across the boundaries between senior management and lower organizational levels. Finally, the middle management layer acts as a go-between or negotiator between the levels of the organization.

Balogun sees middle managers as key strategic actors in the strategic process. Due to their position in the organization, middle managers are both recipients and implementers of change. Balogun (2003) defines their role as "change intermediaries" or "boundary spanners." The way middle managers interpret and make sense of the strategic change is crucial and directly influences the outcome achieved by the strategy. In Balogun's view, failure of interpretation is a key cause of differences between top management intentions and the actual implementation. Balogun (2003) defines four middle-management roles by combining orientation ("team" or "self") and nature of activity ("coordination and management" and "sense making"). By "coordination and management" Balogun refers to traditional middle management activities like planning, budgeting, resourcing, overseeing change-related activities. "Sense making" is the process individuals undertake when they try to understand what is going on around them, i.e. - making sense of experiences and events. Interpreting events and translate what it means for behavior.

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## METHODOLOGY AND DATA DESCRIPTION

An exploratory study was completed in order to assess the completeness of the three views developed above. The objective was to determine if the model covers the types of roles and actions used by middle managers in strategic change implementation. Two questions were addressed: 1) How do middle managers perceive the range of their role set as implementers of strategic change initiatives? 2) Does current research and theory cover the range of roles performed by middle managers in strategic change implementation? Two research hypotheses were tested in this exploratory study:

*H1. The roles middle managers perform in strategic changes can be clustered into three types: the implementer, the networker and the sense-maker.*

*H2. The role typology - implementer, networker and sense-maker - covers the role set performed by middle managers.*

Given the exploratory nature of the study, a small convenience sample was used to test these hypotheses. The interviewees were middle managers from different organizations that varied from commercial to public, from domestic to international, and small to large. Three subjects worked for domestic Netherlands organizations and three for international or global companies. One of the companies is in the public sector. The other five are public. Two companies have more than 40,000 employees. The others have a staff between 150 and 350 employees. Two of the six managers are women. The same interview protocol was used for all respondents. Questionnaires, research protocol and complete data are available from the authors.

All respondents were satisfied with their role in the strategic change implementation. The subjects stated they made a positive contribution in supporting the change, realizing target results and motivating their teams. The subjects are proud of "understanding the objective, reasons and urgency of the strategic change and carrying out the steps on the roadmap with enthusiasm and energy" (Subject 1); "Realizing the objectives. I had big impact on my team, the new label was a success, and both customers and candidates liked it" (Subject 2); People are moving and have not lost anyone along the way (yet)" (Subject 3); "Giving response to support the business decision and making it happen … I had a very good personal relationship with my team and kept the motivation running until the last day" (Subject 4); "Providing top management with new ideas" (Subject 5); "…my contribution in reaching the target … We made it and our team got closer together." (Subject 6) Two of the interviewees (Subject s 3 and 6) also grade the result and the approach very high. Subjects 4 and 2 were not satisfied with their results.

Subjects 1,2 and 4 all ascribe the differences in evaluations of their approach and its result to gaps between senior management and middle management/staff. Subject 1 said, "There is a gap between the high level objectives defined by our directors and the realization of those objectives at the offices. … Due to other change initiatives and the business of daily operations, we are not able to reach the objective defined by top management. But, in my view, the quality of our implementation is good." Subject 1 also reported, "It was good that I as a middle manager was involved [in making the reorganization decision]." "Senior management often thinks that they can cut a function, but they might have no insight in the consequences for operations, for example, interface with other functions… The US team got work for 4 people without increasing its staff. I think this is not realistic and I have heard complaints from the US people that the work cannot be done properly." Subject 2 reported, "The marketing director and I had a different vision on the implementation of the new label. Moreover, communication between the teams was bad. If the marketing director had new ideas, she did not discuss them with me, but implemented them right away." Subject 4 said, "I was very happy with the way we implemented the new way of

working in our team. We made good progress…" In the interviews, the middle managers mentioned the following roles: Initiator (2x), Co-designer (1x), Implementer (3x), Coordinator (1x), Team developer (1x), Coach (1x), Motivator or driver (2x), Boundary spanner (1x). Table 1 summarizes the interviews.

Table 1: Summary of the Interviews

| Subject, organization | Strategic change | Role and metaphor | Obstacles | Success factors |
|---|---|---|---|---|
| Subject 1, Male, Profit Local IT/internet 200 emp.'s | Implementation of new proposition | Implementer "Mountain climbing" | - Strategic change was not defined as a project<br>- time/plan/milestones defined<br>- Balance between change and operations<br>- Hard interpretation of strategic plans<br>- Top management does not accept implementing timeline<br>- Discussions with top management takes lot of time<br>- Dealing with emotions/resistance of employees | - Invest in the understanding "what" and "why" of the strategic change<br>- Clear framework from top management with objectives/expectations<br>- Agreement on objectives<br>- Realize that it takes time for people to internalize change<br>- Stick to your plan<br>- Focus, make choices<br>- Give people responsibility |
| Subject 2, Male, Profit , Local, HR Recruiter 350 emp.'s | Implementation of new label | Implementer and team developer "Cricket Bat" | - Bad relationship with senior mgt<br>- Economic downturn<br>- Role definition too much focused on execution, not on development<br>- Lack of communication between top and middle management. | - Good relationship both upwards and downwards<br>- Use your internal network in developing ideas<br>- Be part of the change program, also in the development phase<br>- Senior management must recognize middle managers added value in development of strategic direction<br>- Freedom to choose own way of implementing |
| Subject 3, Male, Profit, Intl., Industrials, 200 emp.'s | Reorganization of Sales Department | Initiator and motivator "Football coach" | - Lack of sense of urgency<br>- Dealing with people's emotions<br>- Clash of cultures<br>- Gap between top management - staff<br>- Balance change and operations | - Communication<br>- Constant check if everyone is still on same page<br>- Give room and take time for emotions and questions<br>- Clear approach with timelines |
| Subject 4, Female, Profit Global Consumer goods, 30,000 emp.'s | Cost reduction: team restructuring | Implementer and team motivator "Clown" | - Dealing with emotions of employees<br>- Interpretation of strategic plans lead to confusion<br>- Decision by top management not realistic from operational point of view | - Visible support from top mgt<br>- Good relationship with team<br>- Communication<br>- Consistent strategy that makes sense<br>- Being able to cope with stress<br>- Realize change involves dealing with emotions |
| Subject 5, Male, Public, Local, Logistics 350 emp.'s | Implementation of performance management system | Boundary spanner and co-designer "Walking on eggs/ tight-rope" | - Dealing with resistance<br>- Culture not aligned with change<br>- Political environment | - Visible support from top management<br>- Formal mandate<br>- Short communication lines<br>- Realistic timeframe<br>- Understand stakeholders |
| Subject 6, Female, Profit, Intl .Electronics 40,000 emp.'s | Cost reduction: lean and mean | Driver, initiator, coordinator "Fisher-man" | - Balance change-business<br>- Motivating team<br>- Supplier's management | - Clear target<br>- Share information<br>- Close gap between management and team<br>- Constant monitoring/feedback<br>- Take time<br>- Appreciation from top management |

*In all cases, the interviewed middle managers made clear that they played different roles during the change project. These roles can be related to the internal and external relationships they have to manage: upwards, downwards and across boundaries. In their relationship with top management, they have an implementer or co-designer role. In their relationship with their team, they call themselves initiator, team developer, motivator or driver. In the horizontal relationships, middle managers play a boundary spanner role.*

Middle managers perceive their role and their focus on the different relationships as illustrated by the metaphors they chose. Subject 1, who sees himself as the implementer, uses the metaphor of mountain climbing. "The summit is not clear yet, but I can prepare for the journey in my own way and I can determine my own route. I am also invited to share my ideas to directors and colleagues." This metaphor clarifies both the success factors (freedom to implement the change and being seen as a serious partner in the project) as well as the obstacles (the roadmap is not well defined). Subject 2 uses the metaphor of the cricket bat and the saying "it's just not cricket" to express the main obstacle he is meeting in his relationship with top management: lack of communication from top management and not being able to be fully part of the game. Subject 3 compares himself to a soccer coach, focusing on the relationship to his team. "I empower my team to perform, to come up with ideas. If necessary, I teach them how to act. My role is to get everyone in place, to get the best out of every member of the team so that we can score." Subject 6 also has a primary focus on her team when she uses the metaphor of the fisherman: "I give my team juicy bait: a good environment of freedom and openness. The team was already very driven, internal competition is very strong in our company. I saw it as my role to show them their own achievements and coach them." Subject 5 is focused on the relationship with external stakeholders. One of the hurdles he meets is the complex political context he has to deal with. He expresses this by the metaphor of "walking on eggs: "I am pretty much struggling with the tension between 'being right' and 'getting right.' Given the capricious political context we have to deal with, I have the feeling that I walk on eggs."

## RESULTS

The objective of this exploratory study was to test two hypotheses. Both were tested by analyzing the content of the responses from the 6 subjects.

H1. The roles middle managers have in strategic changes can be clustered into three types: the implementer, the networker and the sense-maker,

All three types of the middle-management role were mentioned by several or all of the respondents with the sense-maker role (interpreter of the change objectives, procedures and requirements) mentioned most frequently. No response needed to be placed in a new category. This confirms hypothesis 1. The in-depth interviews show that middle managers do not see themselves acting in one single role. They can play different roles, depending on the relationship they are focusing on, the type of strategic change and the phase of the strategic change. First, middle managers manage multiple relationships. In interactions with top management, middle managers have an implementer/co-designer role. In interactions with subordinates, middle managers have one or more roles as coordinator, motivator, coach or team developer. In horizontal relationships with stakeholders, middle managers act as boundary spanners. Second, they type of the strategic change had an impact on the role performed. In projects with a clear target and a well-defined time frame (like the team reorganization of Subject 4), middle manager's role is implementer and coach/motivator. In projects were the strategic change is defined on a high level and with an open timeline (like Subject 5's example of the performance system and Subject 3's case of the team restructuring), middle managers can flourish in a role as co-designer. Finally, the phase of the strategic change affects the roles performed. In the definition phase, middle management can play a role as networker and sense-maker. This phase is an opportunity to participate in defining the strategy. In the implementation phase, focus is more on the implementer role and the sense-making roles. The second hypothesis was related the completeness of the existing theory base, and the resultant typology developed in this paper in covering the middle management role in strategy implementation.

H2. The role typology - implementer, networker and sense-maker - covers the role set performed by middle managers.

None of the respondents mentioned an activity or metaphor that was not included within the middle-management role typology outlined in the background section. No role description obtained from the respondents in this study mentioned a role or a metaphor that does not fit within the typology. The responses did indicate a broad complexity of role performance and role implementation. Hypothesis 2 is also confirmed by this sample with the caveat that it is a small sample and the possibility remains that a larger sample may uncover an extension to this typology.

Researchers must keep in mind the practical function that middle managers perform while driving successful strategic programs. As the research view of the middle-management role set evolves, it will need to take into account the realities that face middle managers. A short list includes the following normative implications drawn from the work in this study. Middle managers should 1) invest in understanding the urgency and the rationale of the new strategy. If middle managers do not buy it, they cannot sell it to the team. 2) They need to realize that implementing strategic changes takes a lot of energy and time. Middle managers must find ways to make this time such as advising top management on the timing and timeline of the strategy implementation or by delegating operational tasks to others. 3) Middle managers should recognize that change implementation is a complex and demanding task that requires adaptation to company strengths and weaknesses. If they need support or coaching, they must make this explicit to superiors and they must organize it. 4) Middle managers must build on the relationship with the team and involve them actively in the change process. 5) Middle managers must keep communicating about the how and why of the strategic change process, reserve time to deal with questions and resistance, be present and provide frequent, useful feedback to subordinates and superiors.

Attributes of the change process itself will also have an effect on the role set of the middle-management cadre. This means researchers should look for and analyze the drivers of the strategic change that come from within the change process itself. 1) Attributes of the objectives driving the strategic change process will affect the role-set of middle managers. If the strategic change has to be implemented quickly from the top down with lay-offs and reorganizations, the role set will differ from strategic changes with longer time horizons. 2) Middle management roles may adjust based upon the presence or absence of clear targets with a roadmap that explains the goals, timeline, responsibilities, and mandates. 3) Middle manager involvement in planning during the strategy development phase adds a critical component to the role set. 4) The importance, time and effort given to the communication process will affect the role of middle managers. If middle managers are to execute the strategic change, the roles they perform will depend on how well they share top management's vision and how they understand the 'why' and 'what' of the change program. 5) Top management expectations about the function of middle management in communicating information back up the hierarchy during change also affects the role set. Middle managers can serve as the ears and eyes of the organization, they can provide senior management with crucial information about internal and external implementation issues. Senior management may or may not want or expect this behavior. There are cross-cultural research opportunities in this area. 6) Because change implementation is a complex task that requires a lot of time and energy, middle management can put more or less effort in less-visible things such as internalizing the strategic change themselves, dealing with emotions and resistance of employees, and so on. The analysis of these hidden effects are a rich vein which can be mined by researchers involved in understanding the role-set of middle managers in strategic change.

## CONCLUSION

The goal of this paper was to test two hypotheses about the role set performed by middle managers in the implementation of strategic change initiatives. These hypotheses were: 1) The roles middle managers have in strategic changes can be clustered into three types: the implementer, the networker and the sense-maker, and 2) The role typology - implementer, networker and sense-maker - covers the role set performed by middle managers. These hypotheses if confirmed allow us to conclude that the domain of the strategic role set of middle managers is as described in hypothesis 1. From this, further research within this domain is justified. We gathered data through in-depth personal interviews from a small convenience sample of European middle managers from different industries, company sizes, cultural groups, and genders. Results from these interviews did not reveal any role, role set descriptor or other role-relevant variable that did not fit within the domain of hypothesis 1. The sample size is small, and specific statistically relevant observations are not possible from this data set. However, the results of this exploratory study can be used to design more detailed studies with statistically testable hypotheses.

We are able to generate some specific recommendations for researchers interested in participating in the development of the understanding of the role set of middle managers in strategic change. Some key considerations include 1) researchers should be aware of the different types of strategic changes and the implications for the roles of top management and middle management and account for these differences in planning research projects. 2) While the content of the strategic change is important, much of the success is driven by creativity used by middle managers to make the change happen. This process leads to the idea that strategy is not so much planned as it is implemented. Therefore, the role set is often evolving during the change process and some roles are performed and participants may not realize they are performing this function. This means researchers must use multi-faceted research procedures to define the richness that underlies the role performance of middle managers. 3) Since strategic change operates through a variety of social and operational networks, researchers must consider the structure and the function of the middle manager in building, maintaining and using these networks in strategic change. The whole question of the roles performed by middle management was described at its most general level in this paper within the "networking" role, but there is a wealth of opportunity for further research here, and the theory of these networks is less well defined than the role set of middle managers in strategic change is. 4) There is a diverse set of roles that middle managers can play in strategic-change initiatives. Researchers can provide normative advice and develop more effective tools to support middle managers in these roles. Possibilities include tools and theory to support in areas such as project management, leadership practices, behavioral issues, change inertia, passive-aggressive subordinate behavior are a few ideas that deserve development by the research community.

The results of this project show that middle managers have a crucial role in a successful implementation of strategic changes. Due to their interaction with customers, suppliers and other stakeholders they can provide top management with useful insights related to strategy definition. Their knowledge of the organization and business processes is helpful in defining the right planning of strategic changes. Moreover, middle managers are the key drivers in motivating their teams and translating the strategic direction into practices that make strategy happen. Based on the literature and this research, we conclude that middle management's role in strategic changes can vary depending on the organizational context, the relational focus and the phase of the strategic change. Middle managers can play different roles, but all of them can be categorized in one of the three main role types abstracted from the literature: the Implementer, the Networker or the Sense-maker. If we look at the development of middle management's role in strategic changes we can conclude that it follows the development of the strategic process. Normative and theoretical research opportunities remain to be developed by researchers who should take

into account the attributes of the situation, factors driven by management, and topics and approaches not yet fully explored by the research community.

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# CONSUMER PERSONALITY-PRODUCT IMAGE CONGRUENCE: EVIDENCE FROM TAIWAN

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**ABSTRACT**

*This study investigates the congruence between consumer personalities and product images based on the self-congruity perspective. In addition, consumer personality-product image congruence was examined to determine its influences on consumer product preference. Data were obtained from 335 respondents recruited from the customers of furniture stores such as IKEA and HOLA in Taiwan. A between-subjects experimental design was used, with t-tests and regression analysis. The finding showed that6 TABP consumers prefer products with a hard product image that gives strong, tough and strict feeling that is congruent with their own personality characteristics such as pressure for vocational advancement, aggressiveness, and desire for competitive achievement. In addition, TBBP consumers prefer products with a soft product image giving a mild, pleasant and gentle feeling, congruent with their own personality characteristics such as accommodating attitude, cooperativeness, and an easy going approach to life. In practice, determining how the consumer personality-product image congruence affects consumer product preference is helpful to manufacturers in designing products and stimulating product sales.*

**JEL:** M31

**KEYWORDS**: Personality, product image, product preference, self-congruity.

## INTRODUCTION

Functionality is not the end of product design; aesthetics are vital. Current trends in product design are moving toward the aesthetic aspects of products, such as their shape, color, and image (Krippendorff, 1995). Finn (1985) defined product image as the symbolic associations that are gathered into the product design. In terms of business activity, a primary task of product image design consists of attracting consumer preference. Researchers (e.g., Belk, 1988; Malhotra, 1988; Sirgy, 1982) indicate that based on the self-congruity perspective, consumers prefer products congruent with their self-concept. In addition, based on the self-congruity perspective, Govers and Schoormans (2005) found that consumers prefer brands and products whose product personality characteristics are congruent with their own personality characteristics.

Based on the above rationale, the purpose of this study is to explore the congruence between consumer personalities and product images based on the self-congruity perspective. For manufacturers, consumer personality-product image congruence may address consumer preferences at the product design stage. Thus, a secondary purpose of this research is exploring how consumer personality-product image congruence influences consumer preference. The findings of this study may provide suggestions for manufacturers creating product images as a way to attract a diversity of customers and stimulate product sales.

## LITERATURE REVIEW

Allport (1937), who identified 50 definitions of personality, defined personality as: "…the dynamic organization within the individual of those psychophysical systems that determine his unique adjustments to his environment" (p.48). Personality is also defined as the consistent patterns of feeling, thinking, and behaving (Pervin & John, 1997).

The relationship between personality variables and consumer behavior has generated academic interest since marketing first became the subject of scholarly research. Studies have shown that personality is related to such aspects of consumer behavior as purchasing behavior, media choice, innovation, segmentation, fear, social influence, product choice, opinion leadership, risk taking, and attitude change. Several theoretical personality systems that emphasize the importance of consumer orientation have been constructed. Most notable of these are the Big Five, Sixteen Personality Factor and Internals/Externals personality, and the Type A behavior pattern (TABP). Friedman and Rosenman (1974) defined the Type A behavior pattern as "an action-emotion complex that can be observed in any person who is aggressively involved in a chronic, incessant struggle to achieve more and more in less and less time, and if required to do so, against the opposing efforts of other things or other persons" (p. 67). TABP is a model of how a person considers events and information when she/he confronts a challenge (Ivancevich, Matteson, & Preston, 1982). TABP assigns individuals traits such as competitive achievement striving, hostility, impatience, motor mannerisms, pressure for vocational productivity (Sales, 1969). The opposite behavior pattern is known as the Type B behavior pattern (TBBP). TBBP refers to the relative absence of the traits of TABP and a more relaxed way of handling affairs (Contrada, 1989). People manifesting TBBP are more relaxed, seldom become impatient, are not easily irritated, and take more time to enjoy vocational pursuits (Sales, 1969).

Product image has a strong impact on consumer/user preferences and product choice (Chuang, Chang & Hsu, 2001). Image has been seen as the sum of all meanings the consumer experiences with the product (Martineau, 1957). Finn (1985) defines product image as the symbolic associations of a product. Kosslyn (1983) describes image 'as a representation in the mind that gives rise to the experience of "seeing" in the absence of the appropriate stimulation from the eye' (p.29). Such seeing may be deliberately manipulated by marketing experts, for example, by repackaging old products to re-present them as young, changing the image, not the product. Image is thus the non-physical aspects of the product that are associated with the product, such as brands, marketing symbols, celebrity endorsements, and country of origin (Erickson, Johansson & Chao, 1984). Researchers also refer to product images residing at a variety of levels of abstraction in the memory (Poiesz, 1989).

Though the above definitions are broadly similar, the consumer behavior literature does not appear to offer a generally accepted definition of image. Nevertheless, researchers have found that most products include both hard and soft images (e.g., Hsiao & Chen, 1997; Hsiao & Chen, 2006). Hsiao and Chen (2006), in a study of product images of a sofa, used two words for image, hard and soft. Hard product images give consumers a strong, tough and strict feeling. Soft product images give a mild, pleasant and gentle feeling.

Sirgy (1982) described self-congruity as the way consumers make a psychological comparison between their image of themselves, their self-concept, and the image of a product. An individual's self-concept consists of stable self-assessments, including personality attributes, self-knowledge of skills and abilities, occupation and hobbies, and self-awareness of one's physical attributes (Fleming & Courtney, 1984). Self-congruity has two elements, self-concept and product image. Consumer self-congruity is a preference for products whose image is similar to their self-concept (e.g., Belk, 1988; Sirgy, 1982). Self-congruity stems from the human need to exhibit a consistent and positive view of the self. Product choices are one way individuals can display their self-concepts to themselves and others (Sirgy, 1982).

Govers & Schoormans (2005) found that consumers prefer products and brands whose personality characteristics are congruent with their own. Consumers express and enhance their self-concept by consuming products that evoke positive product user stereotypes for them, and avoiding products that evoke negative stereotypes. According to Pervin and John (1997), self-concept is often viewed as a component of personality. The features of TABP have been identified by Sales (1969) as personality traits which consist of pressures for vocational advancement, aggressiveness, competitive achievement striving, and impatience. This study posits that, according to the self-congruity perspective, there should be congruence between TABP and Hsiao and Chen's (2006) hard product image. Namely, consumers manifesting TABP should prefer hard product images, since such an image resembles their personalities.

The TBBP individual has an accommodating attitude, is cooperative, not easily irritated, and has an easygoing approach to life (Sales, 1969). This study thus proposes that there should be congruence between TBBP and Hsiao and Chen's (2006) soft product image, based on the self-congruity perspective. TBBP consumers should prefer products with a mild, gentle and pleasant feeling. Thus, based on the self-congruity perspective, it is hypothesized:

*H1a* When the product manifests a hard product image, TABP consumers will perceive a higher degree of consumer personality-product image congruence than when the product manifests a soft product image.

*H1b* When the product manifests a soft product image, TBBP consumers will perceive a higher degree of consumer personality-product image congruence than when the product manifests a hard product image.

Urban and Hauser (1993) observed that marketing researchers use a range of techniques for evaluating and predicting consumer preferences, including choice, rating, ranking and matching. Researchers (e.g., Belk, 1988; Malhotra, 1988; Sirgy, 1982) indicate that self-congruity strongly affects consumption behaviors such as consumer preference, purchase intention and product loyalty. The present study proposes that, based on self-congruity perspective, congruence between consumer personality and product image affects product preference. It is hypothesized:

H2 The degree to which consumers perceive consumer personality-product image congruence is positively associated with product preference.

## DATA AND METHODOLOGY

Hsiao and Chen (2006), investigating the product image of sofas, found both a hard and soft product image. The present study uses sofas as its experimental product to assess these product images. Participants consisted of individuals who were shopping for sofas from furniture shops in Taiwan, such as IKEA and HOLA.

Each participant was asked to complete a questionnaire with two experimental settings, a sofa manifesting a hard product image and a sofa manifesting a soft product image. In total, 335 individuals (N = 335) completed the survey. The sample was 43.9% male (n =147) and 56.1% female (n = 188).

The questionnaire included the following variables: Type A behavior pattern, consumer personality-product image congruence, consumer preference, age, and product image. The Type A behavior pattern was measured using scales developed and validated by Begley and Boyd (1985) to measure consumer personality. Owing to cross-cultural issues, this study chose 6 items from Begley and Boyd's (1985) instrument, which originally had 21 items, to fit Chinese culture. These six items included "I eat faster than other people," "I like to keep two jobs moving forward at the same time," "Feels like hurrying speaker," "I often set my own deadlines," "Others rate me as hard-driving and competitive," and "Others agree-more energy than most people". Each item was rated on a 5-point Likert-type scale with anchors 1: Strongly disagree and 5: Strongly agree. Cronbach's α for this scale for the current sample was .76.

Product-personality congruence scale was used to measure the congruence between consumer personalities and product images. Three items adapted from the product-personality congruence scale developed by Govers and Schoormans (2005) were used. The three items included "This sofa's product image matches my own personality," "If you consider your own personality and compare it to the description of this sofa's product image, to some extent are they similar," and "This sofa's product image is like my own personality". Each item is rated on a 5-point Likert-type scale, with anchors 1: Strongly disagree and 5: Strongly agree. In this study, Cronbach's α was 0.93 for this scale.

Consumer preferences scale was used to measure consumer preferences such as choice, rating, ranking and matching. The scale was measured using three items adapted from the consumer preference scale developed by Govers and Schoormans (2005). The three items included "I would like to have this sofa," "I think this sofa is attractive me," and "I think this sofa is a good product". Each item was rated on a 5-point Likert-type scale with anchors 1: Strongly disagree and 5: Strongly agree. Cronbach's α for this scale in the current sample was .92.

Yang and Allenby (2003) indicated that age may influence consumer preferences. Preferences could change as time goes by. The product images preferred by the young may differ greatly from those preferred by the old. Therefore, age serves as a control variable in this study.

The product image messages for the participants included two experimental conditions representing different product images. In this study, product image manipulations (i.e., hard product image vs. soft product image) were adopted from Hsiao and Chen's (2006) study. In this study, the hard product image manipulation was presented to the participants as a sofa picture identified as hard product image in Hsiao and Chen's (2006) study. According to Hsiao and Chen's (2006) study, a hard product image gives people a strong, tough and strict feeling. Similarly, the soft product image manipulation was presented to the participants as a sofa picture identified as a soft product image in Hsiao and Chen's (2006) study. According to Hsiao and Chen's (2006) study, a soft product image gives people a mild, pleasant and gentle feeling.

## RESULTS

In order to assess whether the hard and soft product images were perceived as intended, a manipulation check was done. Participants were asked one question, matching the answer to the product image message they had read. The answer was either right or wrong. Further, a Chi-square test was conducted, indicating a significant result ($\chi^2$=242.5, p<0.01). There were significant differences in the frequency of correct and incorrect responses. This suggests that the manipulation of product images was successful and that respondents correctly identified the emphasis that the product image messages were designed to convey.

For hypotheses (*H1a* and *b*), a t-test analysis was used to examine the congruence relationship between consumer personalities and product images. TABP consumers scored significantly higher (*t*-value = 2.17, p<0.05) on consumer personality-product image congruence for the hard product image (*M* = 3.26, *SD*. = 1.1) than for the soft product image (*M* = 3.06, *SD*. = 1.0). Thus, *H1a* is supported.

Similarly, TBBP consumers scored significantly higher (*t*-value = 4.0, p<0.01) on consumer personality-product image congruence for soft product images (*M* = 3.20, *SD*. = 0.9) than hard (*M* = 2.81, *SD*. = 0.8). Thus, *H1b* is supported.

To test Hypothesis 2, the authors used regression analysis. The following regression equation was estimated to identify the determinants of Consumer product preference.

$$\textit{Consumer Product Preference} = \alpha + \beta_1 (\textit{Age}) + \beta_2 (\textit{Consumer Personality-Product Image Congruence}). \quad (1)$$

Table 1 shows the results of adding the control variable (i.e., age) to Model 1, and adding the independent variable (i.e., consumer personality-product image congruence) to Model 2. The association between the independent variable (i.e., consumer personality-product image congruence) and the dependent variable (i.e., product preference) behaved as expected (β = 0.53, p < 0.001). Thus, *H2* was supported.

## CONCLUSIONS

This study investigates the congruence between consumer personalities and product images based on the self-congruity perspective. *H1a* is supported by the results, indicating that TABP consumers prefer

products with a hard product image that gives strong, tough and strict feeling that is congruent with their own personality characteristics such as pressure for vocational advancement, aggressiveness, and desire for competitive achievement.

*H1b* is also supported by the results, indicating that TBBP consumers prefer products with a soft product image giving a mild, pleasant and gentle feeling, congruent with their own personality characteristics such as accommodating attitude, cooperativeness, and an easy going approach to life.

*H2* is supported by the results. As expected, consumer personality-product image congruence was positively related to consumer product preference. This result corroborates the findings of previous studies (e.g., Belk, 1988; Malhotra, 1988; Sirgy, 1982) indicating that self-congruity has a significant influence on consumer preference, purchase intention, ownership, use and product loyalty.

The findings of this study may provide manufacturers with suggestions on how to design and market products to stimulate product preference and product sales. When manufacturers design product images for their products, they should strategize the development of their product images by aiming them at consumer personality types.

This study has some limitations. While the literature has various categories of personalities and product images, the present study focused primarily on Type A/B behavior patterns and hard/soft product images congruence. Future research might investigate congruence between other personality characteristics and other specific product images which are not discussed in this study.

Table 1: Regression Analysis Results

| **Consumer Product Preference** | | |
|---|---|---|
| | Model 1 | Model 2 |
| **Step 1:** | | |
| Age | -0.024 | -0.077 |
| **Step 2:** | | |
| Consumer personality-product image | | 0.534*** |
| $\mathbf{R^2}$ | 0.001 | 0.283 |
| $\mathbf{\Delta R^2}$ | 0.001 | 0.282 |
| **F value** | 0.191 | 65.523*** |

*This table shows the results of adding the control variable (i.e., age) to Model 1, and adding the independent variable (i.e., consumer personality-product image congruence) to Model 2. The relationship between the independent variable (i.e., consumer personality-product image congruence) and the dependent variable (i.e., product preference) is positive ($\beta = 0.53$, $p < 0.001$).*
****, **, and * indicate significance at the 1, 5 and 10 percent levels respectively.*

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# PREFERABLE EXECUTIVES' COGNITIVE STYLE BY STAGE OF THE ORGANIZATION LIFE CYCLE

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**ABSTRACT**

*There are too many different perspectives in strategic decision-making process within the literature. The rational normative model suggests that organizations, first, based on internal and external analysis determine some objective criteria to achieve value-maximization, and then based on those objectives make decisions. However, many research findings indicated that rational model is moderated by many individual-level and environmental-level factors. At individual-level, rational decision-making model has been found to be affected greatly, by the characteristics of executives. Among those characteristics, cognition has significant effects on decision-making process. Executives have different cognitive style that makes them follow steps of decision making process -including information gathering, alternative generation, alternative evaluation, and decision finalizing- very differently. From the other side, organizations at different stages of organization life cycle (Introduction, Growth, Maturity and Decline) have different administration needs and required types of decisions. The aim of this conceptual paper is to find out the desirable cognitive style for executives, at each phase of organization life cycle. Additionally, strategy, as the third construct that is related two both cognitive style and organization life cycle help us to explain the cognition-life cycle linkage with more confidence. Based on literature, executives with similar cognitive profile are more likely to follow similar type of strategies; and at each stage of organization life cycle, specific types of strategy is dominant. These findings implicitly support our proposition, indicating that at each stage of organization life cycle, executives with specific cognition profile will outperform. The proposed framework in this paper links strategy, organization life cycle and cognitive style of management.*

**JEL:** M10

**KEYWORDS***:* cognitive style, organization life cycle, executives' characteristics, strategic choice model

## INTRODUCTION

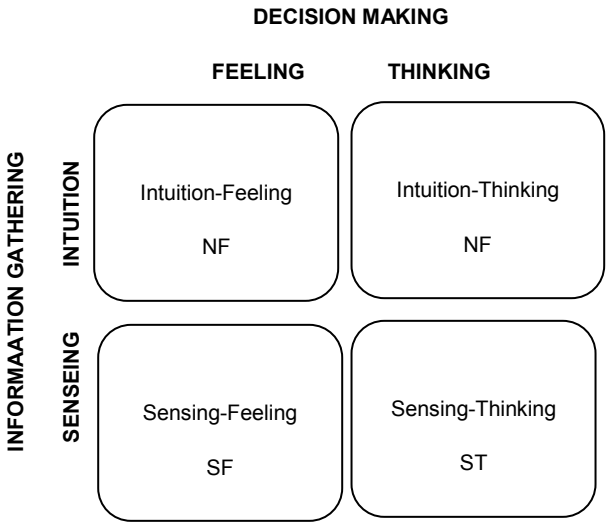
There are too many different perspectives in strategic decision-making process within the literature. The rational normative model suggests that organizations, first, based on internal and external analysis determine some objective criteria to achieve value-maximization, and then based on those objectives make decisions (Hitt & Tyler, 1991). However, many research findings indicated that rational model is imitated and moderated by many individual-level and environmental-level factors (Eisenhardt & Zbaracki, 1992; Hitt & Tyler, 1991). One of these factors is the role of executives and top managers in the decision-making process. Based on this prospective, which is labeled strategic choice, objectives are not consistent and constant across people and over time; and in addition to environmental conditions, the choices that managers make are the critical determinants of organization structure, processes and decisions (Miles & Snow, 1978). Simon (1947) was the first one who challenged the validity of value maximizing approach in decision making process and claimed the limitation of rational model. He argued that decision makers rarely make decisions based on complete information. Uncertainty and lack of comprehensive information is one of the main reasons that cause managers to reach different decisions. According to Cyert and March (1963),"uncertainty is a feature of organizational decision making with which organizations must live" (p.118). In absence of adequate information, managers use different approaches to deal with uncertainty. Among all executives' characteristics, the one that has the greatest

effects on decision-making is the cognition. Managers have different cognition style, which makes them follow the steps of decision-making process differently and reach to distinct decisions. Several researches have confirmed the significant effects of cognitive styles on strategic decision-making (Nutt, 1986a, 1986b; Haley, 1997; Walck, 1997; Myers et al., 1998; Gallen, 2006). Those researches have demonstrated the characteristics of each style, the methods each uses in different steps of decision-making process, and most probable outcomes for each type. Although the research on cognitive styles has began long ago, but its linkage to environment, the other construct that affects rational decision-making, has not been well studied yet. In this paper, the research objective is to study this linkage more narrowly and find out the preferable cognitive style for different stages of organization life cycle. At each stage of organization life cycle (introduction, growth, maturity and declining), there is specific administration needs, and accordingly, the types of required decisions vary. The objective of this study is to find the most efficient and appropriate decision-making style for each phase of organization life cycle. After a brief literature review on cognitive styles and organization life cycle, a theoretical framework will be provided to link these two constructs. Additionally, strategy, as the third construct that is related two both cognitive style and organization life cycle will help us to explain the cognition-life cycle linkage with more confidence. In fact, these three construct makes a triangle that one can explain each side (linkage) based on the other two sides. Based on literature, executives with similar cognitive profile are more likely to follow similar type of strategies; and at each stage of organization life cycle, some types of strategies are dominant. These findings suggest that at each stage of organization life cycle, executives with specific cognition profile will outperform, and implicitly support our conclusion.

## LITERATURE REVIEW

*Cognitive Styles:* Decision making process consists of several steps of information gathering, alternative generation, alternative evaluation and decision finalizing. Research findings have indicated that besides other external elements, such as organization structure, nature of the task, and environment, cognition has a great effect on decisions (Walck, 1997), as managers' cognitive styles influence the decisions they tend to make. Most of executives have preferred styles that use more often, particularly in ill-structured situations (Simon, 1978). Executives with different personality traits develop distinct decision-making styles as their preference and method of information gathering and alternative generation and evaluation differ significantly. In information gathering, managers seek selectively for specific information, concentrate on them and ignore others (Weick, 1979; Haley, 1997), and in decision-making, they differently use insight, intuitions and heuristics (Eisenhardt, 1992; Haley, 1997). In this study the Jung's (1923) psychological constructs has been used to categorize managers' cognitive styles. Based on Jungian psychological construct, individuals' cognitions are different in terms of information-gathering and decision making procedures. For each of these two processes, Jung suggested two distinct functions. In information-gathering (perceiving) process, an individual tend to use either sensing or intuition (S or N) functions. These functions describe the process in which individuals perceive and interpret information. The sensing individuals ascribe prominence significance on tangible and concrete facts. They trust information which is received via the five senses, and tend to doubt on intuitive guesses and hunches. On the other side, intuitive individuals trust on abstract information and insights that have come up from the unconscious mind. Based on the data gathered via one of these two functions, the decision making process is conducted. This judging process also consists of two distinct functions, feeling and thinking (F and T), and individuals tend to prefer one type in making rational decisions. Thinking individual are more analytical; they set a set of rules for decision making process and based on that, pick the more reasonable and matching option. On the other hand, feeling type of individuals make decisions based on their feelings. They seek options that are more in harmony and fit with a given situation and making them feel right. Later on, Myers and Myers (1980) developed these Jungian mental functions and claimed that conjunction of these functions in information-gathering (S - N) and decision-making process (T - F) determines the cognition style of individuals. The following matrix shows the four types of individual cognition styles.

Figure 1: Cognitive Styles




*This figure shows Myers and Myers Cognitive Styles (1980), which is the development of Jung's Psychological Constructs (1923). Based on Jungian psychological construct, individuals' cognitions are different in terms of information-gathering and decision-making procedures. For each of these two processes, Jung suggested two distinct functions. In information-gathering (perceiving) process, an individual tend to use either sensing or intuition (S or N) functions. Based on the data gathered via one of these two functions, the decision making process is conducted. This judging process, also consists of two distinct functions, feeling and thinking (F and T), and individuals tend to prefer one type in making rational decisions. The conjunction of these two processes defines the cognitive style of individuals.*

Although Jung did not assume that these cognition style is absolute and unchangeable, but he believed that each individual has dominant preference style that tend to use most frequently in decision-making and problem solving process. Taggart and Robey (1981) linked cognitive styles and brain hemispheres, indicating that STs are completely left-brained while NFs have a right-brained style, while NTs and SFs are in the middle and have accommodating styles. Managers with left-brained style ascribe greater prominence on analytical and quantitative techniques and apply rational and logical methods for reasoning, while ones with right-brained style apply intuitive techniques and use unstructured and spontaneous procedure in decision making, considering the whole picture rather than its parts (Sauter, 1999). The characteristics of each cognitive style are presented in detail as follow.

ST (Sensing-Thinking)**:** As discussed above, individual with this style are predominantly left-brained and use analytical and sequential process to reason from causes to effects by using details, specifics and pieces of logics. STs pay attention on facts that can be received by senses. They ascribe more importance on hard data and avoid personal analysis. These managers are more risk averse than other styles (Walck, 1997; Behling et al., 1980) and prefer to establish orders and mechanism of control to achieve certainty (Mitroff & Mitroff, 1980). Thus, they typically use problem-solving models that have worked in the past (Haley and Pini, 1994). These managers more focus on immediate and current problems and use standard operating procedures to solve them (Haley, 1997). According to Gallen (2006), regularity, structure and fit with standard practices are the basics for their decision, and consequently, they would be more decisive in well-defined and regulated environment (Nutt, 1986b).

NF (Intuition-Feeling): This style is the extreme opposite of ST. These individuals are significantly right-brained, innovative, enthusiastic and insightful. They believe in their gestalts, feeling, hunches and intuitive perceptions, and look at the whole picture and broad theme rather than specific detailed parts. They avoid traditions and seek new possibilities and novel things that never happened before (Myers et al., 1998). Their decisions are based on similar experiences, analogy and personal views and judgment (Nutt, 1986a, 1986b; Haley and Pini, 1994). According to Haley (1997), these managers like working on

ill-structured problems that requires innovative concepts and theories; they are inclined to creative problem solving and prefer novel, ingenious solutions, rejecting traditional methods and standard operating procedures. NFs managers have specific vision and engage in long-term goals. They tend to simplify the complex problems by reasoning based on analogies and heuristics. Analogy is a reasoning process, in which managers need not understand every aspect of the problem at hand, rather, they just select some features and apply them to a past-solved problem or simple vivid situation (Gavetti & Rivkin, 2005).

NT (Intuitive-Thinking): NTs share common characteristics with both NFs and STs, with some differences. Like NFs, NT managers also pay attention to new possibilities, but with this difference that they use non-personal, cause-and-effect perspective when judging (Myers et al., 1998). Like STs, NTs ascribe great importance on analysis with this difference that they emphasis on long-range plans and new possibilities (Haley, 1997). Research findings indicated that Ns and Ts are better able to make decision in unstructured environments, comparing to Fs and Ss (Walck, 1997), thus the package, NT, outperforms other styles in complex situations. NT managers are more likely to recognize problems and patterns, and request more quantitative but general information for problem solving. According to Nutt (1986a), NT managers prefer long-term open-ended projects that need more innovation, risk and observation.
SF (Sensing-Feeling): SFs ascribe importance on specific peoples' opinions and ideas in decision-making and believe that actions become feasible when people endorse them (Nutt, 1986a; Haley & Pini, 1944). Like STs, SFs appear to focus on problems facing them today. SF mangers make decisions based on what people in a given situation need or want (Gallen, 2006). SF executives are more risk tolerant comparing to other styles; they ascribe more importance on facts and approach decision-making subjectively based on their own value system, as they use feeling as the judgment function.

*Organization Life Cycle:* Just like humans, organizations pass through four stages; they born, grow, mature and die. According to economic and organization theories, organizations share common characteristics at each stage of life cycles. These characteristics include both internal and external factors. In the following, some of these characteristics are pointed out.

Introduction Stage: This period begins with product innovation and development or some novel changes in the process. At this stage, the resources are limited, and there is emphasis on R&D and technological innovation. At introduction stage, the total sales volume is low and the stage lasts until the product is being manufactured in large quantity. The product or service is just introduced to the market and there is not a complete perceived need for it, within costumers. There is not a thorough and well-defined organization vision and entrepreneurial insight yet (Lindell, 1991). In terms of economics, the total profit and sales is low and the gross profit per unit is high. There is constant product or service revision. The focus of the organization or company is on establishing a market and arising demand for the product or service, consequently, marketing is significantly important at this phase.

Growth Stage: By the development of the product the innovation, activities shift from product to process in the growth stage. The volume of sales and production is gradually increasing and many positions and relationships are being created; so, neither the organization, nor market is stable yet. In terms of economic factors, total profit is high and rising, and at the same time, the sales and production volume is increasing. The product design is standardized. Competition is not considered as a significant threat, and risks are accepted by management. As the greater importance is on the processes at this stage, appropriate technologies for production and distribution are implemented; processes are routinized and systemized; manufacturing and marketing are being separated and accounting system for inventory control and purchasing are developed (Lindell, 1991). Jobs become more specialized, and communications within organization become formal at this phase.

Maturity Stage: At this stage, the sales growth is going to stop, the product is fully standardized and at the same time, processes are automated to achieve efficiency. At this stage, there are many competitors with similar products or services, and thus, competition is significantly high and threatening, and is an important concern in almost every decision. There is only minor innovation for modification purposes, and changes made only after a thorough investigation of all possible consequences. At mature markets, firms seek more low-cost strategies rather than innovative and differentiated ones. Actually, the bargaining power of buyers and competitive forces of rivals, incline firms to form tightly structured production and marketing process in order to achieve cost reduction and efficiency. At this stage total sales volume and profit is almost stable, and competitors try to defend their market share, rather than increasing the profit.

Decline Stage: At this stage as a result of unfavorable economic condition, significant change on customers' demands, or emergence of new and substitute products or services, organization experience its last phase of life cycle. At this stage, the sales volume decline and profits are replaced by losses. Management is preoccupied with maintaining controls, and most of actions and decisions are related to cost cutting. The emphasis of management is on finance to overcome the financial crisis.

According to the literature and what have been discussed, executives' characteristics, and more specifically, cognitive style play a critical role in organization strategic decisions. Many research scholars have linked management inability or unwillingness to consider all strategic available alternatives to cognitive styles of managers (Gallen, 1997; Nutt, 1986; Miller & Toulouse, 1986; Gallen, 2006). From the other aspect, at each stage of organization life cycle there are some specific administration needs. For instance, in introduction and lunching phases, there is a high need for creativity and flexibility; growth phase calls for operational planning and market penetration and accordingly analytic type of management; mature stage requires focus on efficiency and market share defense, and thus, needs some conservative and functional types of administration; and finally, at the declining stage, there is high a need for that type of management who can keep the organization together and react to the unfavorable pressures as fast as possible at the time of crisis. Significant differences among characteristics of stages of organization life cycle and cognitive styles imply that the effectiveness of different executives with different cognitive style varies at each stage of life cycle. Consequently, based on evidence in the literature, we proposed that for each stage there is favorable type of cognitive style. The table 1 summarizes the theoretical framework of the paper, which will be discussed more in depth afterwards.

Table 1: Strategy, Cognition and Organization Life Cycle Relationships

| Organization Life Cycle | Strategy | Preferable Cognitive Style |
|---|---|---|
| Introduction | Prospector | NF |
| Growth | Analyzers | NT |
| Maturity | Defenders | ST |
| Declining | Reactor | SF |

*This table shows the relationship between three constructs of Organization Life Cycle, Strategy and Executive's Cognitive Style. Based on literature, executives with similar cognitive profile are more likely to follow similar type of strategies; and at each stage of organization life cycle, one type of strategy is dominant. These findings implicitly support the conclusion of the study regarding the outperformance of executives with each cognitive style at specific stage of organization life cycle.*

## LINKING ORGANIZATION LIFE CYCLES AND COGNITIVE STYLES

Introduction & NF Style: Based on literature, innovation is the core element of introduction stage, thus, more creative and insightful managers, like right-brained NFs, would be more successful at this stage. They avoid traditions and seek new possibilities and novel things that never happened before (Myers et al., 1998). As discussed earlier, NFs managers have specific vision and commit to long-term goals, and this is an essence in newly established markets. These managers prospect increasing corporate influence (Haley, 1997). NF managers are risk takers and believe in their hunches and intuition perceptions; and at

the other hand, there is high uncertainty at introduction stage, because there is not stable and standardized product or service, identified customers and well-defined target market. Thus, NFs managers and organization in introduction stage would be a great match. Other research findings have also confirmed the effectiveness of these mangers at ill-structured situations (Haley, 1997; Walck 1997; Myers et al., 1998). Moreover, research findings indicated that this type of mangers prefer to work in flexible and adaptive environment (Mitrof & Kilmann, 1975), which is one of the characteristics of the organizations at the first stage. Moreover, NF managers value marketing (Myers et al., 1998), which is very important at this stage. Finally, research finding has claimed that NF managers might more likely to follow prospector type of strategy (Gallen, 2006), and consistently, prospector strategy is the dominant type of strategy at introduction stage. Based on aforementioned explanations, we proposed that at introduction stage NF managers outperform management with other types of cognitive styles.

Proposition 1: NF Managers Outperform NTs, SFs, and STs at The Introduction Stage of Organization Life Cycle

Growth & NT Style: At the growth stage, although the product or service is stabilized, but there is still need for innovation in processes, and some improvements in product or service. At the same time, while company has made a market for itself, it should consider and analyze its previous performance. NTs manager would suit best at this stage of organization life cycle. These managers pay attention to new possibilities, but use non-personal and cause-and-effect perspective (Myers et al., 1998); they ascribe greater importance on analysis with emphasis on long range plans and new possibilities (Haley, 1997). Walck (1997) indicated that in complex and open-ended environment, NTs managers outperform other types of management. Growth stage can be considered as the most complex stage, since the firm must both defend its current market and be aware of prospector strategies for profit maximization and growth opportunities, while at other stages, firm has one of the roles, most of the time. NT managers are more likely to recognize problems and patterns, and seek more quantitative general information for solving problems and these characteristics seems most useful at growth stage, while there is no adequate information and specific patterns in introduction stage, and everything is quite well-defined in mature markets. In terms of risk-taking behaviors, these managers are at the middle, they are not as challenger as NFs, and not as risk averse as STs. Consistently, firms at growth stage need managers and executives with this level of risk taking due to their dual roles as both defender and prospector. As discussed earlier, in unstructured environments, NTs and NFs outperform the two other types, and the market structure is not well-defined in early stages of life cycle, introduction and growth. What distinguishes NT managers from NF executives is that they seek more quantitative data, while NF managers more use analogy-based intuitions (Kerin & Slocum, 1981). That is why NF managers more preferable at introduction level, while NT managers assumed to be more appropriate in the second stage. Moreover, NT manager more tend to follow analyzer type of strategies, which is the dominant strategy at the growth stage of life cycle (Gallen, 2006). The following proposition is made based on the above discussion.

Proposition 2: NT Managers Outperform NFs, SFs, and STs at the Growth Stage of Organization Life Cycle

Maturity & ST Style: In this stage of market life cycle, both product and processes are almost standardized and firms compete over efficiency and cost. From the other side, ST managers pursue goals of profitability within the organization and emphasis financial market information (Haley, 1997). These managers are more logical and analytical; they focus on facts and hard data and avoid personal analysis. At maturity stage innovation is rarity and firms are completely engaged with prevalent problems rather than thinking of future trends. Consistently, unlike other NF and NT managers, ST managers more focus on immediate and current problems and use standard operating procedures to solve them, rather than thinking of future problems and possibilities (Haley, 1997). At maturity stage all rules, regulations, relationships, and structure of the industry have been stabilized; thus, it is the best time for ST executives

to show their performance, as many research findings agreed that these managers have the best performance on well-defined, stable and regulated environments (Nutt, 1986b). Unlike other stages, in a mature market, there is a high competition and this competition assumed to be threatening and serious by managers. Compatible with these environments, ST managers found to be more risk averse (Nutt, 1986, 1990; Haley 1997). At mature markets, firms seek more low-cost strategies and try more, to defend their market share. According to Gallen (2006) findings, among managers with different styles, ST managers are more likely to follow defender types of strategies. Based on these findings we proposed that:

Proposition 3: ST Managers Outperform NFs, SFs, and NTs at the Maturity Stage Of Organization Life Cycle

Declining & SF Style: As discussed earlier, at declining stage, as a result of unfavorable economic condition, significant change on customers' demands, or emergence of new and substitute products or services, organization experience its last phase of life cycle. At this stage, the sales volume decline and profits are replaced by losses. Management is preoccupied with maintaining controls, and most of actions and decisions are related to cost cutting. Generally, at the declining stage, organizations face many internal problems as a result of cost-cutting strategies (e.g. downsizing), employees start to lose their trust and loyalty toward organizations, and cohesiveness of the organizations become fragile. At this crises stage, using SF managers could be more appropriate. These managers ascribe importance on peoples' opinions and ideas in decision-making and believe that actions become feasible when people endorse them (Nutt, 1986a; Haley & Pini, 1944). An important fact about dying stage is that this stage lasts until the product or service become extinct or organization breaks down and ceases the market. However, if organization could survive during this stage, maybe it could enter another introduction stage with a new product or service. At this time, the most important factor is protecting the internal cohesiveness of the organization, and SF types of management could do this best. SF executives are also more risk tolerant comparing to other styles and this is the essence of management at this crisis stage. These managers narrow their focus on problems facing them today. Gallen (2006) proposed that SF managers more tend to follow reactor types of strategies. This finding is consistent with our proposition, as these strategies are more seen in declining stages. At the declining stage, there is not a clear image about the future of the market, and organization just try to keep itself alive, so that an innovative movement could open up a new introduction phase. Therefore, the firm just follows what environment or key players of the market, which are more likely to survive and come up with some innovations, dictate. In this situations SF executives who more concentrate on organizational endurance through internal effectiveness, could be the best option, at least for a specific period until there is an opportunity for some fundamental changes. Based on the aforementioned explanation we proposed:

*Proposition 4: SF managers outperform NTs, NFs, and STs at the declining stage of organization lifecycle.*

## CONCLUSION

This is a conceptual paper with aim to identify the preferable cognitive style for executives at each stage of organization life cycle. Briefly, we noticed that at each stage of organization life cycle, there is specific administration needs, and accordingly, the types of required decisions vary significantly. The objective of this study is to find the most efficient and appropriate decision-making profile at each phase of organization life cycle. Researchers have always mentioned the limitation of rational normative decision-making process, indicating that it is imitated and moderated by many internal and external factors. Among those internal factors, executive's cognition has a significant influence on the outcome of decision-making process. In this study, we first carried out a through literature review on cognition to summarize the specific characteristics of each cognitive style, and we used Jung's (1923) psychological constructs that is developed later and became a part of MBTI type indicator. Then after a literature review

on organization theory, we pointed out specific administration needs at each stage of organization life cycle. Then, we linked each cognitive style to a different stage of organization life cycle so that the best result is gained. Additionally, strategy, as the third construct that is related two both cognitive style and organization life cycle helped us to explain the cognition-life cycle linkage with more confidence. In fact, in the triangle of strategy, organization life cycle and executives' cognition, the side (linkage) of cognition-life cycle can be also explained by the other two sides. Based on literature, executives with similar cognitive profile are more likely to follow similar type of strategies (Gallen, 2006); and at each stage of organization life cycle, a specific type of strategy is dominant. Overall, we conclude that NF, NT, ST and SF profiles, in order, outperform at introduction, growth, maturity and declining stage with prospector, analyzer, defender and reactor strategy as the dominant type of strategy. These findings could be beneficial in strategic management literature in several ways. Firstly, it clarifies the role of executives' cognition in decision-making process in the context of organization, and explains why various management styles are more successful at different stages. Secondly, it helps organizations to match their executives with the stage of organization to achieve the best outcome. Finally, it is helpful for executives themselves, to recognize their strengths and limitations according to the organization stage, and use peripheral mechanism in decision-making process to cover their weaknesses and compensate for them. As a conceptual paper, this study has its inherent limitation, lack of validity. Although these findings sound cogent theoretically, but should be tested and validated in future researches.

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The journal acceptance rate is between 15 and 25 percent.

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### Accounting and Taxation (AT)

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