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LETTER FROM THE EDITORS

We are extremely pleased to present the *Journal of International Business Research*, an official journal of the Academy of International Business Research. The AIBR is an affiliate of the Allied Academies, Inc., a non profit association of scholars whose purpose is to encourage and support the advancement and exchange of knowledge, understanding and teaching throughout the world. The *JIBR* is a principal vehicle for achieving the objectives of the organization. The editorial mission of this journal is to advance the knowledge and understanding of international business throughout the world. To that end, the journal publishes high quality, theoretical and empirical manuscripts which advance the discipline.

The manuscripts contained in this volume have been double blind refereed. The acceptance rate for manuscripts in this issue, 25%, conforms to our editorial policies.

Our editorial policy is to foster a supportive, mentoring effort on the part of the referees which will result in encouraging and supporting writers. We welcome different viewpoints because in differences we find learning; in differences we develop understanding; in differences we gain knowledge and in differences we develop the discipline into a more comprehensive, less esoteric, and dynamic metier.

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PERFORMANCE, STRATEGY AND GOVERNANCE CASES FROM MEXICO

Heriberto Garcia, Texas A&M International University

ABSTRACT

During the last two decades, the Mexican Stock Exchange (MSE) has reduced the number of companies publically traded into the Stock Market, simultaneously public and private companies have dramatically changed how they compete, how financial and business information is disclosed in light of new worldwide regulation and demands for transparency. We explored sixteen company cases from various industries and sectors in terms of their implemented processes regarding strategic decision making, financial performance, transparency and ownership structure, using Case Study methodology, to determine whether success or failure of the companies could be predicted. Our findings provide information about the relationship of strategy, performance and governance.

Key Words: Regulation, Corporate Governance, Financial Leveraged.

INTRODUCTION

Now the general who wins a battle makes many calculations in his temple ere the battle is fought. The general who loses a battle makes but few calculations beforehand. Thus do many calculations lead to victory, and few calculations to defeat: how much more no calculation at all! It is by attention to this point that I can foresee who is likely to win or lose.

Sun Tzu.

Over the past two decades, Mexico has joined the globalization process having signed several trade agreements and confronting free market competition, at the same time Mexican authorities have improved regulation and expanded transparency requirements of the financial market and banking sectors in accordance with the trend toward globalization and in line with its continental counterparts, the United States and Canada.

Mexican companies have advance in three major areas in order to compete efficiently against multinational companies offering new imported products: improving corporate governance practices, increasing transparency, and complying with new financial information standards. This new business milieu raises the questions as to whether or not globalization and the North American Free Trade Agreement (NAFTA) have affected the financial performance of

the Mexican corporate firm or its capital structure requirements. Has it impacted Mexico's commercial environment in a positive or negative way?

Local companies have responded to this new environment by adopting new ways of approaching their customers, developing new strategies of competing against their challengers, and spurring the creation of new products. Foreign Direct Investment (FDI) from USA and Canada into Mexican economy has completely transformed its commercial landscape and greatly influenced the way the local companies introduces new products, new services, sought out new markets and/or explored associations with its new competitors. But, not all strategies worked as successfully as expected. We sought answers to the question: which strategies adopted by Mexican publicly traded companies were linked to financial success and which strategies unsuccessful?

In exploring this question, we took into account that any new strategy had to have required the accommodation of the company's actual resources (i.e. their change in assets and liabilities), sought to understand whether any strategy impacted the company either positively or negatively, and analyzed the financial performance of a company over several fiscal periods. This permitted us to deduce how and what strategies were successful and identify how and where those resources were utilized by the company's management. Under the emerging market context, we asked what kinds of strategies were successful and did the type of capital structure utilized by the company relate to their success or failure.

Overall, the purpose of this paper is to explore the Mexican public company at two levels, first explored whether there was any financial improvement before and after the NAFTA and the globalization process at Mexican Stock Exchange (MSE), overall system analysis. The second level is at company or case level, we investigated several firms with either outstanding financial success or poor financial performance looking into whether there were associations between financial performance and the implementation of a descriptive strategy used by the various firms during the relevant time frame. Then, at the MSE level we examined whether the developments of NAFTA and increased globalization affected specific industrial sectors or firm performance, and whether it has impacted the capital structure of various Mexican industrial sectors and the Mexican firm.

We selected various types of companies looking for a relationship between financial performance and strategy. What kinds of strategies were adopted by different firms? Is there *any* relationship between management strategy, capital structure or ownership structure? We divide the paper in two parts: first section describes the commercial environment of Mexico both before and after the economic liberalization process. In that section we examine three major changes the MSE has experienced during the last two decades. 1) reforms related to reporting of economic and financial data, 2) new regulations, and 3) changes relating to how companies' capital structure and competitiveness have been transformed. Second part is dedicated to describes our research methodology, empirical results and discussions. Our Chart 1 synthesizes our research approach.

PREVIOUS RESEARCH AND DESCRIPTION OF THE MEXICAN COMMERCIAL ENVIRONMENT IN CONTEXT.

Mexico is defined as an emerging economy because; during the past three decade it has experienced rapid growth of its low income population. Mexican government and authorities has attempted to improve its situation by adopting several economic and regulation reforms, including economic liberalization, signing several trade agreements and overhauling the financial market and banking industries with reforms and safeguards, see (Aaron Tornell, Westermann, & Martínez, 2003). Additionally, domestic companies have faced increased competition, poor access to new capital due to reforms in financial markets and banking sectors, and has had to rapidly adjust to new regulation regarding governance practices and transparency in financial information. The government intended for these changes to improve the entire economic system, affecting both private companies as well as publically traded companies (R. E. Hoskisson, Eden, Lau, & Wright, 2000). This section describes the way of Mexican authorities has modified the economic environment, regulation and the impact to public companies traded into the MSE.

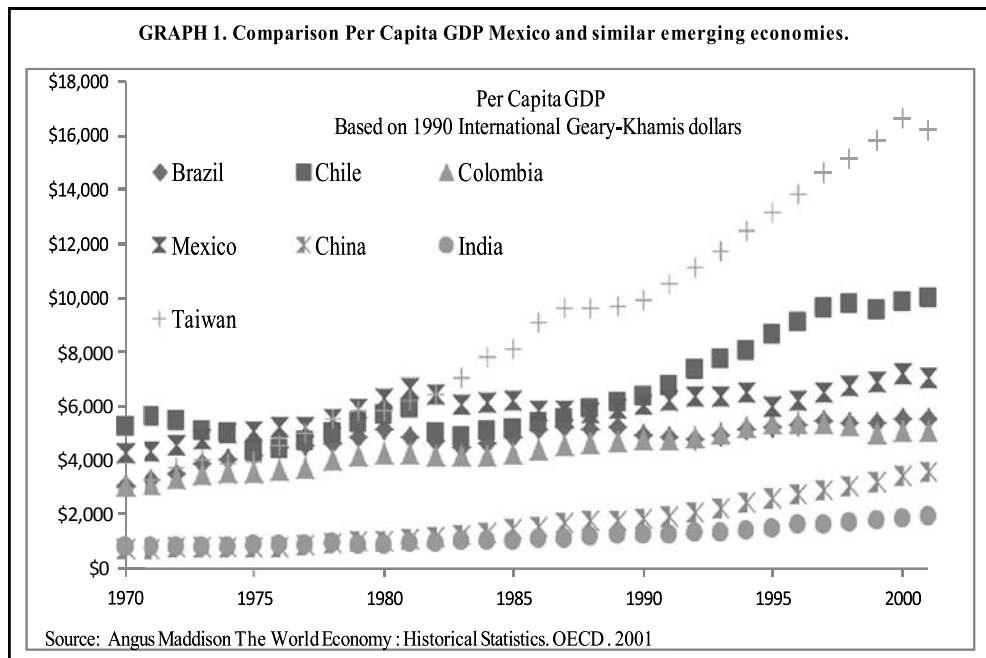
Mexico can be basically described into three most important concepts and processes, it is an emerging economy, the economy is embedded into globalization process and into more open democratic process, and the interrelation between these factors is the result for the actual economic, social and political situation. The first concept it is an emerging economy because the economy still has enormous potential to growth, with a population over 110 million, and \$US GDP per capita above \$6K it's still attractive to many multinational companies (globalization process), in terms of market size, consumer cultural level, product competition, labor cost and opportunities to growth (Garten, 1998). But when we analyze carefully the economic performance there is still so much to improve, compared with similar Latin American countries or other emerging economies (with democratic processes) we can concluded the economy has not improved compared with similar countries (Arias, Azuara, Bernal, Heckman, & Villarreal, 2010). See Graph 1 and Table 1.

Year	Brazil	Chile	Colombia	Mexico	China	India	Taiwan
1970-2001	2.03%	2.25%	1.64%	1.67%	5.08%	2.70%	5.71%
2000-2010	4.62%	5.03%	N/A	4.69%	12.02%	7.93%	N/A

Source: OECD iLibrary. N/A not a OECD member.

The second concept is because now Mexico is part of the global economic environment, Mexican authorities has basically changed the entire economic system, taken three major decisions during the last two decades, those decisions were related with opening the economy to foreign competition, changed the entire banking and financial system and improved regulation and transparency to the MSE. The reasons for each decision were different but echoes remains

today. First, Mexico entered into the globalization process signing first in 1988 the General Agreement on Tariffs and Trade (GATT) and later, to intensify economic liberalization process joined in 1994 the NAFTA agreement with the near counterparts, the second decision was made because the Tequila economic crisis during 1995, during this period the country reform the entire financial and banking system to avoid economic crisis in the future and the last decision was to promote new ways to finance public companies using MSE as major mechanism in 2001. We explain the impact and importance of globalization process including trade agreements and the regulatory changes to the MSE and finally the impact to the Mexican economy.



NAFTA and all trade agreements joined by Mexico have redesigned the entire production and competition system, the foundations of the agreements were to increase and promote trade, competitiveness, foreign investments and labor. Also at the same time specifically NAFTA was designed to decrease in the long run the wealth concentration in Mexico, see (Tanski & French, 2001). The agreements were an outstanding success, according with the Office of United States Trade Representative, official web site, a big picture about the importance United States imported (goods and services) from Mexico in 1994 US\$60.3 and in 2011 all imports accounted US\$277.1 billion dollars, all exports during same period, started in US\$62.1 and ended in 2011 in US\$223.1 billion dollars.

During the last 20 years Mexico has profited from all trade agreements, especially in the concept of direct foreign investment (FDI) due to the attractiveness of the size of the economy and population; Initially under the NAFTA agreement, Multinational Enterprises MNE used the

advantage of cheap labor and transportation cost, the basic process was to produce products in Mexico and export to USA and Canada but eventually MNE started producing their products in Mexico and take the advantage of the local market see (Meyer, 2004). This process triggered enormous inflows into the Mexican economy and promoted several specific industrial sectors. Table 2 and 3 shows major impact after trade process agreements; two sectors were transformed during this period, Manufacturing and Service Sectors.

FDI by Industry	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	Average
Agriculture and Fishing	\$ 97	\$ 95	\$ 99	\$ 15	\$ 41	\$ 16	\$ 21	\$ 144	\$ 52	\$ 31	\$ 64	0.3%
Mining and Quarrying	\$ 166	\$ 12	\$ 265	\$ 139	\$ 303	\$ 212	\$ 433	\$ 1,683	\$ 4,734	\$ 831	\$ 918	3.8%
Manufacturing	\$ 10,119	\$ 5,943	\$ 8,696	\$ 9,633	\$ 13,872	\$ 11,050	\$ 9,971	\$ 13,556	\$ 7,794	\$ 5,619	\$ 11,413	42.7%
Electricity Gas and Water	\$ 134	\$ 333	\$ 447	\$ 340	\$ 262	\$ 195	\$ (85)	\$ 180	\$ 473	\$ 59	\$ 3	0.9%
Construction	\$ 217	\$ 338	\$ 521	\$ 143	\$ 458	\$ 294	\$ 443	\$ 2,316	\$ 1,035	\$ 702	\$ 134	2.6%
Total Services	\$ 5,407	\$ 25,584	\$ 17,137	\$ 10,120	\$ 11,603	\$ 14,042	\$ 9,077	\$ 12,416	\$ 13,348	\$ 8,413	\$ 6,760	53.1%
Total	\$ 18,110	\$ 29,859	\$ 23,921	\$ 18,538	\$ 24,818	\$ 24,276	\$ 19,953	\$ 30,514	\$ 26,565	\$ 15,829	\$ 19,792	100.0%

Source: OECD iLibrary web page. Numbers are \$US dills in millions.

From 2000 to 2010 NAFTA trade and liberalization process has promoted inflows to Mexico at average rate of 78% from its total FDI and those inflows were concentrated into Manufacturing and Services sectors in 95%, these numbers indicated important changes in how local firms competed, how labor was educated, how consumer consumption patterns was changed and how the economic system was transformed.

Mexican globalization process triggered a series of events, that changed how and whom ran businesses in Mexico. Everything started formerly with GATT and later with NAFTA and other European Union (EU) agreements, the economy opened into free competition market gradually, even so the entire process took almost decade (until 2001) to be absorbed and digested by the local companies and eventually to understand the complete force of the event. But the event also triggered different additional changes, specifically in how the additional investors and financial institutions were protected (Franck, 2007).

Mexican authorities started to improve regulation and changed laws related to the investors protections in 2001, issuing by the Mexican Security Exchange Commission (Comision Nacional Bancaria y de Valores, 2000) the "Code of Corporate Governance" CGC, this new regulation was consisted to improve how businesses were managed and how companies disclose financial information, basically CGC included new corporate governance practices, new management procedures to follow, additional minority shareholders protection and more rigorous financial and business information to disclose. The CGC was an adaptation of the worldwide regulation trend related to transparency and minimize potential damage to the minority shareholders due to unethical behavior of the managers and asymmetrical information problem, the CGC code was adopted for the entire MSE during two year process.

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	Average
All OECD Member	\$ 17,544	\$ 29,015	\$ 23,437	\$ 18,187	\$ 24,449	\$ 21,295	\$ 19,392	\$ 28,316	\$ 24,655	\$ 15,406	\$ 19,247	100%
NAFTA (USA and Canada)	\$ 13,671	\$ 22,466	\$ 13,374	\$ 9,183	\$ 9,785	\$ 12,162	\$ 13,527	\$ 12,922	\$ 14,094	\$ 8,787	\$ 6,491	78%
Mercosur (1)	\$ 70	\$ 29	\$ 11	\$ 31	\$ 78	\$ 598	\$ 80	\$ 47	\$ 132	\$ 133	\$ 349	0%
European Union (2)	\$ 3,239	\$ 6,301	\$ 9,760	\$ 6,168	\$ 13,019	\$ 8,373	\$ 6,528	\$ 14,152	\$ 9,780	\$ 6,096	\$ 12,238	18%
European Free Trade Association	\$ 150	\$ (172)	\$ 476	\$ 2,604	\$ 1,167	\$ 331	\$ 588	\$ 631	\$ 209	\$ 147	\$ 189	1%
Total FDI By Economic Zone (4)	\$ 17,131	\$ 28,624	\$ 23,620	\$ 17,986	\$ 24,049	\$ 21,465	\$ 20,723	\$ 27,752	\$ 24,215	\$ 15,163	\$ 19,267	98%

Source: OECD iLibrary web page. Numbers are \$US dills in millions.

(1) Argentina, Brazil, Paraguay, Uruguay.

(2) Austria, Belgium, Bulgaria, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy

(2) Latvia, Lithuania, Luxembourg, Malta, Netherlands, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, United Kingdom

(3) Iceland, Liechtenstein, Norway, Switzerland

(4) Not included minor FDI from not OECD members

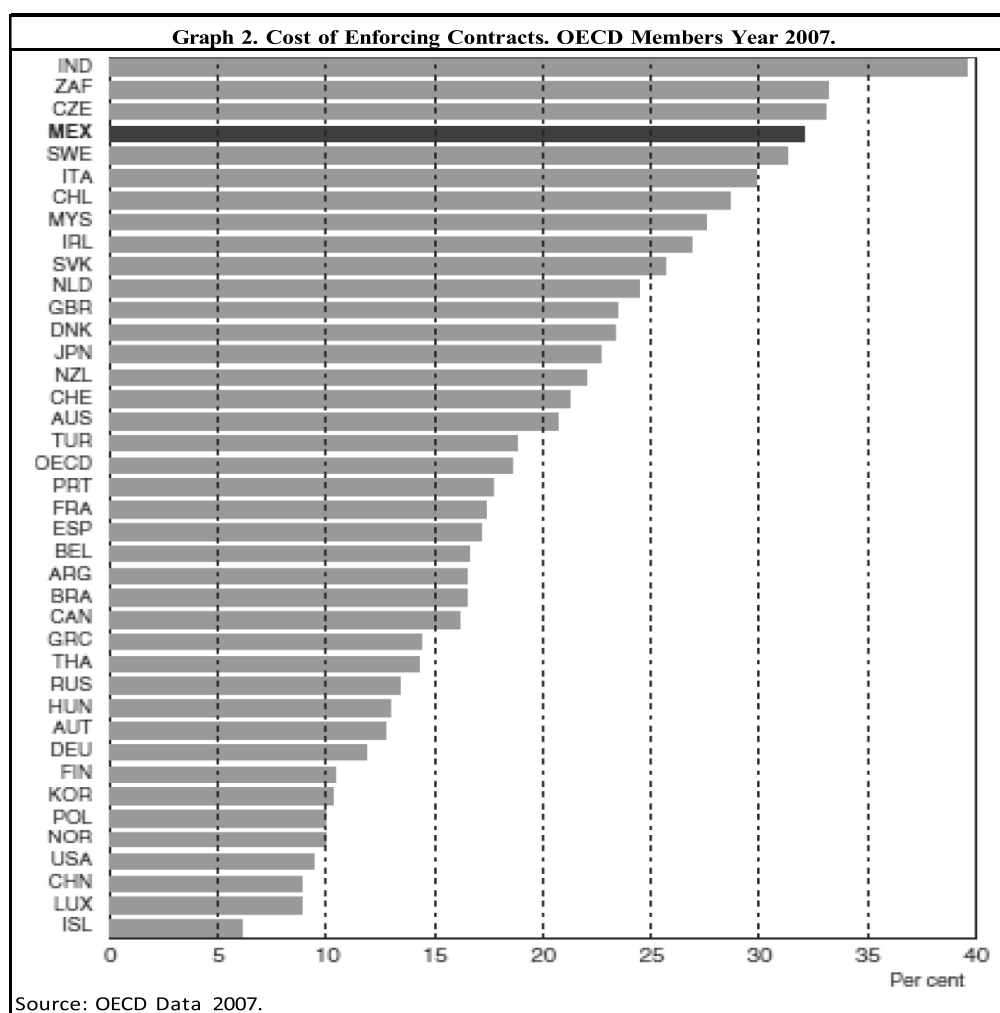
Later as part of the worldwide regulation process (Comision Nacional Bancaria y de Valores, 2005) adopted additional restrictions and regulations to improve transparency and information disclosure to the public companies. The logic behind all these new standards of regulations and improvements in law was to increase the capital inflows and promote FDI. Many companies of the MSE were forced to change how to inform and disclose additional information to the shareholders and how the businesses were managed.

But new laws and reforms were only related to the MSE (only for public companies) not to private companies neither to the institutional and financial private investors, changes in law were only partially and also insufficient compared with the NAFTA counterparts see Graph 2 and at the end of the document Table 6. Changes in investor protection and business law helped MNE and institutional investors to do business in the country rapidly and in efficient manner, also helped to increase the relational business contracts (Law enforcement) and stabilized the investment risk and return in the long term, but wasn't sufficient to overcome other emerging countries.

The Mexican authorities have dealing to change and reform business law and improve protection to the shareholder due to the economic impact of MNE into the Mexican economy, nevertheless recent data suggest that there is so much more to improve, and related with contracts and how the law is enforced in terms of economic cost Mexico is not gaining the pace against other Latin America countries, see Table 6.

Mexico was enrolled in a series of regulatory and legislation changes due to globalization and trade openness, one important change was related to governance practices and the issued of the CGC. The main idea was to follow the general governance practices from the Organization for Economic Cooperation and Development (OECD), members of this organization follows series of guidelines and practices related to corporate governance, transparency and investor protection practices, (Organization for Economic Cooperation and Development, 1995), and Mexico as new member was not the exception. According with (Porta, Lopez-de-Silane, Shleifer, & Vishny, 1998) the relationship between Agent and Principal is affected externally and

internally, inside the firm there are several legal and regulatory mechanisms that assure the investors' interest and minimize moral damage. But also outside the firm, legal system, regulation of the financial markets and transparency also affects the corporate governance practices. This interaction between internal and external variables varies in every country and there is cause and effect between those variables and the economic development of the country.



In this case, Mexico economic plan was to promote FDI and economic development, and there were several factors that affected how the businesses were financed; basically there was a positive relationship between ownership structure, management and business performance, and to promote development authorities promoted a series of changes in law to improve transparency, minority protection laws and improve the MSE as whole. According with (Nenova, 2009; Porta et al., 1998; Santiago-Castro & Brown, 2007b) ownership structures can be mainly

related to shareholders protection, how the financial market is regulated and the overall efficiency of the legal system.

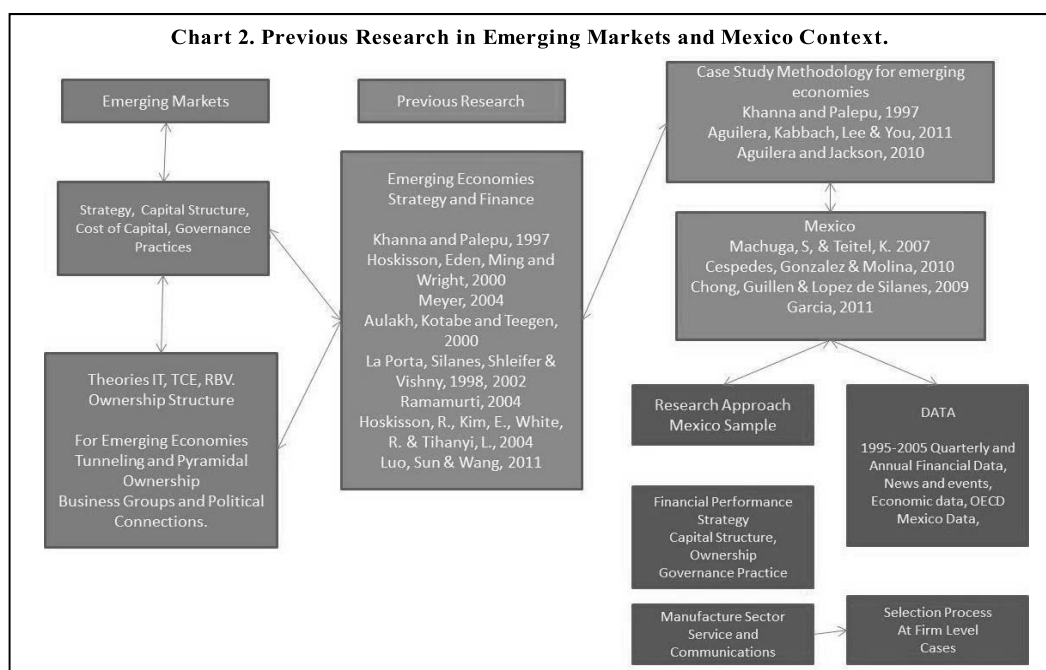
Moreover, ownership seems to be one important factor in emerging economies; According with (R. V. Aguilera, Kabbach-Castro, Lee, & You, 2011) during the last two decades public companies and how they practice corporate governance specially ownership structure have had changed dramatically adapting and adopted new regulatory and accountability structure, there is a common path across the entire emerging countries, the processes and structures controlling the firm had changed remarkably. Specifically, due to the speed of the economic expansion suffered by the emerging markets and in this case Mexico, those economies had experienced additional infusion of new capital from developed countries, this process has triggered a major shift in management practices to the local firms.

During the process to be competitive against global economies and multinational corporations, companies from emerging economies promoted a complete inside out firm transformation and competitiveness and to do so increased the use of debt instead equity, the reasons were based on tax purposes, bankruptcy and shareholder control rights. According with (Céspedes, González, & Molina, 2010) explored the same path in Latin America in seven countries, the conclusion was a positive relationship between leverage (use of debt), ownership structure (shareholder control) and low financial performance.

RESEARCH METHODOLOGY

This research is concerning with the following questions, first, How the globalization process and specifically NAFTA new trade agreement in Mexico has affected performance and capital structure for the public companies in Mexico using the MSE?, second What kind of successful and unsuccessful strategies were adopted by different companies during this process?. Third; is there was any relationship between how firms designed and implemented business strategies and the relative ownership structure? In order to explore some answers we identified three major important elements and limitations that were embedded in our research methodology, first was the limitation of accessing the data like any emerging economies study (data statistics and standard information), as described in the previous section Mexico has adopted different ways to promoted economic growth and competitiveness. Second the timeline, this process (globalization) took more than one decade and affected the way of how local companies compete (longitudinal analysis), and using business strategic analysis is one important answer to promote business performance and to understand the adaptation process of new competition, third also setting new strategies and new ways to compete were related with financial performance (Case study methodology). Chart 2 describes how these three elements have been explored in the past on the Mexican economy context. Due to the limitations of the Mexican context, we opted to use first statistical analysis of financial data and later using Case study methodology.

Our research begins describing the MSE and how is integrated by industry and the number of companies by sector. We selected those companies with at least 10 years financial data, traded at least into the MSE and not be related with bankruptcy or Chapter 11 process, as a result we started our data analysis with 55 companies and 44 financial quarters resulting in 2624 observations. For our research we used financial data from 1995 to 2005, quarterly data and firm annual reports, due to the long term analysis we excluded the inflation effect in all the financial data; our data was extracted from Economatca, Bloomberg, official site MSE, “Infosel Financiero” and “El Financiero” which were the major financial and economic sources in Mexico, the universe of companies holds up to the 45% of the MSE in terms of capitalization.



Our period of analysis was from 1995 to 2005. Table 4 describes the results of selected companies out of 90 companies, we excluded from our analysis the Financial Sector, Banks and Financial institutions because this sector suffered a major overhaul during the 90's and the resulting changes experienced a major shift in ownership and regulation conditions, now financial sector is owned above the 80% from MNE.

In terms of economic importance, Table 4 represent above the 45% of the MSE not including banking sector. We redesigned this table because we wanted to identify specifically how FDI affected the industrial and service sector see also Table 2; previous section described the impact of the FDI in manufacture and services sectors, using OECD classification. At the first glance FDI can affect the entire context, economically, social, educational and cultural conditions for the country which have had inflows from MNE organizations, according with

(Ramamurti, 2004) FDI can change the way the industry sectors can operate compared with the global rules and also how locals can be turn into MNE. Locally we explored several firms which were part of the most FDI inflows industry sectors, services and manufacture.

Sector / Industry	Companies	LC*	FSC**
Retail	14	14	
Communications	4	1	3
Building and Construction	9	6	3
Manufacture	15	11	4
Others	7	4	3
Mining	3	3	
Services	3	3	
Total Companies	55	42	13

* Local Company ** Foreign Stock Company

The classification from INEGI which is the Official department of economic and statistic in Mexico it consolidated all the economic data into three major components, primary, secondary and tertiary. Manufacture sector was classified into the primary sector and into our Table 4 classification the manufacture industry experienced 15 public companies, 11 domestic and 4 non domestic or MNE. We changed the composition of the Service Sector because is on the tertiary sector, in our Table 4 includes Service, Retail and Communications, in our analysis we included as well some of the companies from those sectors. As a result, as affected industries we concentrated our research only in manufacture and service sectors, the resulting redesigned Table 5 describe in detail both sectors at level firm.

Manufacture*	LC / FSC	Commercial**	LC / FSC	Communications**	LC / FSC
Bachoco	LC / FSC	Alsea	LC	Cintra	LC
Bafar	LC	Benavides	LC	Radio Centro	LC
Bimbo	LC	Collado	LC	Telmex	LC / FSC
Femsa	LC / FSC	Comerci	LC	Televisa	LC / FSC
GCorvi	LC	Coppel	LC	TMM	LC / FSC
Geupec	LC	Elektra	LC	TV Azteca	LC / FSC
Gmodelo	LC	Fragua	LC	Services***	LC / FSC
Gmodern	LC	Gigante	LC	CMR	LC
Gruma	LC	Liverpool	LC	Posadas	LC
Herdez	LC	Marti	LC	Realtur	LC
Hilasal	LC	GPH	LC		
Kimberly	LC / FSC	Saba	LC		
KOF	LC / FSC	Soriana	LC		
Minsa	LC / FSC	Walmart	LC / FSC		
Maseca	LC	* Primary Manufacture			
Valle	LC	** Tertiary Commercial,			
Vitro	LC / FSC	**Communication and Services			

Our first question was related to how the globalization process and NAFTA agreement in Mexico affected performance and capital structure at MSE level, at industry level and also at level firm? We defined the period of analysis based in two reasons, first we wanted to explore the effect of all trades signed by Mexico during certain period of time it means GATT, NAFTA, EU and later others minors trade agreements with different countries in Latin America but there were signed in different several years and all affected gradually, we discover that 2001 was the year that mostly all trades agreements were working at full capacity in the economy, also during same year were implemented major regulations and changes in law related with governance practices (CGC) transparency and more modern management practices, finally we wanted to explore a long longitudinal analysis due to implementation of the case study methodology as the final step in our research.

Second, we defined financial performance, using the Appendix 1 Financial Ratios using mean and variance for each ratio and applied to the Table 4 our initial universe of companies, also we calculated the financial data during 10 years period, then we compared two periods EXANTE and EXPOST, EXANTE period covers 1995-2000 and EXPOST 2000-2005 respectively, to test our Hypothesis we use T Test mean and variance samples comparison. Previous studies using either emerging economies as context or case base analysis studies suggest some of the ratios used in Appendix 1, see (Chong et al., 2009; Machuga & Teitel, 2007). We calculated the ratios using financial quarterly data and annual data, also all ratios were calculated without the inflation effect, real financial data. The alternative hypothesis should describe if there is any difference between the previous period compared with the after trade agreement process, the hypothesis was tested at MSE level, industry and firm level.

H0 For every company, there is NO difference in Financial Performance, between EXANTE and EXPOST periods.

We used Appendix 1 to identify the relative financial performance related with business, such sales, margins, net profits, operative income or to identify how was the relation between assets and liabilities or capital structure, we measured all ratios quarterly and we compared the previous and post period of trade agreement process.

Table 4.1 confirms previous studies and answering question one, on the overall results companies traded into the MSE were getting less financial performance and used more debt, for the study of 55 companies on the overall the debt ratio (DR column on Table 4.1) was move from 87% to 125% translated in 43 companies using more debt for the period of analysis, only 12 companies remained with the same capital structure from previous and after trade agreement process. At MSE level, all performance ratios, using ROE, ROA, % Sales, MGN and NI were below compared with the previous period before the NAFTA agreement. Also the two most important ratios related with capital structure were DR and DER, both increased during the same period of time. The GDP for the same period was also with similar results.

Table 4.1 Trades and MSE financial results comparison before and after agreements.									
Variables / Time Period	All Sectors								GDP*
	ROE	ROA	% Sales	MGN	NI	(NI / S)	DR	DER	
Exante Mean Before Trades	11.1%	4.6%	12.2%	14.3%	75.2%	10.1%	43.2%	87.8%	3.5%
Expost Mean After Trades	7.2%	3.2%	6.7%	11.9%	60.9%	13.4%	50.5%	125.4%	1.9%
Std Dev EXANTE	0.04	0.00	0.05	0.00	11.60	0.07	0.01	0.20	0.05
Std Dev EXPOST	0.01	0.00	0.02	0.00	6.08	0.42	0.00	0.05	0.02
N Exante	1384	1384	1335	1384	1335	1376	1384	1384	23
N Expost	1240	1240	1240	1240	1240	1240	1240	1240	20
All Observations	2624	2624	2575	2624	2575	2616	2624	2624	43
Mean	10%	0.04	10%	13%	68%	12%	47%	106%	2.8%
Median	9%	0.04	5%	13%	5%	10%	47%	103%	3.2%
Std Dev	19%	0.06	26%	6%	480%	31%	10%	53%	4.1%
Min	-117%	-36%	-37%	-6%	-1594%	-138%	18%	-295%	-9.2%
Max	142%	29%	142%	37%	4072%	812%	73%	391%	8.4%
Statistical Significance Accepted H Alternative**									
	ROE	ROA	% Sales	MGN	NI	(NI / S)	DR	DER	
Accepted H Alternative**	29	25	22	38	7	30	43	42	
H Alternative	26	30	33	17	48	25	12	13	
Total	55	55	55	55	55	55	55	55	
* GDP Gross Domestic Product, * Using alpha .05.									

We test every H0 at level firm, majors changes were related with MGN, DR, DER in the case of MGN 38 companies out 55 decreased the Margin Profits and using DER ratio more than 42 companies out 55 used more debt compared with the previous period of analysis. However, at industry levels those numbers seems to appear completely different, for example communication sector perform very similar in terms of financial performance but using consequently more debt. These results help us to determine that the majority of the MSE companies were losing financial performance and at the same time changed the capital structure.

Part of the explanations was based on the globalization process and economic stability that allows to use additional capital at low cost as is in the counterparts US and Canada public companies (Booth, Aivazian, Demircuc-Kunt, & Maksimovic, 2001). But lastly the MSE have faced one of the most important limitations, the number of public companies has decreased and so the access to new capital according with (Machuga & Teitel, 2007) regarding regulation and later (Chong, Guillen, & Lopez-de-Silanes, 2009) regarding the systemic lack of additional capital and (Garcia, 2011) related with poor performance and regulation effect in the long term.

Also other different explanation was local companies has faced different strategies to kept the business running and at the same time being profitable to the shareholders (Robert E. Hoskisson, Johnson, Tihanyi, & White, 2005), as a result triggered a major shift in some industries and the level of competition forced some companies to lost market share and financial performance (Chacar & Vissa, 2005). This new approach motivated local companies to set and design new strategies and compete against new products and services, new quality standards, more competitive prices and new competitive standards that had have never experienced by the local consumers and producers (Dominguez & Brenes, 1997).

Table 4.1 Continue by industrial sector								
	Manufacture							
	ROE	ROA	% Sale	MGN	NI	(NI / S)	DR	DER
(1)	12.8%	5.8%	7.4%	12.7%	56.6%	8.7%	36.9%	71.5%
(2)	8.4%	4.0%	5.3%	11.1%	47.5%	5.9%	45.1%	102.0%
	Services							
	ROE	ROA	% Sale	MGN	NI	(NI / S)	DR	DER
(1)	-0.3%	1.8%	7.4%	16.6%	-17.3%	0.9%	39.5%	94.3%
(2)	2.7%	1.4%	2.3%	12.0%	2.3%	5.0%	40.0%	77.0%
	Communications							
	ROE	ROA	% Sale	MGN	NI	(NI / S)	DR	DER
(1)	9.3%	4.4%	3.9%	19.0%	71.2%	29.5%	49.8%	147.1%
(2)	12.1%	4.0%	5.1%	17.5%	73.9%	64.4%	62.9%	222.4%
(1) Ex ante Mean Before Trades (2) Ex post Mean Before Trades								

There were no changes in capital structure without the revision and analysis of the board of directors, also changes in capital structure reflect changes in ownership control, transparency and corporate governance practices, with or without new regulation, in this process we wanted to understand much better how firms actually adopted new strategies and how financial performance was obtained. According (Ruth V. Aguilera & Jackson, 2010) after a deep comparative studies cross countries, multidimensional and different theory paradigms, found out the best way to understand the governance and ownership structure relays in adopting multidimensional approach, using economics, management, cultural, sociology, legal and political domains and the best way to approach the problem is using case study analysis and historical approach.

Our second question was related with the strategic analysis of the firm, we wanted to know what kind of strategies were used for companies with outstanding financial performance and also on the other hand we wanted to explore companies with unsuccessful financial results and the related strategy used, previous studies in emerging markets applied at firm level were considered (Parnell, 2006) regarding how generic strategies are used in emerging countries, and later (Nandakumar, Ghobadian, & O'Regan, 2011) regarding same generic strategies applied by the maquila and manufacturing sectors. In order to obtain logical and valid results we were motivated to move our research methodology from quantitative statistical research methodology to case by case analysis or more qualitative data, it was mean to explore descriptive and qualitative data at firm level using same period of analysis developed during the first question. In order to find potential answers, it was required to divide this step research process in two phases; the first phase was to discriminate the average performance companies selecting the best and worst financial performers. The second phase was the analysis of what were the strategic and competitive actions used during the period of analysis and the ownership structure held during the same period of time.

Variables*	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Manufacture Mean	11%	5%	6%	12%	50%	7%	41%	86%
BACHOCO	14%	11%	10%	12%	55%	12%	21%	27%
BAFAR	23%	13%	19%	9%	22%	9%	40%	80%
BIMBO	8%	5%	8%	8%	17%	4%	41%	74%
FEMSA	8%	4%	12%	14%	28%	8%	47%	92%
GCORVI	11%	2%	4%	2%	26%	1%	61%	186%
GEUPEC	10%	4%	10%	10%	41%	7%	27%	41%
GMODELO	12%	5%	6%	25%	12%	16%	14%	17%
GMODERN	9%	4%	9%	14%	4%	9%	24%	31%
GRUMA	10%	2%	5%	6%	63%	5%	45%	86%
HERDEZ	11%	3%	3%	10%	22%	6%	47%	90%
HILASAL	15%	9%	5%	17%	103%	12%	48%	99%
KIMBERLY	22%	11%	3%	28%	110%	17%	47%	93%
KOF	17%	8%	19%	15%	28%	8%	52%	113%
MASECA	10%	4%	-1%	11%	2%	9%	21%	27%
MINSA	-6%	-1%	-7%	4%	87%	-3%	40%	73%
VALLE	3%	1%	8%	6%	136%	2%	50%	114%
VITRO	5%	0%	-7%	13%	89%	2%	68%	221%
Service Mean	3%	2%	5%	14%	-8%	5%	38%	81%
CMR	3%	2%	5%	6%	-58%	3%	22%	30%
POSADAS	7%	4%	7%	21%	29%	12%	56%	129%
REALTUR	-2%	0%	3%	15%	4%	1%	36%	83%

* (1) ROE, (2) ROA, (3) IS, (4) MGM, (5) NI, (6) NI/S
(7) DR, (8) DER.

In order to perform the first phase, we calculated eight most important financial ratios from 1995 to 2005, used in previous studies; we did select sixteen companies out 55 including the best and the worst financial performers using only manufacture and service industries. Previous researches to the MSE suggest the use of several financial ratios or financial statements can help to identify the historical financial performance of the firm, (Chong et al., 2009; Machuga & Teitel, 2007). See Appendix 1 for the definition of every variable, to select the companies first we calculated the average industry of eight ratios using only public companies for 10 year period, then we compared the results between industry and firm level.

After the first phase, the discrimination process Table 7, we selected those companies with the highest and lowest financial ratio results. For example the average industry ROE (Table 7, column 1) ratio for manufacture industry was 11%, across all firms there were some firms with negative average ROE ratio like MINSA or REALTUR, but also we found out companies with outstanding ROE ratio like BAFAR, KIMBERLY and KOF. The idea was to identify those companies were all eight ratios were better or worse than the industry average. At the end of the document Table 8 shows the companies that perform (I) as improved or (W) as worst performance compared within the industry average ratio.

Table 7. Performance comparison (Continue)								
Variabes	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Comercial Mean	16%	6%	18%	6%	70%	4%	45%	78%
ALSEA	14%	9%	22%	11%	33%	10%	33%	51%
BENAVIDES	8%	4%	2%	3%	79%	3%	56%	140%
COLLADO	18%	7%	17%	7%	63%	5%	60%	161%
COMERCI	11%	6%	1%	3%	46%	4%	44%	81%
COPPEL	14%	7%	20%	12%	41%	7%	49%	108%
ELEKTRA	65%	-2%	112%	3%	-2%	-8%	82%	18%
FRAGUA	23%	14%	17%	6%	19%	5%	41%	76%
GIGANTE	7%	4%	-1%	3%	127%	3%	37%	61%
LIVEPOL	8%	5%	8%	7%	110%	5%	37%	62%
MARTI	8%	5%	13%	10%	61%	6%	42%	76%
GPH	4%	2%	5%	6%	335%	4%	40%	69%
SABA	13%	7%	5%	4%	30%	2%	50%	106%
SORIANA	14%	10%	15%	6%	27%	6%	31%	47%
WALMART	12%	8%	10%	5%	10%	6%	28%	40%
Comunications Mean	10%	4%	4%	18%	62%	43%	57%	192%
CINTRA	-10%	1%	-3%	1%	26%	-1%	72%	316%
RCENTRO	1%	1%	5%	15%	71%	208%	25%	38%
TELMEX	24%	12%	4%	35%	19%	21%	45%	103%
TELEVISIA	7%	3%	2%	17%	105%	9%	57%	135%
TMM	16%	2%	10%	9%	68%	5%	70%	264%
TV AZTECA	24%	6%	8%	33%	84%	17%	74%	297%
* (1) ROE, (2) ROA, (3) IS, (4) MGM, (5) NI, (6) NI/S (7) DR, (8) DER.								

Table 7 include forty companies, with eight financial ratios, comparison between industry 44 quarterly average ratios and for the same period the firm ratio average, there were more companies with less average industry performance across the analysis, it means for example using variable 1, ROE out of 40 companies just 15 companies improve or perform better than the industry average. The only exception was the DER variable, which improved 22 companies out of 40. We consider those companies with exceptional positive and negative performance, in different industries and available data to analyze.

Table 8; describe how at firm level, financial performance was compared within the industry, there were companies with not improvement at all like CMR, CINTRA, SABA where financial ratios were far away from the industry standard. Also we found out, outstanding financial results where all ratios were above the industry standard, like BACHOCO, GMODELO and ALSEA. This process helps us to determine if there were a substantial different strategy used by the firm in different environment and financial conditions.

The second phase was consisted in analyze the strategic and competitive actions made during the period of analysis in order to identify the most important events in terms of strategic and competitive actions, we include five more variables to identify those financial performance changes that were linked to strategic decisions, we ran the statistical data at firm level and then

we calculate for each variable the matrix correlation in order to identify any inconsistency in the data. All descriptive statistics and matrix correlations by firm are on Table 9 we include just one firm example due to space limitation.

The statistical data at firm level and the ratio correlation matrix (Table 9) helped us to identify the robustness of the financial data, we found out firms with the typical performance relationship or typical economic function, example positive sales, better margins or net income improvement translated into better use of resources or return on assets or equity, examples related BACHOCO, GMODELO and ALSEA. But also given the long period of analysis we found out incongruities' in the financial data, for example VALLE, VITRO and BENAVIDES matrix ratios correlations were extremely unexpected, we also found out that those companies with inconsistency financial data were acquired later for the competition, entered in a bankruptcy process or delisted process. We suspected within those companies the validity and consistency of their financial reports due to the long period of the analysis and the extreme unexpected negative performance, we also suspected that there was a clear systemic hole between the transparency of the information, governance practices and ownership structure.

After we selected the 16 companies described in Table 8, phase two was required to identify financial performance with strategy, we used two different kinds of variables, the financials using operative variables such, change % in sales, operative margins and change in net income. And variables linked to resources and how assets were financed, we used changes % in total assets, property plant and equipment and change % in debt ratio. We then pinpoint those major percentage changes in those variables greater than 10% compared with the previous year, either positive or negative then we include the longitudinal analysis of those most important variables.

We wanted to identify only major percentage changes (above 10%) for every firm case, we use the marginal 10% change due to several reasons, first ten percent was the average growth sales during the period of analysis for all companies traded into the MSE, also that was the average return on equity for the same period, second the Mexican economic growth for the same period was almost 3% we assume that any number above three times (means 9%) was consider outstanding. The main idea was to identify during ten years period how the most important changes in financial performance were actually linked to the description of the strategy and how was related financial performance within the strategy. Table 10 describes for each company where and which specific variables were changed during 44 quarterly financial data.

The diversity of the firms' population (16 different companies) describes how different path of financial data were disclosed and also the strategic decisions made during the period of analysis. For example, we found out firms with specific consistent path of any generic strategy and performance relationship, such new investments, new level of debt and then year's later increase again in sales, margin and profits. But also we discovered less overall performance during several cycles, none specific strategy description, not action or plan and new level of debt.

We found several companies, during several economic cycles or years with negative financial performance with no clear specific strategic description or path or actions to be followed.

Table 10 enable us, to identify specifically the most important financial changes during the last 10 years, also help us to identify the specific business and economic cycle for every firm, for example BACHOCO company increases activities investing or increasing assets and debt during 1996, 1998 and 2000, later financial results translated in more sales and better margins see 2000, 2004 and 2005. With this process in mind, we then identify which specific strategic actions were made during the same period of analysis. The example company was the typical business and economic cycle that is used in any business environment. We identified same patterns with GMODELO, ALSEA, more intense FRAGUA and VALLE, more stable and with less marginal effect KIMBERLY and TELMEX. We wanted to explore the explanations in strategic terms that were involved behind those financial numbers, we also wanted to explore how diverse were those strategic decisions and how different were the best strategic plans compared with companies with low financial results.

The strategies were different across the firms and industries, but at the end and after analyzing the Table 11, we realize that there was nothing completely different after all. Typical strategic actions were new products, increase in capacity, additional distribution centers, acquisition of competitor, mergers, expansions projects and fewer technology projects. We used descriptive strategic actions or strategy description at level firm in order to identify the typology or taxonomy involved, the descriptive strategic actions were according with the annual reports and the information disclosed by the company to the investors or the general public, everything were obtained from the company official annual reports.

Our results were according with (Luo, Sun, & Wang, 2011) companies in emerging markets can react accordingly with the level of institutional context, competitive and socio cultural conditions all embedded to provide systematic patterns. We found out just small variations in the taxonomy and typology of strategies across all firms, those variations we suspected that were also embedded with previous strategic decisions (Wright, Filatotchev, Hoskisson, & Peng, 2005) and capital structure (Rajan & Zingales, 1994), and due to different sectors (Campbell-Hunt, 2000). In the same line we found out strategies which were concentrated to reduce cost in different ways such the use of information technology, new investments in modern production technologies and new product and services, all according with (Aulakh, Kotabe & Teegen, 2000).

The MSE shows the typical taxonomy of (Miles, Snow, Meyer, & Coleman, 1978), at firm level we identified a variety of firms dedicated to operate properly with the economic environment, called reactors typology as well we found out defenders typology which include firms with narrow products and market domain.

Table 10. Principal Variations in Sales, Margins, Net Income, Total Sales, Property Plant and Equipment and Debt Ratio.							
Year	BACHOCO	GMODELO	ALSEA	KIMBERLY	FRAGUA	TELMEX	VALLE
2005*	.10-.17-4.27		.16-.11-.47		.18-.05-.39	.22-.29-.15	
2005**		.10-.06-(.05)	.29-.30-.33			.35-.18-.03	
2004*	.15-.04-(.25)		.22-.09-.48		.10-.04-.38		
2004**			.20-.34-(.11)		.15-.09-(.03)		(.16)-(26)-.08
2003*					.12-.04-.15		
2003**					.12-.07-.02		
2002*					.18-.04-(.11)		
2002**		.10-.05-(.35)			.16-.11-.07		
2001*					.27-.05-(.18)		.13-.07-1.31
2001**					.18-.11.22		
2000*	.55-.20-.61		.42-.13-.01		.23-.06-.02		.12-.03-.16
2000**	.27-.24-1.60		.21-.44-.14		.17-.09-.51	.12-(.14)-.50	.20-(.02)-37
1999*		.14-.24-.28	.60-.15-.39		.26-.07-.33		.24-.02-(2.09)
1999**			.71-.76-(.08)		.20-.10-(.02)		.14-.22-.02
1998*		.10-.22-.18			.33-.07-.38	.10-.39-.03	.31-.08-(1.10)
1998**	.19-.12-(.19)	.11-.09-1.17			.48-.21-(.09)		.27-.11-.13
1997*					.10-.07-.39		
1997**		.10-.00-.17			.09-.01-(.27)		
1996*	.16-.12-2.11						
1996**	.14-.20-(.13)			0.16-.18-(.10)			.14-.21-.12
1995*				.19-.27-.11			
1995**				0.33-.34-(.05)			.17-.55-.00
* Means the change in decimals for the variable during the annual period, for example BACHOCO year 1996, .16-.12-2.11 means increase 16% in Sales, average annual margin of 12% and increase 211% in net income.							
** Means the change in decimals for the variable during the annual period, for example BACHOCO year 1996, .14-.20-(.13) means increase 14% in Total Assets, increase 20% in PPE and (decrease) 13% in debt ratio.							

Also we saw firms with (Vesper, 1979) typologies such multiplication, which focused in expansion and multiply the market structures, also monopolizing which eliminates competition (buying or acquisitions), complicate the barriers of entry to new competitors and use and control of resources and finally the last typology was the specialization which included those firms with particular characteristic in products and services that allows to keep their markets. Also we found out the typical process of develop, stabilize, turnaround and harvest of the market structure extracted from (Herbert & Deresky, 1987). We discovered very limited strategies based on new products or innovation based strategies.

Table 10. Principal Variations in Sales, Margins, Net Income, Total Sales, Property Plant and Equipment and Debt Ratio. (continue)								
Year	VITRO	GCORVI	HERDEZ	BENAVIDES	COMERCI	SABA	CMR	CINTRA
2005*				.11-.02-1.85				(.31)-.00-(.13)
2005**								(.51)-(.65)-(.16)
2004*								.11-(.01)-.76
2004**							(.13)-(.13)-(.12)	
2003*								
2003**							(.13)-(.13)-.03	
2002*			.10-.13-.35	(.15)-.00-(.25)				(0.10)-(.04)-(.46)
2002**				(.21)-(.18)-.11				
2001*	(.15)-.11-.10			(.11)-.01-(.77)				
2001**				(.13)-(.10)-.12				(.11)-(.15)-.04
2000*		.13-.02-(.38)					.10-.04-(.82)	
2000**						(.20)-(.07)-(.01)		
1999*		.12-.02-.07					.20-.07-.07	
1999**						.16-(.03)-.15	.20-.25-1.46	
1998*		.15-.02-(.02)	.11-.10-(.45)		.12-.03-(.30)	.18-.02-(.71)	.15-.09-(.15)	
1998**		.12-.09-.00				.25-.12-.29	.12-.35-.55	
1997*			.15-.10-.29	.19-.03-(.57)				
1997**	(.23)-(.03)-(.01)		.14-.31.03		.17-.13-(.02)	.24-.31-.11		
1996*	(.20)-.18-2.76				(.11)-.02-1.31			
1996**	(.22)-(.16)-.05	.14-(.01)-(.01)		(.10)-(.08)-.03	(.13)-(.13)-(.03)			
1995*	(.21)-.18-(2.25)							
1995**								

Our third question, was related in how the dynamics of the business practices and financials, and the business strategy can be related with the actual ownership structure of the firm? According with Table 12 we display the ownership structure during the same longitudinal analysis in order to identify if was any relationship. Our rationale was if there is any good or bad strategy, or outstanding or poor financial performance then financial markets will reward or punish properly, selling the stock or affecting the ownership structure of the firm. We were wrong.

There were only few companies with more than 50% outstanding shares held by the public investors, also there was not significant change in this ownership structure during the period of analysis, and only few companies were publicly traded into the MSE for more than 30 years. The sample shows high concentration of ownership and low year experience in being public companies.

Table 11. How are related the Financial Performance with the Strategic Actions	
Description of the Strategic Actions Taken by the Firm	
BACHOCO	GMODELO
2005 Productivity projects and one acquisition	1998 New export strategies additional production capacity
2004 New Products, Cost Reduction Projects	1997 New production capacity
2000 Two Acquisitions, IT Projects, Price Reduction	TELMEX
2000 Cost Reduction and raw materials and energy	2005 New operations, acquisitions in Brazil, Chile and Argentina
1996 Investments in additional production capacity	2001 Operative expenses plan reduction, New internet services and data services.
KIMBERLY	1998 New price policy, new operations in USA
1995 Merger with competitor	GCORVI
VITRO	1998 New openings
2001 Production capacity and acquisition of competitor	1996 New distribution center and debt reduction
1996 Close several uniti business in Mexico and USA	COMERCI
1995 Tequila crisis, slow demand.	1998 Price competition
BENAVIDES	1997 Five new business units, expansion projects
2002 Aquired by FASA competitor from Chile	1996 Change in consolidation process, operative expenses reduction plan
2001 Looking for partnership	CMR
1997 Acquisition of one competitor	1997 New franchise and new business units.
HERDEZ	FRAGUA
1997 Acquisition competitor, Debt restructure	2003 New definition of busines, pharmaceutical and convenient stores
ALSEA	2001 Expansion opening culture, 10 openings every 10 days
2004 New openings, new franchises Starbucks and Popeyes in Mexico	2000 New openings
2000 New operations in Brazil, New Franchise, New logistic system, cost reduction, new distribution center.	1999 New price policy
VALLE	1998 New Generic pharmaceutical policy
1998 Acquisiton of one competitor	1997 New openings, new additional issue of public shares
1997 New competitor acquisition	
1996 Acquisition of one company not competitor same indus	
1995 New production capacity	

* No data were available for CINTRA and SABA

CONCLUSIONS AND AGENDA

The MSE faces two major problems, by one side there were companies with tremendous opportunities to expand operations in the local product markets and with exceptional financial performance and exceptional strategic advantage, those companies may consider explore additional use of external resources, typically additional financial debt and with low associate financial risk. But on the other side there were also firms with poor financial performance, with

Companies	IPO Year	1*	2**
BACHOCO	1996	17%	0%
GMODELO	1994	20%	0%
ALSEA	1999	20%	0%
KIMBERLY	1961	47%	0%
FRAGUA	1997	19%	0%
TELMEX	1990	60%	0%
VALLE	1996	23%	0%
VITRO	1975	34%	0%
GCORVI	1996	24%	0%
HERDEZ	1991	28%	0%
BENAVIDES	1993	24%	2%
COMERCI	1991	36%	0%
SABA	1993	15%	0%
CMR	1997	25%	3%
CINTRA	1996	38%	0%
1* % of shares held by public investors			
2** %Changes in public shares held by public investors from 1995-2005			

not strategic plan to face the future and with no options to obtain additional resources to compete. Also there were firms without vision to increase the number of investors inside the firm, with high financial risk and concentration of ownership. The path was similar across the MSE

Our findings were related with Mexican globalization process, strategy and performance. We explored several abnormal cases in order to explore and determine how are related those variables within the firm, industry and Financial Market level. Our analysis also triggered a series of additional questions to understand competitiveness and new regulation inside the firms. Our suggestions were divided in two parts, at firm level and MSE level.

We suspected that companies with low experience in being public must be educated to promote growth, implementing better governance practices and improve minority investor protection, more proactive than the actual law. Thus inside the firm, translate into better strategy implementation, more low risk investments, less financial risk and more competitive future. In terms of strategic implementation we found out very limited strategy plans or practices, we did not find any elaborated innovative products, services or ways to improve business or to simply compete.

We also raised several questions regarding the quality of the financial information disclosed by several business cases in our analysis, we found out not just one firm, several firms with substantial anomalies or “unexpected” business and financial results that cannot be sustained in a long period of time, but existed in our research. Then, we suspected about the systemic anomalies or legal deficiencies that actually the MSE has experienced without any notice, specifically the symptoms were clear, the number or public companies was decreasing in the last twenty years, and limited access to additional debt or capital and the dangerous combination of having less financial performance and increasing financial risk at the same time.

Additionally our research discover additional information related on if there was any difference between being local or MNE into the Mexico context, In term of financial performance the answer is NO for the MSE, Table 8 shows exceptional outstanding financial performance, ALSEA, FRAGUA, BACHOCO, and also poor financial performance, BENAVIDES, CINTRA and GCORVI all were local companies. In terms of strategy implementation and management skills, there was clear difference between being local and how they competed, FSC companies with operations in foreign countries or part of the bigger MNE were more stables, more traditional in terms of strategy implementation and transparency, the only company with poor financial performance, no strategy at all, high financial risk and high concentration of ownership was VITRO. Again there was a relation between the ownership structure, regulation and how the firm was managed.

ADDITIONAL TABLES AND APPENDIXES

Appendix 1. Financial Ratios (Variables) used to select the companies.	
(1) Return on Equity (ROE) = net income divided by total equity	
(2) Return on Assets (ROA) = net income divided by total assets	
(3) Increase in Revenues (IS) = % Change in revenues.	
(4) Operative Margin (MGN) = Operative income divided by total revenues	
(5) Net Income (NI) = % Change in Net Income before extraordinary items.	
(6) Income to Sales (NI/S) = ratio in % between net income and net sales.	
(7) Debt to Assets (DR) = ratio between total debt and total assets.	
(8) Debt to Equity (DER) = ratio between total assets and book value of equity.	
(9) % Change in Total Assets (TA) = % Change in Total Assets.	
(10) % Change in Current Assets (CA) = % Change in Current Assets.	
(11) % Change in Property Plant and Equipment (PPE) = % Change in Property Plant and Eq.	
(12) % Change in Debt Ratio (%DR) = % Change in Debt Ratio.	
(13) % Change in Debt Equity Ratio (%DER) = % Change in Debt Equity Ratio.	
* We add these variables for the strategic analysis. See Tables 9 and 10.	

Table 6. Investor Protection (7) comparison and Enforcing Contracts (10)											
Economy	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Colombia	3	12	9	28	4	10	1	13	16	25	1
Peru	2	8	20	20	1	3	2	9	8	17	16
Puerto Rico (U.S.)	4	1	30	10	20	3	2	15	19	11	4
Trinidad and Tobago	10	14	18	7	31	5	4	6	7	30	22
Chile	1	3	16	13	5	7	5	2	10	4	18
St. Lucia	5	7	4	2	15	18	5	3	24	27	8
Antigua and Barbuda	7	16	7	4	19	18	5	21	12	5	11
Dominica	9	6	6	18	16	13	5	7	17	28	15
Grenada	11	10	3	12	27	18	5	11	3	26	19
St. Vincent and the Grenadines	12	9	1	5	26	26	5	7	2	14	31
St. Kitts and Nevis	17	11	5	9	28	26	5	20	4	18	31
Mexico	6	15	10	30	25	5	12	14	9	8	2
Paraguay	19	18	12	6	7	13	13	19	31	16	26
Dominican Republic	20	23	21	24	13	13	13	12	5	9	27
Jamaica	14	2	11	22	11	18	15	30	18	22	3
Guyana	23	17	8	31	12	31	15	16	14	6	24
Brazil	26	19	24	15	14	18	15	26	26	19	23
Uruguay	15	5	31	1	29	10	18	28	28	15	7
Nicaragua	24	21	28	29	18	18	18	27	15	2	10
Panama	8	4	14	3	17	7	20	29	1	20	12
Bahamas, The	13	13	15	21	32	13	20	5	6	21	6
Argentina	22	24	32	17	24	10	20	24	20	1	13
Belize	16	27	2	16	22	18	23	4	23	29	5
Guatemala	18	29	29	8	2	1	24	18	25	11	17
Ecuador	28	28	17	26	8	13	24	10	27	13	25
Bolivia	29	30	22	25	23	26	24	31	29	24	9
El Salvador	21	22	27	27	6	7	27	25	11	3	14
Costa Rica	25	20	26	14	3	18	27	22	13	23	20
Honduras	27	26	13	23	10	1	27	23	21	31	21
Haiti	31	32	25	19	21	29	27	17	30	10	30
Venezuela, RB	32	25	23	32	9	32	31	32	32	7	29
Suriname	30	31	19	11	30	29	32	1	22	32	28

Source: The World Bank Group and the International Finance Corporation. Data 2011.
(1)Ease of Doing Business Rank (2)Starting a Business (3)Dealing with Construction Permits
(4) Getting Electricity (5)Registering Property (6)Getting Credit (7)Protecting Investors
(8)Paying Taxes (9)Trading Across Borders (10)Enforcing Contracts (11)Resolving Insolvency

BACHOCO	ROE	ROA	% Sales	MGN	NI	(NI / S)	DR	DER	TA	CA	PPE	% DR	% DER
Obs	44	44	44	44	44	44	44	44	44	44	44	44	44
Mean	14%	11%	10%	12%	55%	12%	21%	27%	7%	9%	6%	4%	8%
Median	15%	12%	7%	13%	14%	14%	22%	28%	5%	10%	3%	-8%	-11%
Std Dev	7%	6%	16%	6%	162%	6%	5%	8%	11%	16%	12%	51%	72%
Min	-10%	-7%	-10%	-1%	-178%	-8%	11%	12%	-18%	-20%	-17%	-40%	-47%
Max	27%	20%	59%	22%	634%	21%	32%	46%	33%	52%	44%	192%	280%
Correlations	1	2	3	4	5	6	7	8	9	10	11	12	13
2	0.986*												
3	0.342**	0.239											
4	0.913*	0.916*	0.317**										
5	0.486*	0.486*	0.204*	0.440*									
6	0.953*	0.978*	0.133	0.901*	0.430*								
7	-0.083	-0.233	0.510*	-0.145	-0.049	-0.314**							
8	-0.065	-0.215	0.539*	-0.115	-0.065	-0.292***	0.996*						
9	0.345**	0.319**	0.261***	0.440*	0.106	0.388*	0.030	0.059					
10	0.368**	0.381**	0.060	0.459*	0.278***	0.394*	-0.099	-0.101	0.614*				
11	0.160	0.138	0.210	0.219	-0.073	0.224	0.001	0.038	0.833*	0.095			
12	0.225	0.107	0.647*	0.260***	-0.019	0.103	0.606*	0.643*	0.523*	0.151	0.443*		
13	0.245	0.129	0.652*	0.281***	-0.018	0.126	0.588*	0.628*	0.532*	0.161	0.450*	0.998*	

Variables *	Ind	LC/FSC	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	**I
BACHOCO+	M	LC / FSC	I	I	I	I	I	I	I	I	8
BAFAR	M	LC	I	I	I	W	W	I	I	I	6
BIMBO	M	LC	W	W	I	W	W	W	W	I	2
FEMSA	M	LC / FSC	W	W	I	I	W	I	W	W	3
GCORVI+	M	LC	I	W	W	W	W	W	W	W	1
GEUPEC	M	LC	W	W	I	W	W	W	I	I	3
GM ODELO+	M	LC	I	W	I	I	W	I	I	I	6
GM ODERN	M	LC	W	W	I	I	W	I	I	I	5
GRUMA	M	LC	W	W	W	W	I	W	W	I	2
HERDEZ+	M	LC	I	W	W	W	W	W	W	W	1
HILASAL	M	LC	I	I	W	I	I	I	W	W	5
KIMBERLY+	M	LC	I	I	W	I	I	I	W	W	5
KOF	M	LC / FSC	I	I	I	I	W	I	W	W	5
MASECA	M	LC	W	W	W	W	W	I	I	I	3
MINSA	M	LC / FSC	W	W	W	W	I	W	I	I	3
VALLE+	M	LC	W	W	I	W	I	W	W	W	2
VITRO+	M	LC / FSC	W	W	W	I	I	W	W	W	2
CMR+	S	LC	W	W	W	W	W	W	W	W	0
POSADAS	S	LC	I	I	I	I	I	I	W	W	6
REALTUR	S	LC	W	I	W	W	W	W	I	I	3
ALSEA+	C	LC	W	I	I	I	W	I	I	I	6
BENAVIDES+	C	LC	W	W	W	W	I	W	W	W	1
COLLADO	C	LC	I	I	W	I	W	I	W	W	4
COMERCI+	C	LC	W	W	W	W	W	W	I	W	1
COPPEL	C	LC	W	I	I	I	W	I	W	W	4
ELEKTRA	C	LC	I	W	I	W	W	W	W	I	3
FRAGUA+	C	LC	I	I	W	W	W	I	I	I	5
GIGANTE	C	LC	W	W	W	W	I	W	I	I	3
LIVEPOL	C	LC	W	W	W	I	I	I	I	I	5
MARTI	C	LC	W	W	W	I	W	I	I	I	4
GPH	C	LC	W	W	W	W	I	W	I	I	3
SABA+	C	LC	W	I	W	W	W	W	W	W	1
SORIANA	C	LC	W	I	W	I	W	I	I	I	5
WALMART	C	LC / FSC	W	I	W	W	W	I	I	I	4
CINTRA+	T	LC	W	W	W	W	W	W	W	W	0
RCENTRO	T	LC / FSC	W	W	I	W	I	I	I	I	5
TELMEX+	T	LC / FSC	I	I	W	I	W	W	I	I	5
TELEvisa	T	LC / FSC	W	W	W	W	I	W	I	I	3
TMM	T	LC / FSC	I	W	I	W	I	W	W	W	3
TV AZTECA+	T	LC / FSC	I	I	I	I	I	I	W	W	5
		Improve	15	16	16	17	16	19	20	22	
		Worst	25	24	24	23	24	21	20	18	

+ Selected Companies. * (1) ROE, (2) ROA, (3) IS, (4) MGM, (5) NI, (6) NI/S (7) DR, (8) DER. * Ind = Industry, M=Manufacture, S=Service, C = Commercial, T = Communications. * LC = Local Companies, FSC= Foreign Stock Companies
 **Number of variables better than the industry average (I) Improve (W) Worst

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ANALYSIS OF IRANIAN CURRENCY VERSUS DOLLAR

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ABSTRACT

In this work the Iranian currency (Rial) and the exchange rate for one Dollar in terms of Rial from January 1962 through January 2011 has been studied. This exchange rate has been studied during three periods of time. The events of nearly the last 30 years are bringing the value of Iranian currency to a disastrous condition. Inflation in Iran and international sanctions are effective conditions that are influencing the exchange rate and as a result they are bringing Iranian currency to collapse. Regression analysis is performed to predict the exchange rate through year 2020. Several recommendations are made.

INTRODUCTION

The Iranian currency (Rial) follows the exchange rate on a daily basis. In this work the Iranian currency has been studied. In particular, the exchange rate for one Dollar in terms of Rial that is 1/10 of one Toomaan from January 1962 through January 2011 has been studied.

Theoretical frameworks for currency, exchange rate, and currency option pricing have been developed by several researchers. Two of the main theories are as follows:

1. Purchasing power parity (PPP) that quantifies the relation between inflation exchange rates between two countries that are being studied. There are two types of PPP theories. The absolute form of PPP states that given the fact that there are no international trade barriers, then consumers will tend to shift their purchases to the country that offers lower prices (as measured by common currency). As a result the exchange rate will adjust so that the same items will cost the same in both countries as measured by the same common currency. On the other hand, the relative form of PPP is the exchange rate that is adjusted based on the relative inflation in the respective countries (Haque & Saba, 2011).
2. The second theory of exchange rate determination is the interest rate parity theory (IRO). In this theory the major assumption is that one should not make a greater profit by taking advantage of an interest rate differential in these two countries since the currency for the country with the higher interest rate has a tendency to depreciate either in the forward market or appreciate in the spot market (Haque & Saba, 2011). Furthermore, the interest rate parity satisfies the following equation:

$$1 + d_i = 1 + F_i \left(\frac{\text{forward rate}}{\text{spot rate}} \right),$$

where d_i = domestic rate and F_i = foreign rate. This exchange rate must be a direct quote, that is, it must be Rial (one Toomaan = 10 Rials) per Dollar. It must be foreign currency per unit of domestic currency. Here the United States is considered as domestic and Iran is considered as foreign.

Black and Scholes (1973) provided a relationship between stock price and the value of an option under the following assumptions:

- a) The short-term interest rate is known and is constant through time.
- b) The stock price follows a random walk in continuous time with a variance rate proportional to the square of the stock price. Thus the distribution of possible stock prices at the end of any finite interval is log-normal. The variance rate of the return on the stock is constant.
- c) The stock pays no dividends or other distributions.
- d) The option is "European," that is, it can only be exercised at maturity.
- e) There are no transaction costs in buying or selling the stock or the option.
- f) It is possible to borrow any fraction of the price of a security to buy it or to hold it, at the short-term interest rate.
- g) There are no penalties to short selling. A seller who does not own a security will simply accept the price of the security from a buyer and will agree to settle with the buyer on some future date by paying him an amount equal to the price of the security on that date.

At the present time, due to international sanctions, Iranian currency does not participate in currency option pricing and for that reason relevant discussions will be omitted.

There are several factors that are not quantifiable, but they influence the exchange rate that Haque and Saba (2011) mentioned:

Internal Political Condition

Such as policy decisions, in particular when these decisions are unpredictable. As well as elections, especially when there is no clear prediction for outcome of an election for major candidates with very opposite policies and point of views.

External Political Condition

External Political Condition and instability due to uprising or revolution or other conditions such as the events that occurred in Middle East and other oil countries during the first quarter of 2011 made a major effect on the price of gold and as the result exchange rate was affected.

Budget Deficit

In 2009, Treasury Bills holdings (with maturity under one year) by China were at their highest and since then are declining as the value of the Dollar is declining. The problem of deficit becomes crucial when the amount of short-term loans by any government reaches to amounts that even the interest on these loans cannot be paid. Thus far Iran continues selling oil, but this trend cannot continue indefinitely.

Trade Deficit

Although Iran and United States do not have direct trade, both countries are having trade deficits.

Interest rates

When the fluctuation of interest rates is not predictable, the currency exchange rates will be affected. Kanas (2008) found evidence of regime-switching dynamics in the United States and the United Kingdom real interest rates during the period 1881–2003. In addition, for the United Kingdom, there is a regime in which the real interest rate displays a relatively stronger mean-reversion and a regime that displays a relatively weaker mean-reversion. It was found that former the regime is characterized by a relatively larger error in the estimation of the reversion parameter and higher volatility. For the United States, the two regimes differ in volatility. Furthermore, the probability of transition from one regime to another is found to be significantly related to the inflation rate regime and to the political regime. The results highlight the importance of regime switching in the dynamics of the real interest rate, as well as the role of inflation and political regimes in explaining this switching.

Kanas (2008) indicated that according to the Fisher effect, nominal interest rates move along with expected inflation on a one-for-one basis in the long run based on rational expectations. This implies that the real export interest rate should follow mean-reversion. However, empirical tests have shown no consensus to that theory.

Several studies for the United States indicate that the real interest rate does not show mean-reversion (Schwert 1986; Antoncic, 1986; Rose, 1988; Koustas & Serletis, 1999). However, several researchers concluded the opposite (Mishkin, 1981; Huizinga & Mishkin, 1986; Bonser-Neal, 1990; Lai, 1997) explained that these conflicting results occur because United States real rate exhibits ‘subtle mean-reverting dynamics’, namely mean-reversion of a special manner that is not captured by the usual stationary process.

Time-variation of the real interest rate was studied by Bekdache (1998) and Huizinga and Mishkin (1986) who found that the real rate process is unstable and should be modeled using a time-varying model. Trehan and Wu, (2004) showed important policy implications and Alexius and Welz (2005) explained the excess sensitivity of interest rates. Garcia and Perron (1996) modeled the United States real rate by using Markov switching model that was developed by Hamilton (1989) and they found some of the real rate characteristics.

Inflation

Inflation is actively under control by the United States. However, this is not the case for Iran since rising prices have shown a negative effect on its currency. On the other hand, in the United States, the commodity prices are rising with alarming rate, partly due to the increase in gas prices. This includes all items that are imported including imported goods from China.

The increase of gold price is an indication of the decline in the value of Dollar. Printing money is a short-term solution for the financial crisis that will result in inflation in long-term scenario. Historically, this has happened to Argentina, Austria, Brazil, Chile, Germany, Japan, Poland, Russia, and Ukraine.

For example, in 1967, the United Kingdom devaluated the British Pound by approximately 15% and as a result inflation occurred in the following years. As another example, in 1975 the inflation rate in United Kingdom was reported nearly 27%. Moreover, businesses were working only three days and television broadcasting was halted at 10:30 p.m. to save energy and electricity.

Wars

Participating in war(s) is very costly and historically can negatively influence the financial pressure on the participating countries. As an example, during the nineteenth century London was the financial capital of the world. Its downfall was due to the large amounts spent on World War I which ultimately resulted in overvalued currency and the loss of credible gold convertibility. As a result the United Kingdom fell into a great amount of debt.

At the present time, the United States is involved in Iraq and Afghanistan wars. However, in this case, the world still relies on the dollar-base system Harold (2008). In the case of Iran the

nine years war with Iraq is another factor in budget problems and exchange rates for Iran (Harold, 2008).

International Currency Unions

Rose and Engel (2002) studied and discussed the integration patterns of international currency unions (such as the CFA Franc Zone). Rose and Engel (2002) empirically explored different features of currency unions, and they compared them to countries with sovereign monies by examining the criteria for Mundell's (1961) concept of an optimum currency area. Finally, Rose and Engel (2002) concluded that members of currency unions are more integrated than countries with their own currencies. Moreover, they concluded that currency union members have more trade and less volatile real exchange rates than countries with their own monies. Furthermore, the business cycles are more highly synchronized across currency union countries than across countries with sovereign monies.

Monitory Policies

Engel (2009) states that there is a case for policy to stabilize exchange rates and large fluctuations in exchange rates—even if they are not “excessive” fluctuations due to market sentiment or bubbles—which can lead to inefficient allocation of resources. Moreover, unperturbed free markets in foreign exchange cannot be relied upon to arrive at exchange rate levels that deliver terms of trade and real exchange rates that reflect the underlying economic productivity, efficiency, and competitiveness of economies. Engel (2009) concluded that probably the main case for freely floating exchange rates is a political one: Policymakers cannot be relied on to intervene in foreign exchange markets in a benign way. Furthermore, Engel (2009) added that from a selfish standpoint, each country may have an incentive to devalue to gain a competitive edge. Engel (2009) indicated that the competitive devaluations of the Great Depression loom large in the memories of many economists and policymakers. Finally, he concluded that some effort to control exchange rate fluctuations is desirable, but that it is best achieved in the context of cooperation among policymakers.

Central Banks

If the central bank in each country makes unpredictable decision as their decisions affect the exchange rate of those countries.

Weather

Tsunami, hurricane and other unpredictable weather changes that cause major destruction and as the result major policy and reorganization come into play and will affect exchange rate. For example, during the first quarter of 2011 as the result of tsunami and damages to the nuclear plant in Japan, the exchange rate of 76 Yen for one Dollar was unpredictable.

Financial System

Thus far the United States Dollar is the world's reserve currency and is the basis for the international banks to hold in reserve against their loans. On most occasions the United States pays for imports in Dollars. The Base for buying oil is the Dollar and that makes the Dollar in more demand. Some countries are talking about receiving other currencies than Dollar. It has been reported that countries such as China, France, Japan, and Russia are in discussion about using a basket of currencies including Japan Yen, Chinese Yuan, European Euro, and gold for oil (instead of Dollar) for countries such as Abu Dhabi, Kuwait, Qatar, and Saudi Arabia. If such changes occur, the price of oil will dramatically increase and, as a result, the price of other commodities will increase dramatically.

The International Monetary Fund (IMF) has discussed the possibility of a new worldwide currency other than the Dollar (Reserve Accumulation and International monetary Stability, reported by the Strategy, Policy, and Review Department of IMF, April, 2010).

Exchange rate

Although the value of the Dollar in the exchange rate has dropped by nearly 10% against Yen during the second half of 2010 and this exchange rate continues dropping, the exchange rate of Iranian currency versus the Dollar is dramatically dropping due to the aforementioned factors.

Devaluation of Dollar

Although the budget deficit in the United States continues to grow and the Dollar is losing its value compared with the Yen, the Iranian currency is losing its value against the Dollar by an alarming rate.

Next, a brief history of Iran will be discussed. In particular, the history of oil and events of last 20th century that led to the current international impasse and the effect of international sanctions on Iran and consequently to its currency.

History

According to Axworthy (2008) people lived on the Iranian plateau as early as 100,000 BC. In addition, the oldest-known wine jar, Zoroaster, Cyrus (Kurosh), Darius, Ester, and Persepolis (City of Persians) are associated with Iran and Iranians.

In 1912 the British navy switched from coal to oil for more efficiency. Under D'Arcy concession oil was discovered in 1908 in southwest Iran according to Axworthy (2008). The Revolution of 1905-1911 was followed by Pahlavi dynasty and Reza was crowned in 1926 in a country of twelve million (Axworthy, 2008). Expansion of the army, improvement of transport infrastructure, production of textiles, tobacco, sugar, expansion of education (from 55,131 in 1922 to 457,236 in 1938) are due to Reza Shah according to Axworthy (2008).

In 1934 Reza Shah visited Kemal Ataturk (the supreme authority in Turkey), and the visit symbolized the parallel between the two regimes (Axworthy, 2008). In 1935 the name of Persia changed to Iran "Land of the Aryans."

British Exploitation of oil was providing only sixteen percent of profit to Iran. After 1933 this share of profit was increased to twenty percent and the duration of concession was extended to 1993 (Ansari, 2007). In 1941 British and Soviet took over Iran and Reza Shah abdicated in favor of his son Mohammad Reza Pahlavi and went to exile in South Africa in 1944 according to Axworthy (2008). Under Mohammad Mossadegh, prime minister, leadership in 1951 Majles voted to nationalize Iranian oil (Axworthy, 2008). In 1953 Central Intelligence Agency (CIA) under the coup code name Operation Ajax and with British Secret Intelligence Service (SIS) arrested Mossadegh and Shah returned according to Axworthy (2008).

In 1963 the Shah set the land reform as the White Revolution. This was encouraged by the John F. Kennedy administration (Price, 2005). The White Revolution included land reform, privatization of state factories, female suffrage, and a literacy corps by young educated people in the countryside (Price, 2005). From 1963 to 1970 the Gross National Product (GNP) rose from \$200 to \$2,000. Number of children in primary schools went from 1.6 million in 1953 to 4 million in 1977; and universities and college students' enrollment rose from 24,885 to 154,215. Moreover, the number of Iranian students in foreign universities grew from 18,000 to 80,000; and the number of hospital beds went from 24,126 to 48,000. The Shah bought more Chieftain tanks from United Kingdom than the British army owned according to Axworthy (2008). In 1971 the Shah was granted the title of Arya Mehr (the light of Aryans) by the parliament and the Shah declared "Cyrus, rest assured, we are awake" (Price, 2005). On January 5 and 6, 1979 in the island of Guadeloupe Valery Giscard d'Estaing, the president of France, President Jimmy Carter of United States, German Chancellor Helmut Schmidt, and British Prime Minister James Callaghan met (Milani, 2011). On January 16, 1979 Shah left Iran.

According to Mousavi (2002) in 1999 in the United States about 84 percent of Iranian speak English and are employed, 46 percent hold B.Sc. and higher degrees, and about 43 percent

have top professional and management positions. The average annual income of Iranian is \$55,000, and 92 percent have private homes.

Nuclear Energy

The International Atomic Energy Agency (IAEA) has found no evidence of an Iranian nuclear weapon program. However, after the discovery of Arak and Natanz in 2002, the IAEA could no longer be confident that there were no more undeclared nuclear activities in Iran according to Axworthy (2008).

Oil

This is one of the largest sources of income for Iran and it deserves to be discussed in detail. Organization of the Petroleum Exporting Countries (OPEC) was established in 1960 (http://www.opec.org/opec_web/en/about_us/24.htm) with five founding members: Iran, Iraq, Kuwait, Saudi Arabia and Venezuela. Then nine other countries joined OPEC: Qatar (1961); Indonesia (1962) – suspended its membership from January 2009; Libya (1962); United Arab Emirates (1967); Algeria (1969); Nigeria (1971); Ecuador (1973) – suspended its membership from December 1992-October 2007; Angola (2007) and Gabon (1975–1994). At the present time OPEC has 12 member countries.

According to <http://www.wtrg.com/prices.htm> in 1972, the price of crude oil was below \$3.50 per barrel. However, on October 5, 1973 Syria and Egypt attacked Israel and the Yom Kippur War started. Then the United States and many countries supported Israel while several Arab oil exporting nations joined by Iran and imposed an embargo on the countries supporting Israel. While these nations curtailed production by five million barrels per day, other countries were able to increase production by a million barrels. The net loss of four million barrels per day extended through March of 1974. It represented 7 percent of the free world production. By the end of 1974, the nominal price of oil had quadrupled to more than \$12.00. The following table shows the price of oil per barrel set by OPEC since 1999.

1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
17.48	27.60	23.12	24.36	28.10	36.05	50.64	61.08	69.08	94.45	61.06	77.45	107.46	110.13

In 2008, after the beginning of the longest United States recession since the Great Depression the oil price continued to soar. Spare capacity dipped below a million barrels per day and speculation in the crude oil futures market was exceptionally strong. Trading on NYMEX closed at a record \$145.29 on July 3, 2008. In the face of recession and falling petroleum demand the price fell throughout the remainder of the year to the below \$40 in December. <http://www.wtrg.com/prices.htm>

It is worth mentioning that the three longest United States recessions since the Great Depression coincided with exceptionally high oil prices. The first was due to the 1973 oil embargo that started in November 1973 and the second was in July 1981. Both recessions lasted 16 months.

The third recession began in December 2007 and lasted 18 months. Charts similar to the one at the right have been used to argue that price spikes and high oil prices cause recessions. There is little doubt that price is a major factor. <http://www.wtrg.com/prices.htm>

International Sanctions

Since 1979 the United States has imposed a number of sanctions against Iran due to Iran's support for terrorism and its nuclear weapons program. These sanctions are not limited to trade restrictions. At the present time the United States as well as the United Nations (UN) and the European Union (EU) have imposed numerous sanctions on Iran. United States Department of Treasury Office of Foreign Assets Control (OFAC) informs that companies and individuals in breach of the sanctions are considered to be aiding a foreign entity hostile to the United States and its allies, and are liable to major penalties including criminal prosecution. In 2010, the Comprehensive Iran Sanctions Accountability and Divestment Act (CISADA) was passed. Moreover, on July 12, 2012, additional sanctions were placed on another 11 entities and four individuals under Executive Order 13382. These include freezing the assets of proliferators of weapons of mass destruction and their supporters. Some of these entities include Goods and Services, Oil and Gas as well as Financial Transactions. The penalties for violating the embargo or trade sanctions include criminal penalties including monetary fines up to \$10,000,000, freezing and/or seizure of assets, and imprisonment of up to 30 years. Under the National Defense Authorization Act for Fiscal Year 2012 law that was signed into law, property which an Iranian bank has an interest in will be frozen. And, any foreign bank having business relations with an Iranian bank will be shut out of the United States banking system.

Iranian currency

The Rial is the unit of Iranian currency that is one tenth of Toomaan (or [Toman]). The value of Iranian currency is moving downward since the revolution of 1979 in such a way that in practice the public calls a 1,000 Toomaan bill just one Toomaan. This suggests that one of the future solutions for valuation of Iranian currency is removing three zeros from the bill or print a new bill with such ratio in value.

STATISTICAL ANALYSIS AND COMPARING METHODS

According to International Monetary Fund (IMF) the exchange rate for one Dollar in terms of Rial from January 1962 through January 2011 can be discussed during the following three periods.

During 1962 to 1975 that was the days of prosperity for Iran and there was no war the Rial versus one Dollar was very stable as it shows in the following table:

1962	1963	1964	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975
75.75	75.75	75.75	75.75	75.75	75.65	75.11	75.359	76.38	75.38	75.75	68.88	67.63	67.64

The next table shows how Rial lost its value in particular during 1993 through 2001:

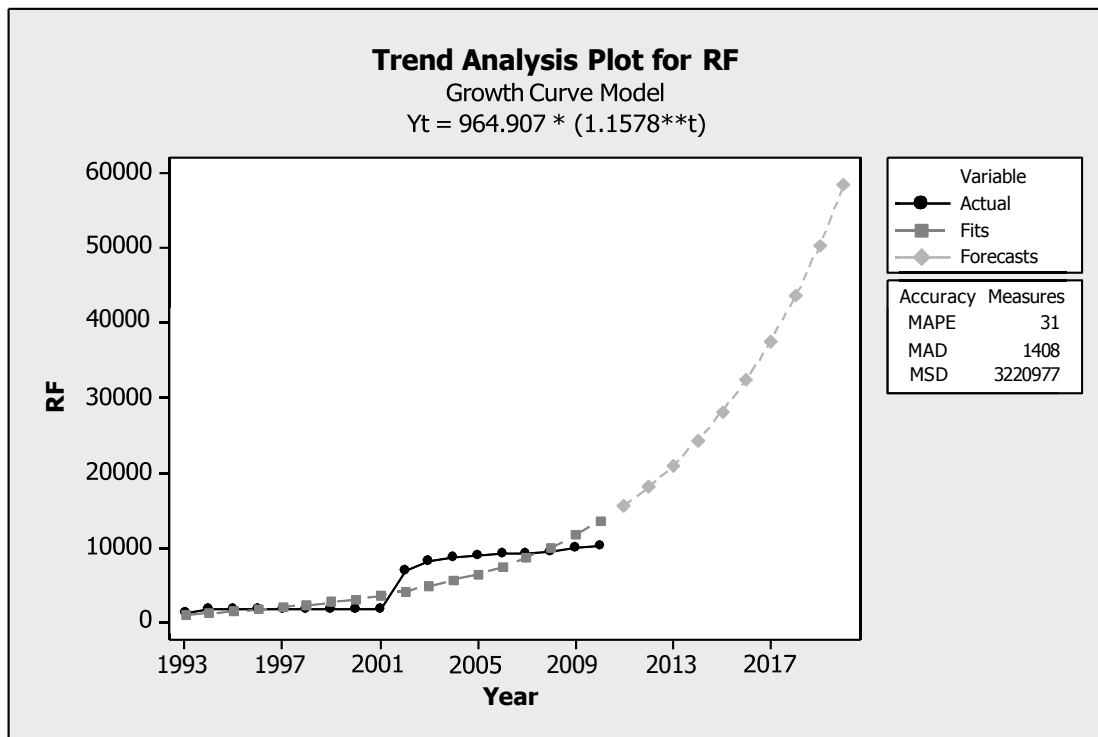
1993	1994	1995	1996	1997	1998	1999	2000	2001
1267.77	1748.75	1747.93	1750.76	1752.92	1751.86	1754.00	1765.00	1754.00

Finally, the next table shows how dramatically Rial lost its value versus one Dollar in during 2002 through 2010:

2002	2003	2004	2005	2006	2007	2008	2009	2010
6907.00	8194.00	8614.00	8964.00	9171.00	9281.00	9429.00	9864.00	10254.00

In order to study the relative value of Dollar against Rial (Toomaan = 10 Rials) and perform regression analysis several software such as SAS, MINITAB, and SPSS were selected and regression analysis were performed using each of these software. The results of these softwares were not different significantly. Therefore, in the following the result of regression analysis will be reported using MINITAB.

Several models for regression analysis such as Linear, Logarithmic, Inverse, Quadratic, Cubic, Compound, Power, S or S-curve, Growth, Exponential, and Logistic were employed. Then for each of these models several parameters were calculated including Regression Coefficients, multiple R, R^2 , adjusted R^2 , and Parameter Estimates such as for b_1 , b_2 , and b_3 . Finally, Standard Error of the Estimate, analysis-of-variance table, predicted values, residuals, and prediction intervals were constructed and presented. The following tables and graphs presents some the results related to the exponential model since other models do not reflect the loss of value of Rial versus Dollar in this year rates which is traded unofficially about 22000 Rial for one Dollar.



Data RF
Length 18
NMissing 0
Fitted Trend Equation
 $Y_t = 964.907 * (1.1578^{**t})$
Accuracy Measures
MAPE 31
MAD 1408
MSD 3220977

FORECASTS

2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
15620.0	18085.2	20939.4	24244.1	28070.4	32500.5	37629.8	43568.6	50444.7	58406.0

Considering that at this time the value of one Dollar unofficially is about 22000 Rials which was nearly 67 Rials in 1975, that is the value of Dollar versus Rial has approximately increased by 328 times! If the Rial is compared with Japanese Yen during the same period, the value of Yen versus Rial has increased by nearly 1200 times. The exchange rate for one Dollar in terms of Yen from January 1960 through January 2011 was studied by Haque, Saba, (2011).

The value of Iranian currency Rial is moving downward versus Dollar since the revolution of 1979 in such a way that in practice the public calls a 1,000 Toomaan bill just one

Toomaan. This suggests that one of the future solutions for valuation of Iranian currency is removing three zeros from the bill or print a new bill with such ratio in value.

CONCLUSION

This trend of loss of value for the Iranian currency versus Dollar cannot continue unless several measures can be realized. Inflation in Iran and exchange rate are bringing its currency to collapse. Several recommendations will be made to correct the current economic, international, and social issues that may help slowing down or reversing the downward trend of Iranian currency (Rial).

1. The current regime of Iran needs to behave in such a way that International Sanctions can be removed. International Sanctions only hurts Iranian people.
2. Freedom of speech needs to be respected. Thousands of Iranian are put in jails or they are executed. This must stop.
3. Elections need to be free of cheatings.
4. Change of government from dictatorship to democracy is essential that is the government of the people by the people for the people.
5. Human rights need to be respected.
6. Iranian people need to have freedom of choice for practicing or not practicing any religion.
7. In particular, the rights of women need to be respected and Iranian women need to have the same rights as men. This includes divorce laws and the right to travel without written permission from husbands. Inheritance laws in which a son receives twice as much as a daughter need to change to an equal share.
8. Disciplinary measures need to be taken to lower the inflation. Price control or increasing the supply of certain life necessities can be effective.
9. Bribery and corruption throughout the country need to be reduced.
10. Nuclear Non-Proliferation Treaty (NPT) needs to be respected.

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CORPORATE SOCIAL RESPONSIBILITY PRACTICES AND COMPANY SIZE AMONG GLOBAL MANUFACTURERS

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ABSTRACT

Corporate Social Responsibility (CSR) issues have become increasingly important over time and involve a broad range of activities and practices. These may include ethical, social, and environmental concerns. The focus of this paper is on socially responsible environmental and health and safety investments made by manufacturers around the world and how they are related to company size. Results based on data collected from over 1,300 firms from 23 countries show that CSR activities vary significantly by size of the firm. Also, the results suggest that smaller firms engage in CSR activities more closely associated with cost savings.

INTRODUCTION

This study examines the CSR activities of SMEs (small- and medium-sized enterprises) in several countries. Several past studies examine the motivation and subsequent CSR activities of larger firms. A developing body of literature considers the role of CSR at smaller firms. SMEs are an important segment to examine because in some countries their role in employment and the economy is significant. This study provides a unique perspective on the actual practices of companies in several countries. The study provides insight useful to both practitioners and policymakers. Practitioners can understand the role of CSR and its value even if it occurs outside the more formal corporate framework in evidence at larger firms. Policymakers focusing on CSR activities that benefit society need to first understand what SMEs are currently doing before developing additional regulation or incentives for them.

LITERATURE REVIEW

The corporate social responsibility literature is large and growing and includes a broad range of issues and activities, even though there is no one set definition of what constitutes CSR. Any observed differences in CSR for SMEs and larger firms could result from differences related

to the motivation and benefits as perceived by the corporation or constraints faced by one firm size as compared to another. Examining cross-cultural differences in addition to firm size is also important. Regulations or cultural differences might create differences even among companies of similar size.

There is a body of literature mapping the basic activities or concerns of companies that practice CSR. There are several aspects of corporate activity examined by Egri and Ralston (2008) who provide a comprehensive review of corporate responsibility research from 1998-2007. Of the 321 articles reviewed, the largest number (37%) focused on ethics, followed by governance (25%), environmental (19%) and CSR (18%). Furthermore, the majority of the articles surveyed focused on one country (56%), with the U.S. being the country most frequently studied, followed by China; but overall, most of the countries included in those studied were economically well developed.

Our study examined investments in CSR activities of various sized firms from North America, Europe, Asia, Australia, and Africa. Some of the countries included are those frequently overlooked by the CSR literature, including Albania, Hungary, Nigeria, Macedonia, Fiji and Poland. Furthermore, environmentally related issues such as waste reduction, recycling, and pollution prevention are included. According to Tilley (2000), “environment as an ethical issue has been rarely investigated,” when it comes to small firms.

The literature as it relates to firm size includes both theoretical, case studies and empirical studies of a particular industry or country. Some theoretical research lacks an empirical test while other studies use case studies or a limited data set in either one industry or country to examine the issues. The focus of this study is unique in its focus on a broad set of companies in different industries and countries. Companies were asked a series of questions about their practices instead of whether or not they implemented CSR. This is important since smaller firms may engage in CSR activities without first developing the kinds of formal organization structures larger companies use to develop and implement it. The motivation to implement CSR activities and practices may also be different at small as compared to larger firms, so focusing on the outcomes is relevant.

Smaller firms may engage in CSR for very different reasons than larger firms. Jenkins (2004) considered CSR theory and possible differences for SMEs and larger firms. He concludes that the less formal structures at smaller firms mean CSR is often dependent on the owner or manager. Fassini (2008) indicated large companies have a formal process for reporting and implementing CSR while smaller firms have a less formal process. He suggested there are three characteristics that distinguish the SME from the large corporation; less formal structures and looser control systems, a less formal organization and a lack of specialized staff to create reports about CSR activities. This research is important because it suggests SMEs engage in CSR differently than larger firms. For example, they do not have a formal reporting process but are still engaging in activities identifiable as CSR. This is important to our study which focuses

on the activities without examining whether or not companies reported them or developed them via a formal process labeled as CSR.

An important issue studied by Preuss and Perschke (2009) are the differences among SMEs in their implementation and adoption of CSR. Micro- small- and medium-sized enterprises might behave differently. High-growth or family-run firms could have different approaches to CSR. The smaller the firm the closer its values are aligned with the owner/manager. The authors concluded that it is important to realize there can be differences between firms grouped in the broad designation of SME without focusing on the various possible size delineations.

Vintila and Moscalu (2009) examined the existing literature on CSR activities and practices at smaller firms in order to provide a theoretical framework for research. This study also notes the economic importance of SMEs at least in the European Union based on employment, numbers and value-added to sectors. Both small and large firms can follow CSR practices, but the level of involvement and the strategy they use differ. The informal nature of CSR at smaller firms is again supported.

The different motivations for CSR depending on firm size are further studied by Russo and Perrini (2010) conclude that SMEs should be studied within a different theoretical framework than larger firms. Stakeholder theory is the typical approach used in CSR research but may not be applicable to SMEs who, the authors suggest, should be viewed using the concept of social capital. The idea of social capital encompasses ethics, goodwill, transparency and good citizenship. Smaller firms engaging in CSR can be thought of as investing in social as contrasted with physical capital. Identifying less CSR activity at smaller firms may be explained by the difference between social capital and stakeholder theory. This means that some CSR activities relevant to a larger firm may not be applicable to smaller firms if their activities are studied within the framework of social capital instead of stakeholder theory.

Although CSR is often considered to add value to the large firm, it is important to consider whether or not the same applies to SMEs. If CSR adds value, we would expect to observe these practices regardless of whether or not there was a formal policy or procedure for implementing them. Hammann et al. (2009) reviewed the economic significance of SMEs in Germany and study a subset of companies and business. The goal is to determine whether or not values translate into economic value for smaller firms. Three stakeholder groups were studied; customers, employees and society. The businesses were selected because they were members of the German Catholic Entrepreneurs Union based on the assumption this group would share common values. After preliminary interviews, the authors developed a questionnaire to examine the perceptions and practices of the businesses. The results indicated socially responsible activities targeted to customers and employees, and to lesser extent to society, had a role in creating firm value.

There are several empirical studies of SMEs and CSR practices and policies but they have limitations. Some use the case study method or examine single company or small group of

companies in a particular industry within one country. An example involving a large firm is that of Cortez and Penacerrada (2010), who analyzed Toyota's environmental accounting report and related environmental costs to the firm's financial performance. Other studies use questionnaire or other data to develop a broader sample, but again focus only on one country, region or industry. Globalization and cultural differences are well researched in a broad literature applied to several aspects of business and it is also important to include a global perspective on CSR.

An example of research focusing on one country is provided by Avram and Kuhne (2008) with a study that used a case study approach to examine whether or not social responsibility fits with competitive advantage or plays a role in strategic planning at SMEs. The conclusion is that companies have a better chance of developing environmental practices to enhance strategic positioning and lever growth if they are aware of their position within an industry and focus. The authors also suggest SMEs may find it more difficult to devote resources to CSR and that government and industrial organizations can help create awareness which in turn can lead to CSR initiatives.

Williamson et al. (2006) examined 31 manufacturing SMEs in the UK. The study uses stakeholder theory to conclude that voluntary actions to benefit a broad group of stakeholders do not provide the same motivation as cost reduction, efficiency and even regulation. Since much of the CSR literature focuses on voluntary compliance, the results are significant. However, the study includes a limited set of companies in only one country.

Other studies considered how to create a more formal implementation of CSR at smaller firms or public policy to achieve social goals for the environment. Battaglia et al. (2010) studied companies only in Italy and propose a cluster approach meaning local groups of companies. The concept is based on the idea that the cluster would reduce compliance or implementation costs. The study indicates that companies in clusters were able to achieve sustainable objectives related to CSR because of synergies not available from the perspective of the individual company.

Bradford and Fraser (2008) focused on energy and environmental initiatives. SMEs are a significant part of the U.K. economy so their practices are important. The study reviews SMEs in the U.K. and concludes few of them practice CSR activities to reduce emissions or improve environmental performance. Energy consumption cost is important and quantifiable to firms regardless of their size. The benefits of reducing emissions can be external to companies. The results found time and staff was a barrier to CSR activities related to emissions. Mandatory regulation with its associated costs, incentive, and advice were viewed differently by SMEs depending on their sector; manufacturing, construction, and commercial; or firm size small versus medium.

Zhu et al. (2008) provided a perspective on Chinese SMEs and environmental aspects of CSR. Firm size effects the adoption of environmental initiatives. The authors proposed resources explain the difference. Small-sized organizations also paid less attention to the environmental issues than medium-sized firms supporting studies suggesting SME behavior might differ depending on firm size within that classification. The implication for other

developing countries is government regulation can induce larger firms to implement practices which in turn can affect the supply chain.

Studer et al. (2008) drew similar conclusions for the environmental performance of SMEs in Hong Kong. The role of these firms in the economy is important because 98% of businesses employ less than 50 people. The size of the SME sector in Hong Kong means they have an important environmental impact. Although there are incentives to help companies implement environmental and CSR initiatives, these are not effective. Cost is an obstacle. One important issue is that supply chains help transmit CSR values and practices. Another is that key clients influence CSR. The authors conclude that external rather than internal forces would motivate implementation of further CSR initiatives, although that regulatory change is unlikely.

Barriers to CSR were also the focus of Fitjar (2010). The study looked at the Norwegian graduate uniform industry using the case study method. The issue studied is the manufacturing practices of the company's suppliers. Size is a barrier because the companies do not have the leverage of larger firms to organize inspections and get their message across to manufacturers. Two companies were in the industry and the conclusion is competition explains differences. Smaller firms with a big competitor might operate as "little big firms." Given the limited nature of the companies studied, it is difficult to conclude this model has a broader application without further study of more varied examples of industrial organization.

Lepoutre & Heene (2006) stated that the "small business context does impose barriers on social responsibility taking, but . . . the impact of the small firm size on social responsibility should be nuanced depending on a number of conditions." They concluded that most small businesses do not recognize specific social responsibility issues; entrepreneurship is no guarantee for responsible behavior; and due to a lack of financial resources, small businesses will experience more difficulty than larger firms to engage in CSR actions that have no immediate return.

Udayasankar (2007) took a slightly different view and does not believe the relationship between firm size and CSR activities is linear. He found that "medium-sized firms are the least motivated. This suggests a U-shaped relationship between firm size and CSR participation." Firm visibility, resource access, and scale of operations and various combinations of these were considered. He examined motivations based on these characteristics. Spence and Schmidpeter (2003) pointed out that while small and medium-sized enterprises constitute the largest number of firms, they don't attract the attention of large firms. They used qualitative research methods to examine "civic engagement" of SMEs in Germany and the UK.

Detailed case studies of companies in the U.K. are used by Jenkins (2008) in developing a framework for implementing CSR in SMEs. The business opportunity model adopted and analyzed recognizes the unique nature of the SME and differences between these and large firms. Companies in the sample were those that exemplified CSR having received awards or recognition for best practices. Companies uncomfortable with CSR as traditionally defined view corporate social opportunities favorably. Owner-manager values are important because

companies need an internal champion. Peer networks are important because SMEs are less able to influence the competitive environment than a large firm and so view competitors as stakeholders. The study offers an alternative series of steps for the encouraging and supporting CSR in the SME. This recognizes the steps and their implementation as developed for Grayson and Hodges (2004) are not necessarily applicable to the SME.

Perrini (2006) represented one of the studies that considered CSR within a single country. He studied CSR activities of 400 firms in Italy to determine the categories and kinds of CSR practices at smaller firms. The second most frequently reported CSR activity in the sample was “safeguarding employees’ health (82%), behind “training activities” (89%). Further down the list was “controlling environmental impacts of products” (62%) and “environmental protection activities” (39%). He also noted that “there is a small body of literature on SME experiences in industrialized countries and a very limited amount of literature in developing countries.” The study provides insight into some of the relevant activities included in our research. Our study also addresses the limited geographic and global scope by considering many countries, including those considered as developing nations.

After reviewing the theoretical literature, barriers to SME implementation at SMEs and their motivation within a social capital framework would result in what many studies find: small and medium-sized enterprises (SMEs) are less involved in CSR activities than are large firms. For example, Perrini et al (2007) find “large firms are more likely to identify relevant stakeholders and meet their requirements through specific and formal CSR strategies.” Their sample included 3,680 Italian firms, of which nearly 90% were SMEs. They hypothesized that the larger a firm is, the more it undertakes formal CSR strategies. Regression analysis was used in their comparison of large firm and SME strategies. Dependent variables were six different CSR strategy scores. The logarithm of the number of employees was used to measure size; control variables included location and industry. Large firms were more likely to address environment management; SMEs recognized the importance of responsible behaviors along the supply chain.

Russo and Tencati (2008) analyzed a large sample of Italian firms and conclude there are differences between smaller and larger firms and their CSR implementation. As suggested with previous research, smaller firms do not typically use the formal language of CSR but do engage in activities defined as socially responsible. This study tries to determine if there is a distinction among firms based on size within the SME category. The study finds differences micro firms and the combined category of small- medium- and large firms.

Reviewing the literature indicates there are several reasons why differences between firm size categories and adoption of CSR might be observed. SMEs would be more likely to have informal processes. Our study does not analyze whether or not firms claim to have a CSR strategy and formal reporting or implementation, but instead reviews whether or not businesses practices result in CSR-type activities.

The current study also adds to the literature by examining a broader group of companies in a wider range of countries. Prior studies have limited global scope or involve a limited number of companies making it difficult to draw cross-cultural conclusions. To the extent that CSR should be a global and not just a one-country or local issue, our study provides insight in several countries not previously examined in the literature.

EXPECTED RESULTS

While there is some disagreement as to whether small and medium-sized firms are vested in CSR practices, most researchers agree that large firms are likely to adhere to some CSR practices, having more motivation and financial means to do so. Hence, we expect to find a relationship between firm size and CSR practices in this sample of international firms, although the strength of this association is likely to vary by country.

We look for relationships between firm size and investments in CSR activities in several ways. We first test for differences in median firm size, defined as small, medium, or large, using the common definition of the European Commission, across the entire data set. We then graphically examine country level associations of median company size with average CSR activity investments. Finally, we compare correlations of logarithmic firm size and firms' reported investments in four CSR practices across countries.

Data

The data for this study were collected by the Global Manufacturing Research Group (GMRG), an organization of academic researchers engaged in international manufacturing studies. Since 1985, GMRG has surveyed global manufacturers on manufacturing practices and customer satisfaction several times. This paper uses the results of the fourth survey, collected in 2006-2007, to examine the extent to which firms invest in pollution prevention, recycling, waste reduction, and work place health and safety, and how these investments correlate to firm size.

Firms that participated in the survey comprise a broad range of manufacturing industries, including plastics, printing, paints, footwear, beverages, food, electronics, and many others. The firms and countries were not randomly selected, but were included based on location, availability of information, willingness to participate, and products manufactured. The sample included over 1300 firms from the countries shown in Table 1. Firms ranged in size from 1 employee to 25,000 employees.

Because several of the countries included in this sample were European, the common definition for SMEs was used (European Commission, 2003). Hence, small enterprises are those which employ less than 50 workers, and medium-sized enterprises are those with less than 250 workers.

Country	Number of firms			
	Total	Small	Medium	Large
Albania (AL)	14	12	2	0
Australia (AU)	50	9	28	13
Austria (AS)	15	3	1	11
Brazil (BR)	30	6	14	10
Canada (CA)	90	4	62	24
China (CH)	57	1	9	47
Croatia (CR)	93	36	38	19
Fiji (FI)	110	8	62	40
Finland (FN)	139	23	103	13
Germany (GE)	58	34	17	7
Hungary (HU)	53	0	32	21
Ireland (IR)	48	7	34	7
Italy (IT)	53	19	27	7
Korea (KO)	103	16	31	56
Macedonia (MA)	33	20	9	4
Mexico (MX)	99	32	39	28
Nigeria (NI)	30	5	16	9
New Zealand (NZ)	23	10	11	2
Poland (PO)	57	25	19	13
Sweden (SW)	31	4	15	12
Switzerland (SU)	30	3	14	13
Taiwan (TW)	50	4	18	28
United States (US)	82	27	39	16
Total	1,348	308	640	400

SURVEY QUESTIONS

The firms were asked, “in the last two years, to what extent has the plant invested resources (money, time and/or people) in programs in the following areas?” and were asked to rate these options on a Likert scale from 1 (not at all) to 7 (to a great extent). The areas were

- pollution prevention,
- recycling of materials,
- waste reduction, and
- work place health and safety.

The firms rated themselves; no outside evaluation was performed. Note that companies were not queried about formal CSR initiatives but instead were asked about activities in way that

could include those that lacked formal CSR processes, but that were implementing them on an informal basis.

METHODS

The Kruskal-Wallis test for differences in medians was used initially to ascertain differences in investments in CSR practices by firm size. Firm size was defined as small, medium, or large, using the European Commission's common definition. The Kruskal-Wallis test was used instead of ANOVA as a non-parametric test was needed due to violations of assumptions of ANOVA.

Visual correlations of firm size and investments in CSR by country were constructed using median firm size (due to skewed distribution) and average ratings of the firms in each country.

Correlations of firm size and reported investments in CSR were calculated using logarithmic firm size (logarithm of number of employees). Perrini et al (2007) used the same variable in their study. Correlations were calculated over the 1,300+ firms and also for firms from each country.

RESULTS

Table 2 shows the mean responses by country and CSR activity. Overall the highest mean of the CSR activities was workplace health and safety with 5.33, followed by waste reduction of 4.65, recycling of 4.34, and pollution prevention of 3.98.

Country	Median firm size	Pollution Prevention	Recycling of materials	Waste Reduction	Workplace Health and Safety
Albania	25	4.36	4.00	4.08	5.07
Australia	87	4.18	4.55	4.86	5.69
Austria	300	3.81	3.69	4.19	5.19
Brazil	165.5	3.43	3.57	4.73	4.87
Canada	150	3.54	4.44	4.46	5.70
China	600	4.42	4.90	4.95	n/a
Croatia	60	4.59	4.76	4.82	5.28
Fiji	200	4.18	4.82	5.28	6.55
Finland	85	3.44	4.22	4.30	5.22
Germany	32	3.42	3.90	3.68	4.84
Hungary	185	4.14	3.56	4.12	4.57
Ireland	85	4.06	5.04	5.31	5.71
Italy	70	4.17	4.00	4.52	5.00
Korea	280	4.75	4.66	5.00	5.34
Macdeonia	25	4.52	3.68	5.26	5.41
Mexico	100	4.07	4.25	4.97	5.21

Country	Median firm size	Pollution Prevention	Recycling of materials	Waste Reduction	Workplace Health and Safety
Nigeria	100.5	4.23	3.90	4.70	5.37
New Zealand	55	3.48	4.22	5.00	5.61
Poland	70	2.91	3.60	3.53	4.49
Sweden	165	3.83	4.47	4.42	4.84
Switzerland	178	3.47	3.76	3.24	4.80
Taiwan	450	4.88	5.08	5.64	n/a
USA	70	3.46	4.28	4.51	5.35
Overall		3.98	4.34	4.65	5.33

An initial look at investments in CSR activities and firm size showed distinct differences by whether the firm was classified as small (less than 50 employees), medium (50-249 employees) or large (more than 250 employees). Kruskal-Wallis tests for differences in medians were significant at the 1% level for each of the four CSR activities of the survey. Table 3 summarizes these results. Table 2 also shows the mean responses for each firm size.

Activity	Small firms	Medium firms	Large firms	KW test p-value
Pollution prevention	4.0 (3.5)	4.0 (3.8)	5.0 (4.6)	0.000
Recycling of materials	4.0 (4.1)	4.0 (4.2)	5.0 (4.8)	0.000
Waste reduction	4.0 (4.4)	5.0 (4.5)	5.0 (5.1)	0.000
Workplace health and safety	5.0 (5.0)	6.0 (5.4)	6.0 (5.6)	0.000

We now turn our attention to country level associations of company size with CSR activity investments. Figures 1-4 show the relationship between the median company size and average response to the survey questions asking respondents to rate the extent to which the plant invested resources in pollution prevention, recycling of materials, waste reduction, and workplace health and safety, on a scale of 1 (not at all) to 7 (to a great extent), by country. Participating firms on average made the greatest investments in workplace health and safety, ranging from an average of 4.5 out of 7 in Poland to 6.5 in Fiji. (Chinese and Taiwanese firms did not answer this question.) The overall average was 5.3 out of 7.

Waste reduction was the next highest priority investment by these firms, with an average rating of 4.7 out of 7 and ranging from 3.24 in Switzerland to 5.6 in Taiwan. Pollution prevention averaged 4.0 and recycling of materials averaged 4.3.

Except for workplace health and safety, Taiwanese companies claimed to make the greatest investments of all countries/regions, averaging 4.9 in pollution prevention, 5.1 in recycling, and 5.6 in waste reduction. The lowest averages reported were Poland's 2.9 in

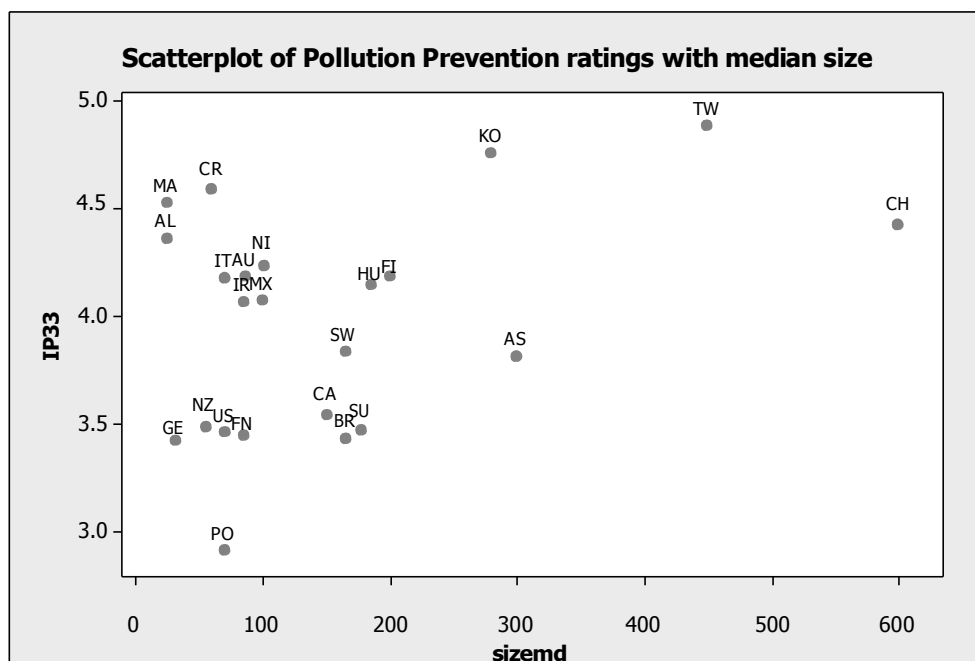
pollution prevention, Hungary and Brazil's 3.6 in recycling, and Switzerland's 3.2 in waste reduction.

Figures 1 through 4 show the relationships between the average ratings, by country, for the four types of investments in resources, plotted against median firm size. Aggregated by countries, there doesn't appear to be a strong association between average rating reported by firms in each country's sample and median firm size.

Figure 1 provides more detail as to the relationship between investments in pollution prevention and firm size by country. There is not a strong correlation between median firm size and how these firms rate their investments in pollution prevention. However, three countries in particular stand out: Korea, Taiwan, and China have the largest median firm size and report the greatest investments in pollution prevention. Austria, with median firm size approximately the same as Korea, reported significantly lower average investments in pollution prevention. However, Albania, Macedonia, and Croatia have relatively high ratings with relatively low median firm size.

Figure 1: Pollution Prevention

Average response by region and firm size: In the last two years, to what extent has the plant invested resources (money, time and/or people) in programs in pollution prevention; 1 = not at all, 7 = to a great extent, average for country, plotted against median firm size

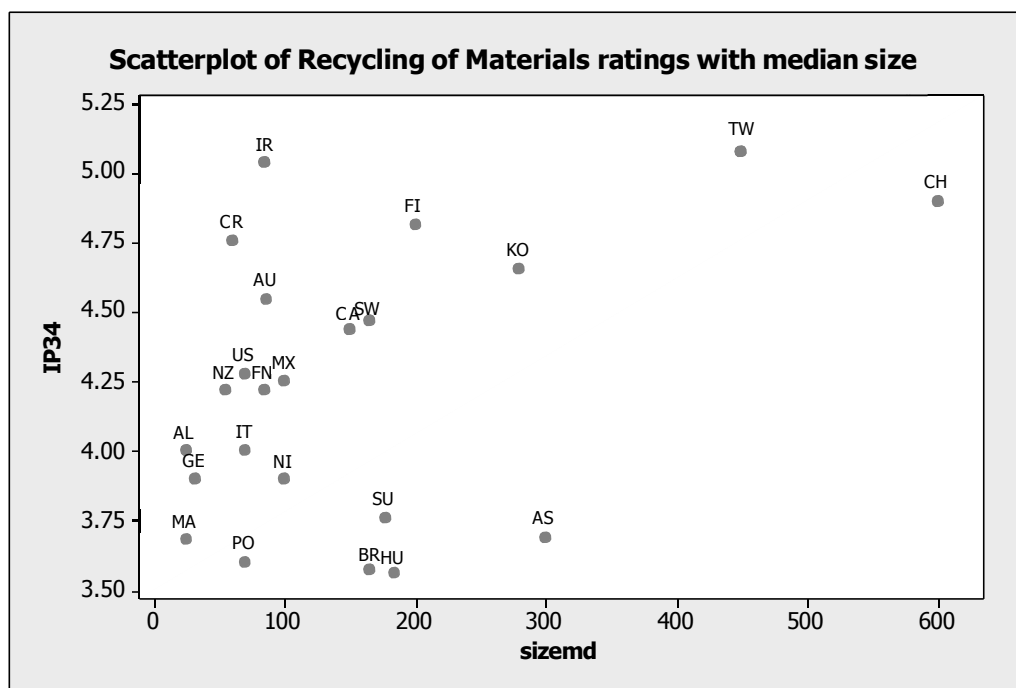


The pattern of investment in recycling (Figure 2) is very similar to that of pollution prevention by these firms, with no obvious pattern between their investment rating and median

firm size. Again, China and Taiwan stand out as having large median firm size and high average ratings for investments in recycling of materials. Unlike pollution prevent investments, Korea has ratings similar to the other countries in the sample, and Austria has very low ratings. Ireland also stands out as reporting high average ratings for investments in recycling, but relatively low median firm size, as do Fiji and Croatia.

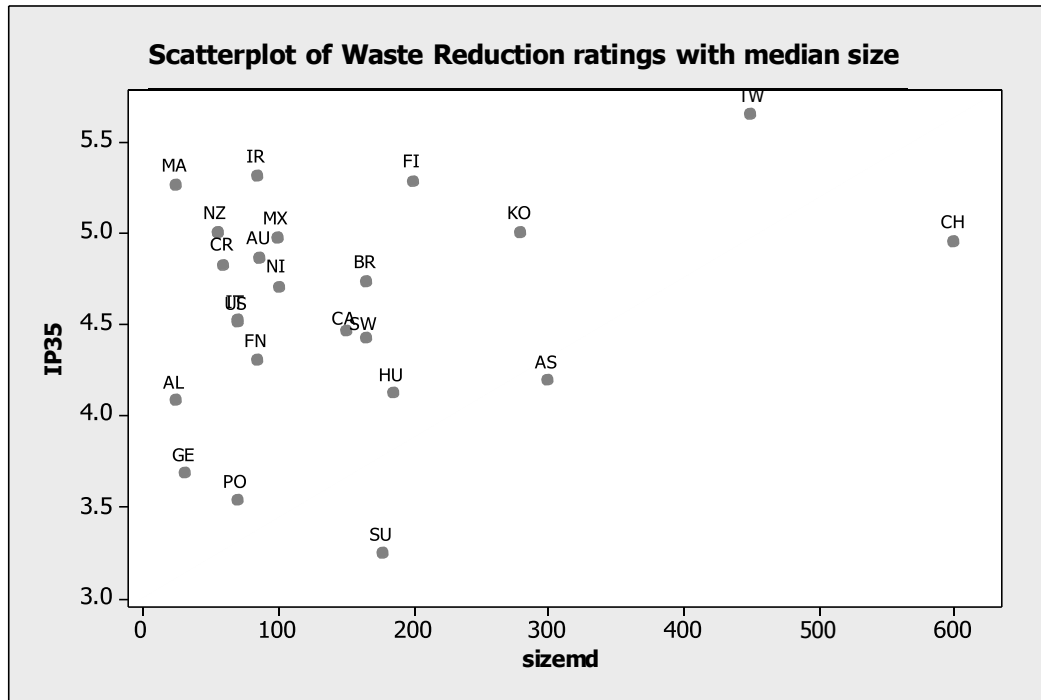
Figure 2: Recycling of materials.

Average response by region and firm size: In the last two years, to what extent has the plant invested resources (money, time and/or people) in programs in recycling; 1 = not at all, 7 = to a great extent, by country, plotted against median firm size



Overall, firms reported a greater level of investment in waste reduction than in pollution prevention or recycling (Figure 3), with an average of 4.65 out of 7. While Taiwan reports the highest average rating in investments in waste reduction, it is not far above the remaining countries, and China and Korea trail Macedonia, Ireland, and Fiji. Firm size is not strongly correlated with waste reduction ratings ($r = .192$).

Figure 3: Waste Reduction.
 Average response by region and firm size: In the last two years, to what extent has the plant invested resources (money, time and/or people) in programs in waste reduction; 1 = not at all, 7 = to a great extent, by country, plotted against median firm size



Over the two years prior to the survey, firms placed the greatest importance on work place health and safety(Figure 4), with an average rating of 5.33 out of 7. Unfortunately, firms in China and Taiwan did not report health and safety investments so they are excluded from this graph. The average for these countries ranged between 4.5 for Poland 5.7 for Ireland, with the exception of 6.55 for Fiji.

The previous figures examined the association between average ratings and median firm size at the country level. However, this aggregation may hide associations of ratings and firm size within countries. Table 4 reports the correlation coefficients between ratings and the logarithmic firm size by country.

Table 4 shows correlations of firm size (in logarithmic units) with investments in pollution prevention, recycling, waste reduction, and work place health and safety, overall and by country/region. Perrini et al (2007) also used firm size in logarithmic units in their study of Italian firms. In our study, larger firms made greater investments in these areas than did small firms overall. However, firm size was not significantly correlated with these investments in many individual countries.

Figure 4: Work place health and safety.

Average response by region and firm size: In the last two years, to what extent has the plant invested resources (money, time and/or people) in programs in work place health and safety; 1 = not at all, 7 = to a great extent, by country, plotted against median firm size

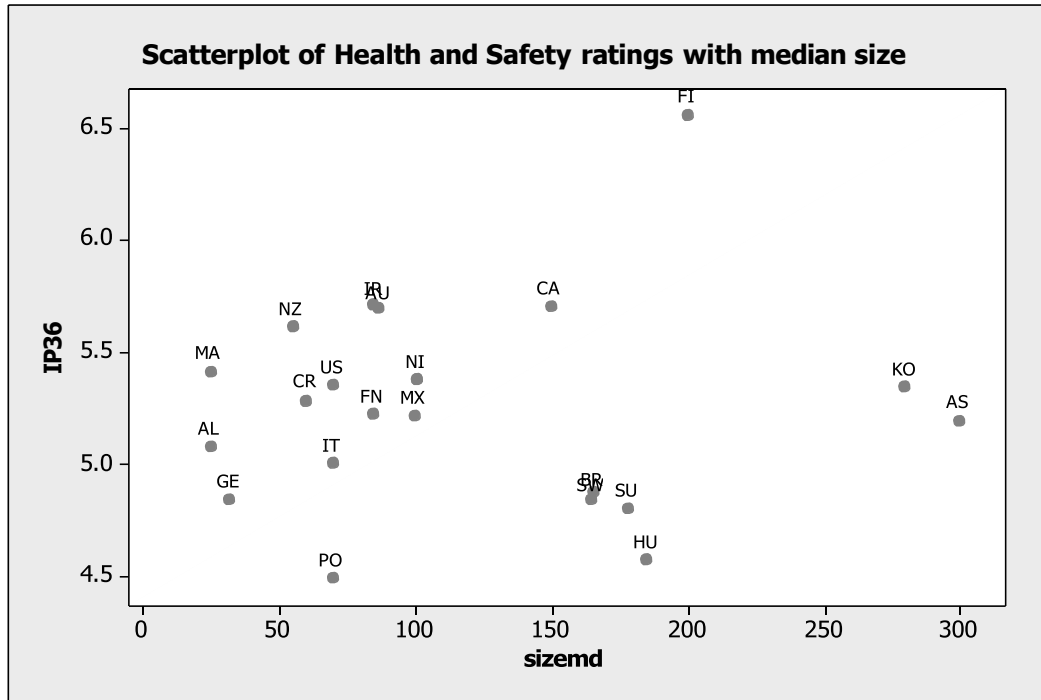


Table 4: Correlation coefficients of Ln Size with the extent to which the plant invested resources in each of the four CSR practices

Region	Pollution prevention	Recycling of materials	Waste reduction	Work place health and safety
Albania	.266	.206	.056	.068
Australia	.180	.132	.243*	.190
Austria	.437	.264	.268	-.145
Brazil	.012	.371**	.278	.224
Canada	.271***	.012	.047	-.012
China	-.017	.452***	.273**	.332**
Croatia	.042	-.046	-.039	-.120
Fiji	.193**	.169*	.333***	.275***
Finland	.102	-.052	-.055	.019
Germany	.063	-.081	.040	.074
Hungary	.365***	.180	.121	-.039
Ireland	.365**	.086	.339**	.255*
Italy	.229*	.121	.117	.112
Korea	.392***	.306***	.478***	.410***

Region	Pollution prevention	Recycling of materials	Waste reduction	Work place health and safety
Macedonia	.130	.022	-.062	.299*
Mexico	.418***	.035	.107	.221**
Nigeria	-.082	.303	.276	.115
New Zealand	.154	.342	.446**	.015
Poland	.470***	.413**	.341*	.369**
Sweden	.575***	.430**	.253	.112
Taiwan	.450***	.395***	.259*	NA
USA	.212*	.047	-.055	.184*
TOTAL	.268***	.172***	.192***	.162***

***significant at 1% level; **significant at 5% level; *significant at 10% level.

Korean firms show the strongest and most consistent relationship of firm size with investments in these activities, with larger firms reporting a greater extent of investments. The same is true for firms in Taiwan, China, Fiji, and to a lesser extent, Ireland and Poland.

Size is most strongly correlated with pollution prevention, with $r = .268$. This association is significant in most countries except Albania, Australia, Austria, Brazil, China, Croatia, Finland, Germany, Macedonia, Nigeria, and New Zealand.

The activity with the weakest correlation of investment to firm size is work place health and safety. Work place health and safety investments are strongly and significantly correlated with firm size only in China, Fiji, Korea, Mexico, and Poland. It appears that in most other countries, this issue is important regardless of firm size (see Table 2).

Recycling of materials is strongly correlated with firm size in Brazil, China, Korea, Poland, Sweden, and Taiwan. Waste reduction is strongly correlated with firm size in China, Fiji, Ireland, Korea and New Zealand.

LIMITATIONS

These data provide a window into the decision making of small, medium and large firms around the world during the mid-2000s in regards to investments in pollution prevention, recycling, waste reduction, and work place health and safety. However, some limitations should be addressed.

First, the sample is biased and not randomly selected. Firms were included based on willingness to participate. Second, investments in resources were self-rated on a Likert scale of 1-7, with 1 being not at all and 7 being to a great extent. We assume that the distance between each rating is equal, but that may not be the case. In addition, more objective outside reviewers may have assigned different ratings. Actual dollar expenditures or man-hours of employees were not measured. Also, the firms were asked to rate the extent of investments over the previous two years. If the firm made large expenditures prior to that time or after that time, these investments

would be missed; or, if the firms already had such programs in place and needed no further investments, they would underrate the extent of their activities because of the wording of the survey.

Finally, other factors that may influence the extent of their investments in these activities were not accounted for or controlled for, such as the legal/regulatory environment that differs among countries.

CONCLUSIONS

This study contributes to the literature in several ways. First it supports studies that find differences in CSR practices among SME and large firms. This study expands on prior research by including companies in more than one country and in countries not studied previously lending credibility to the conclusions that suggest CSR is not the same at SME and large firms regardless of country.

Cross-cultural differences are another important aspect of this research. If SMEs are different based on size, what happens when we account for country of origin? There are country differences for some of the aspects of CSR covered by the survey questions. Some of the differences may relate to differences in incentives, regulation or cultural differences. Those aspects of CSR which might mean cost savings to firms, in particular waste reduction, show firm size is not correlated strongly with the characteristic. Other studies suggest that smaller firms engage in CSR activities more closely associated with cost savings, so these results support prior research. For practitioners, the idea that CSR can occur without a formal CSR framework is worthwhile. For policymakers it is important to note that education and government involvement in the form of either regulations or incentives that succeed in one country may provide a model for other countries.

This study suggests several areas for further research. One issue is to provide a framework for explaining differences among countries. Cross-cultural differences, the regulatory environment and other country-specific issues may help explain the data.

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TRADE WAR WITH THE UNDERVALUATION OF THE CHINESE YUAN

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ABSTRACT

Many experts believe that the Chinese yuan has been intentionally kept undervalued by the Chinese Central Bank to have a comparative advantage for their products in the global market, especially the U.S. This paper investigates whether the claim is true or not. There are two theories of exchange rate determination. The first theory is the Purchasing Power Parity (PPP) theory which states that exchange rates between two currencies adjust based upon the movement of the consumer price index (CPI) for the two different countries. The second theory of exchange rate determination is the Interest Rate Parity (IRP) theory. According to IRP, in the country that has higher interest rates, the value of the currency will depreciate in the forward market so that no one can make a gain by taking advantage of interest rate differential. Because the U.S. is the largest importer of Chinese goods, the paper tests the null hypothesis that Purchasing Power Parity holds between the U.S. and China. The second null hypothesis tested states that Interest Rate Parity holds between the U.S. and China.

The results of the test showed that both null hypotheses were rejected which proves that the claim of many experts is valid. The Chinese yuan is undervalued.

INTRODUCTION

There are two theories of exchange rate determination. The first theory is called Purchasing Power Parity (PPP) which states that the exchange rate between two currencies adjusts based upon the movement of the consumer price index (CPI) for the two different countries. For examples, if ten apples in the U.K. cost £1 and ten apples in the U.S. cost \$2, then the exchange rate will be £1=\$2. Now let's assume that the price of the apples goes up in the U.S. where ten apples cost \$3 and 10 apples in the U.K. go up to £2. The exchange rate will now be £1=\$1.50. In other words, because the relative price increase in the U.S. was lower than in the U.K., the dollar increased its value against the pound.

The second theory of exchange rate determination is the Interest Rate Parity (IRP) theory. According to IRP, in the country that has higher interest, the value of their currency will depreciate in the forward market so that no one can make a gain by taking advantage of interest rate differential. In other words, if interest is 4 percent in the U.S. and 8 percent in the U.K., investors in the U.S. will borrow in the U.S., convert to British pounds, and invest in the U.K. But at the end of the investment period when they try to convert British pounds to U.S. dollars, the value of the pound will have gone down, wiping out any gain made due to the higher interest

rate in the U.K. The purpose of this paper is to investigate whether PPP and IRP hold between the U.S.A. and China.

HYPOTHESES

There is an abundance of research on purchasing power parity and interest rate parity but very few deal with an empirical test. The claim made by some experts that the Chinese yuan is undervalued can be tested using the PPP and IRP theories. We will test two hypotheses.

H1 First Null hypothesis: Purchasing Power Parity holds between the U.S.A. and China.

HA: Purchasing Power Parity does not hold between the U.S.A. and China.

H2 Second Null hypothesis: Interest Rate Parity holds between the U.S.A. and China.

HA: Interest Rate Parity does not hold between the U.S.A. and China

If the PPP and IRP null hypothesis can be rejected and the actual exchange rate of the Yuan is lower than the exchange rate predicted by PPP and IRP, using the T-test if the difference is significant, we can then conclude that the Chinese Yuan is undervalued.

PURPOSE AND METHODOLOGY

In this study the exchange rate of the Yuan is predicted by using both IRP and PPP. The predicted exchange rate is compared with the actual exchange rate for years 1996 to 2007. T-test is done to determine if the difference between actual and predicted exchange rates are significant. If the differences are significant and the actual value of the Yuan is below that of the predicted exchange rate based on IRP and PPP, in that case we will reject both null hypotheses and conclude that the Chinese Yuan is undervalued. We make the comparison between the U.S.A. and China because the U.S.A. is the largest importer of Chinese goods. It can then be claimed that China is getting a comparative advantage in trade by the Chinese central bank's intervention in the foreign exchange market by increasing the supply of the Yuan and keeping the value of the Yuan artificially low.

Year	Actual Exchange Rate	Predicted IRP
1996	8.298	6.96
1997	8.28	6.98
1998	8.28	6.12
1999	8.28	6.16
2000	8.28	6.26

Table 1		
Year	Actual Exchange Rate	Predicted IRP
2001	8.28	6.59
2002	8.28	7.14
2003	8.28	7.18
2004	8.28	7.20
2005	8.07	6.32
2006	7.81	7.84
2007	7.30	6.65

Table 2		
Year	Actual Exchange Rate	Predicted PPP
1996	8.298	7.82
1997	8.28	7.84
1998	8.28	7.21
1999	8.28	7.24
2000	8.28	7.82
2001	8.28	7.65
2002	8.28	7.02
2003	8.28	7.23
2004	8.28	7.18
2005	8.07	7.28
2006	7.81	6.84
2007	7.30	7.14

LITERATURE REVIEW

It is determined that non-stationary real exchange rate in the long run between nominal exchange rate and domestic and foreign prices is almost non-existent, and therefore it is concluded that the theory of Purchasing Power Parity is invalid (Su & Chang, 2011). Therefore, it is concluded that exchange rate cannot be predicted using PPP. PPP states that if the price of a basket of goods is the same in two countries then the exchange rate must be at equilibrium. Given any international goods market arbitrage is traded away, then we must expect exchange rate to be at equilibrium. It is true that empirical evidence on the stationarity of real exchange rates is present, but it remains inconclusive.

Numerous studies have found support for a unit root in real exchange rates but critics contended that such a conclusion is probably attributed to the lower power of the conventional unit root test employed. This is because a growing consensus that conventional unit root tests fail to incorporate structural breaks in the model (Lin & Chang, 2010). Lin and Chang employed a stationarity test with a fourier function which has been recently introduced by Beeker (Beeker, et al, 2006). In their study of the empirical results of nine post communist economies in Europe,

Lin and Chang concluded that PPP does not hold in those nine post-communist transition economies.

There is an abundance of empirical evidence on the stationarity of the real exchange rates; however, there are none conclusive. The reason for that may be because most of the prior studies implicitly assumed that exchange rate behavior is inherently linear in nature. Taylor and Peel have proven that the adoption of the linear stationarity test is inappropriate for the detection of mean reversion given that the true process of the data generation of the exchange rate is in fact a stationary nonlinear process (Taylor & Peel, 2000).

Lee and Zhu used monthly data covering 1997 to 2009 in order to apply stationary test with a fourier function which has been proposed by Enders and Lee (Enders & Lee, 2004) which tests the validity of PPP covering seven major OPEC countries. Lee and Zhu applied nonlinear threshold unit root test in order to assess non-stationary properties of the real exchange rates for seven major OPEC countries. The test has higher power than linear method if the true DGP of exchange rate is really in fact a stationary nonlinear process. The major implication of the study is the validity of PPP from the nonlinear point of view and concluded in the long run PPP is an indication of a long run relationship between the nominal exchange rate and the domestic and foreign prices of a certain economy. When PPP holds, it can be used to determine the equilibrium exchange rate. Therefore monetary approach requires that PPP must hold. Although many empirical tests have taken place, none of the results are conclusive. The empirical test undertaken by Lu and Pan employed the monthly bilateral nominal exchange rate relative to the U.S. dollar and CPI based on 2000 = 100 among G-7 countries over the period January 1980 to January 2009. The study applied the non-parametric rank test of cointegration as proposed by Breitung in order to test the validity of long run PPP for G-7 countries (Breitung, 2001). They concluded that PPP holds true for all G-7 countries. They also concluded that nominal exchange rate and the domestic and U.S. CPIs are nonlinearly interrelated with the exception of France and Germany (Lee & Pan, 2011).

The majority of the empirical tests of PPP generally conclude that real exchange rates tend to converge towards the levels predicted by PPP over the long run (Taylor & Taylor, 2004).

The panel based unit root test that maintains the null of the unit root in all panel members is not capable of detecting precisely the stationarity of individual real exchange rates. In an article by Baharunshah and Beko, they tackle this issue by using panel seemingly unrelated regressions Augmented Dicky-Fuller (SURADF) approach (Baharunshah & Beko, 2011). This is the first study that uses SURADF to study the PPP for the real exchange rates of twelve Central and Eastern European economies with respect to the U.S. dollar and the Euro.

The results reported from the SURADF estimates show that the PPP proposition holds for half of the countries in this analyzed panel with respect to the U.S. dollar and the Euro. They conclude that the concept of PPP is corroborated for some but not for all Central and Eastern European economies. Secondly, the judgment on the validity of parity conditions for individual countries is contingent upon the choice of the numeraire currency (Baharunshah & Beko, 2011).

Several studies have provided empirical evidence on the nonlinear adjustment of exchange rates. This is because of the presence of transaction costs that inhibit international goods arbitrage and official intervention in the foreign exchange market which may lead to nominal exchange rate movements which are asymmetric (Taylor & Peel, 2004). Killian and Taylor suggest that nonlinearity may also arise from heterogeneity of opinion in the foreign exchange market pertaining to the equilibrium level of the nominal exchange rate. When the nominal exchange rate takes on more extreme values a degree of consensus develops regarding the appropriate direction of exchange rate moves and as such, trades act accordingly (Killian & Taylor, 2004).

There is an abundance of empirical evidence on the stationarity of the real exchange rates; however, there are none conclusive. The reason for that may be that most of the prior studies implicitly assumed that exchange rate behavior is inherently linear in nature. Taylor and Peel have proven that the adoption of linear stationarity test is inappropriate for the detection of mean reversion given that the true process of the data generation of the exchange rate is in fact a stationary nonlinear process (Taylor & Peel, 2000).

Lee and Zhu used monthly data from 1997 to 2009 in order to apply stationary test with a fourier function which has been proposed by Enders and Lee (Enders & Lee, 2004, 2009) which tests the validity of PPP covering seven major OPEC countries. The test has higher power than the linear method if the true DGP of the exchange rate is really in fact a stationary nonlinear process. The major implication of the study is the validity of PPP from the nonlinear point of view and concluded in the long run PPP exchange rate adjustment is mean reverting towards PPP equilibrium values in a nonlinear way (Lee & Zhu, 2011).

In the recent past many studies have focused on testing the validity of long run PPP. These studies have unveiled important policy implications in international finance. Long run PPP is an indication of a long run relationship between the nominal exchange rate and the domestic and foreign prices of a certain economy. When PPP holds, it can be used to determine the equilibrium exchange rate. Therefore monetary approach requires that PPP must hold. Although many empirical tests have taken place, none of the results are conclusive. The empirical test undertaken by Lu and Pan employed the monthly bilateral nominal exchange rate relative to the U.S. dollar and CPI based on 2000=100 among G-7 countries over the period January 1980 to January 2009. The study applied the non-parametric rank test of cointegration as proposed by Breitung (Breitung, 2001) in order to test the validity of long run PPP for G-7 countries. They concluded that PPP holds true for all G-7 countries. They also concluded that the nominal exchange rate and the domestic and U.S. CPIs are nonlinearly interrelated with the exception of France and Germany (Lee & Pan, 2011).

The majority of empirical tests of PPP generally conclude that real exchange rates tend to converge towards the levels predicted by PPP over the long run (Taylor & Taylor, 2004).

The panel based unit root test that maintains the null of the unit root in all panel members is not capable of detecting precisely the stationarity of individual real exchange rates.

In an article by Baharunshah and Beko, they tackle this issue by using panel seemingly unrelated regressions Augmented Dickey Fuller (SURADF) approach. This is the first study that uses SURADF to study the PPP for the real exchange rates of twelve Central and Eastern European economies with respect to the U.S. dollar and the Euro. The results reported from the SURADF estimates show that the PPP proposition holds for half of the countries in their analyzed panel with respect to the U.S. dollar and the Euro. They conclude that the concept of PPP is corroborated for some but not for all Central and Eastern European economies. Secondly, the judgment on the validity of parity conditions for individual countries is contingent upon the choice of the numeraire currency (Baharunshah & Beko, 2011).

Several studies have provided empirical evidence on the nonlinear adjustment of exchange rate. This is because the presence of transaction costs that inhibit international goods arbitrage and also official intervention in the foreign exchange market which may lead to nominal exchange rate movements are asymmetric (Taylor & Peel, 2000, 2004).

Kilian and Taylor suggest that nonlinearity may also arise from heterogeneity of opinion in the foreign exchange market pertaining to the equilibrium level of the nominal exchange rate. When the nominal exchange rate takes on more extreme values, a degree of consensus develops regarding the appropriate direction of exchange rate moves and as such, trades act accordingly.

Chang, Chang and Su in their empirical study determine whether PPP holds for Germany's real exchange rate relative to a sample of its major trading partner countries and find that the adjustment process towards its equilibrium is nonlinear in a symmetric or an asymmetric way, using a simple and powerful nonlinear unit root test. Their study applies a simple and powerful nonlinear unit root test, proposed by Sollis in order to test the validity of long run PPP, for Germany's real exchange rates vis a vis five trading partner countries with the exception of Canada, and that adjustment towards PPP is nonlinear and asymmetric (Chang, Chang & Su, 2011).

The theory of interest rate parity holds that one cannot make arbitrage profits due to different interest rates in different countries. Any gain made because of the interest rate differentials will be wiped out due to adjustment in the exchange rate at the end of the investment time horizon. Let us assume the three month interest rate in the U.S.A. is 11 percent and the same three month interest rate in the U.K. is 7 percent. This would indicate that investors in the U.K. will transfer their funds to the U.S. to take advantage of the higher interest rates and to earn a higher return. However, the theory of interest rate parity holds that such arbitrage opportunity is not possible because after three months the U.S. dollar is expected to depreciate by approximately 4 percent. Therefore, the British investor will not be any better off at the end of three months because the 4 percent higher return in the U.S. will be wiped out when the value of the dollar declines by approximately 4 percent at the end of three months, when the British investor converts the dollar for British pounds. This is an exchange rate risk. To avoid exchange rate risk, a British investor will simultaneously buy the dollar in the spot market and sell the dollar in the forward market. The value of the dollar in the spot market will therefore go

up and the value of the dollar in the forward market will go down. This will wipe out any arbitrage profit. Therefore, whether the investor invests in the U.K. or U.S.A., they should get the same return. This study examines whether PPP and IRP hold between the U.S.A. and China.

Interest rates and exchange rates are sometimes influenced by political pressures. Liability dollarization and lobbying activity interact to influence exchange rate policy in emerging market economies. There is a reluctance to allow the currency to float freely because of political pressures and financial sectors, although exchange rate movements could be beneficial from a social perspective. This assumes one period small open economic model, where two groups of individuals have conflicting interest toward exchange rate policy. The first group is producers of tradable goods who seek loans in domestic currency to cover the cost of production, but get paid in foreign currency in trading those goods. They stand to gain from an ex-post depreciation of the domestic currency. The second group is the bankers, who are producers of an intermediary service. They obtain funds from the world market. Therefore, their assets are in domestic currency, but liabilities are in foreign currency. Therefore, they gain from an appreciation of the domestic currency. However, both parties dislike excessive volatility in the foreign exchange market as it increases the cost to both parties. The excessive volatility increases the cost of gathering funds from abroad for the bankers and it causes them to charge higher interest rates to the producers. Both parties are organized and have lobbies with diverging objectives. They try to influence the government to have exchange rate policy to appreciate local currency while the lobbyists of the producers want exchange rate policies to depreciate the local currency (Ester, Massimo, Michele, 2008).

Fixed exchange rate regimes are considered temporary even though it can last up to a decade. Usually freely floating regimes last longer than pegged regimes, especially among developed countries. The main problem is how to exit a pegged exchange regime to a free floating exchange rate regime. One should exit a pegged exchange rate regime when economic conditions globally and domestically are favorable. There is a difference between orderly exit from pegged exchange rate regimes which is followed by better economic performance (Abi, Nedezhda, Chuda, 2009).

There is considerable literature on joint intervention in the foreign exchange market. Intervention provides credible information about future policy decisions. Such policy decisions may relate to interest rates. The joint intervention in the foreign exchange market by both the Japanese and American central banks on 17 June 1998 was effective. However, the effectiveness of the joint intervention is not instantaneous and does not last very long. The fundamental determinant of exchange rates is not intervention but rather capital flow and economic performance. Therefore joint intervention has very little impact on exchange rate which is short lived. Capital flow can be influenced by interest rates which will influence exchange rates. Monetary authorities in any country cannot rely solely on intervention to stabilize exchange rates (Chen & Huang, 2008).

The modern approach to forward exchange rate determination suggests that the equilibrium forward exchange rate is determined by the actions of two groups, arbitrageurs and speculators. It was found that there is a systematic long run relationship between the current forward exchange rate, the parity forward exchange rate and one period ahead spot exchange rate. It is also concluded that speculation plays a very negligible role in determining forward exchange rate (Karfakis & Costas, 2008).

According to uncovered interest rate parity, it is predicted that currencies yielding a high return will depreciate; however, an increase in real interest rate will appreciate the currency. In the short run, there may be deviation of the UIRP, but it does hold in the long run. Empirical research has found that deviation from UIRP is fairly strong and should not be ignored.

There is arbitrage opportunity in the short run because in the long run UIRP holds (Yuhang, 2007).

The value of the Malaysian ringgit has been a controversial issue in the most recent times. The authorities decided in September 1998 to peg the ringgit to the U.S. dollar after a sharp decline of about 23 percent in real effective terms during the crisis of 1997 and 1998. The peg remained in effect until July 2005. During these seven years the current account balance increased significantly and was in continuous surplus, unusual for an emerging economy. The foreign reserve continued to increase since mid-2002, reflecting recurring intervention by the Malaysian Central Bank to prevent the appreciation of the ringgit from reaching an equilibrium exchange rate of the ringgit. The equilibrium exchange rate of the ringgit appreciated during the first half of the 1980s because of expansionary fiscal policy. There was fiscal contraction during the first half of the 1980s along with rise in international trade because of the government's commitments to an open trade regime which eventually resulted in the depreciation of the ringgit during the second half of the 1980s (Koske, 2008).

In an analysis of East Asian interdependence in the face of global imbalances using a multinational macroeconomic model, it was found that a depreciation of the dollar and reduced U.S. demand has contrasted effects on East Asian economies. The U.S. deficit is important for China and other East Asian countries. The study compares fixed versus flexible exchange rate regimes in East Asia. It shows that depreciation of the dollar has more impact on Korea and slowdown of demand has more impact on China (Jaques, Yonghym, Shopie, 2008).

It is widely accepted that forward exchange rates are not unbiased predictors of future spot exchange rates and therefore there are nonzero returns to forward speculation. It is believed that if forward speculation contains systematic risk, there should be nonzero return from speculation. The paper analyzes ex ante return on forward speculation and attempts to determine interest rate parity hypothesis, the expected profit to forward speculation should be zero.

There are significant ex ante returns to forward speculation in five currencies in relation to the dollar, and four currencies relative to the Deutsche mark (Cumby, 1988).

According to uncovered interest rate parity it is argued that the presence of different interest rates in different countries can be explained by expected changes in exchange rates,

although empirically this theory does not hold (Micheal, Christenson, Froot, Mark, Wu, 2008). Therefore one could reasonably argue that there are other factors besides interest rates that influence the exchange rates. For the purpose of this study however, we concentrate only on those variables involved in interest rate parity theory, such as forward rates, spot rates and domestic and foreign interest rates. However, sometimes spot exchange rates are influenced by policy behavior such as increasing or decreasing interest rates to stabilize exchange rates (Christensen, 2000). The forward rate has often been referred to as a biased predictor of the future spot rate (Baillie & Bollerslev, 2007). Kevin Clinton emphasized transaction cost as being relevant in his study (Clinton, 1988). However, in most studies involving covered interest arbitrage the transaction cost is usually ignored.

In an efficient market, forward exchange rate is the sum of the expected future spot rate plus the risk premium (Byers & Peel, 1991). McCullem argues that forward market for foreign exchange is inefficient, therefore, the notion that forward rate is an unbiased estimator of forward spot rate is not valid (McCullem, 1993). However, in my study it is assumed that the market is efficient and forward rates are an unbiased estimate of the future spot rates.

Normally it is expected that currencies with high interest rates tend to appreciate against those with lower interest rates in the spot market (Flood & Rose, 1996). However, this is not true for the emerging markets in Asia.

Although several studies have rejected the interest rate parity theory, nevertheless the theory is used both by academicians and policy makers because there is no alternative theory.

Mayfield and Murphy suggest that a time varying risk premium is responsible for the rejection of interest rate parity theory (Mayfield & Murphy, 1992).

RESULTS

The results of the t-test for interest rate parity show that the computed t value is greater than the critical t value and also the p value is less than alpha. For both of these reasons, we must reject the null hypothesis and conclude that Interest Rate Parity does not hold between the U.S.A. and China

Similarly, the t-test for PPP also has a computed t value greater than critical t and the p value is less than alpha. Therefore, we reject the null hypothesis and conclude that PPP does not hold between the U.S.A. and China.

CONCLUSION

It can be argued that the Chinese central bank intervenes in the foreign exchange market by increasing the supply of yuan, thereby lowering the value of the yuan. Because of the undervaluation of the Chinese yuan, Chinese products become cheaper in the global market. It may be concluded China continues to follow this policy and therefore has a positive balance of

trade with most countries including the U.S.A. This is an unfair trade practice that will eventually lower the standard of living for the Chinese people because imports by China become more expensive.

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INTERNATIONAL TOURISM AND THE OLYMPICS: THE LEGACY EFFECT

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ABSTRACT

This study examines international tourism as a legacy of hosting the Olympics. Prior research has hypothesized that the host city will have sustained increases in international tourism as a result of hosting the Olympics. The increase in tourism is largely attributed to the positive media coverage of the sporting event and the host city. In this research, international air passenger traffic for six Olympics is analyzed. Time series models are used to analyze the effect of the Olympics as an intervention in the series. The magnitude, shape and duration of the intervention are modeled. The results show no sustained increase in international tourism for five of the six host cities. Only half the sites show an increase in international tourism during the Olympics.

INTRODUCTION

This study examines international tourism as a legacy of hosting the Olympics. In this research, international tourism is measured by the number of international air passengers enplaning and deplaning each month at the international airport(s) serving the Olympic host city. Hypothetically, increases in tourism to the host city is composed of four major components: (1) increased tourism at the time of the Olympics as a direct result of tourists coming to watch the Olympics, (2) Olympic visitors returning for an additional visit, (3) Olympic tourists encouraging friends back home to visit the host city, and (4) visitors who are generated by the media coverage of the Olympics and the Olympic host city. The most important of these is the extensive media coverage (Preuss, 2004). The US is exposed to more media coverage of the Olympics than any other country (Short, 2004). The US comprised 20.9 percent of the viewers watching the opening ceremonies of the 2006 Olympics (ETOA, 2006). AC Neilson estimated that 40.7 million people watched the opening ceremonies for the London 2012 Olympics, an all-time high number of viewers. The 1996 Atlanta Olympics held the record previously (Collins, 2012). An overall audience of 219.4 million viewers for the games made the London Olympics the most watched event in American history (IOC, 2013). Although the US is the largest source of international visitors for many of the host cities at any time, a recent study shows that

exposure in the US to the games does not produce sustained increases in international tourism from the US to the Olympic host city (Gruben, 2012).

The cost of hosting the Olympics has dramatically escalated since the 1984 games in Los Angeles (Malfas, 2004), yet cities wanting to host the event form long lines years in advance to put their names in the pool of those to be considered as a host city. Although short term profit may be a motivating factor, Los Angeles was the first city in modern times to generate a profit from hosting the games (Holloway, 2006; Yongjian, 2008). Few Olympic host cities have shown a profit since the 1984 Los Angeles games. London, host site of the 2012 Olympics, spent £2.38 billion over an eight-year period to hold the games, yet generated revenue of only £2.41 billion over the same period (Owen, 2013). Regardless of the profitability, hosting the games is considered a prestigious honor for the host city.

This paper examines the changes in international tourism at Olympic venues during the games as well as the time just prior to and after the event. Increasing international tourism is the largest economic justification for hosting the Olympics. Measuring the change in international tourism has also been one of the more difficult research issues related to the Olympics. The time series methodology used in this research will improve upon the estimation process by controlling for existing trends in international tourism to the host city. The methodology and data used will also improve on prior studies by controlling for the displacement effect. Another improvement on prior studies is the use of international tourism (measured by international air passengers) from all originations versus domestic visitors or visitors from one country to the Olympic site.

This paper is organized as follows. First, a review of the literature pertaining to Olympic tourism will be presented. A description of the data will come next. A discussion of the methodology will follow. Fourth, the results for six Olympic host cities (Atlanta, London, Salt Lake City, Sydney, Turin, and Vancouver) will be presented. These six cities were selected based on data availability for the primary international airports serving the region. Finally, concluding remarks and implications of the study are discussed.

LITERATURE REVIEW

The Olympic bidding process is expensive and time consuming. The process involves nominations, applications, self-evaluations, creating the bid document, and submitting the bid. The evaluation process can take years. Any city can submit a bid (Short, 2004); the process begins with city nominations and applications. Many cities apply to host the games but only a few, usually four, are selected for candidacy. Emerging from the bidding process victoriously and eventually hosting the Olympics currently runs in the billions of dollars. Although the bidding cost is a sunk cost, the International Olympic Committee (IOC) contends that the expenses involved in the process generate positive legacies even for the cities that are not awarded the event (IOC, 2007; IOC, 2011).

The \$150k application fee for each bid city is only a small portion of the actual cost for the cities that achieve candidacy. One estimate of the cost of London's winning bid for the 2012 Olympics is \$25.5 million, with estimated cost of hosting the games at \$4 billion (Anonymous). While the budget for the games is anticipated to be revenue and expenditure neutral, that budget can be misleading. In London's case, another \$13.7 billion is budgeted for the infrastructure, venues, and transportation (IOC, 2005), which increases anticipated costs to \$17.7 billion. While the final results are not known at this point, London projects a modest profit of £30 million from the 2012 games with revenues of £2.41 billion and costs of £2.38 billion. This will allow London to provide \$8 million in financial aid to the British Olympic Committee (BOC) for joint marketing, \$4 million to the British Paralympic Association (BPA), and an undisclosed amount to the British government (Owen, 2013).

The main reason for bidding cities to want to host the event is that Olympic supporters claim positive tourism legacies and economic benefits derived therefrom (ETOA, 2006; Preuss, 2006). Despite the high cost and lengthy time associated with producing the game plan in the host city, supporters envision increased tourism for many years following the Olympics. The positive legacy is believed to be a result of perceptual changes resulting from the media coverage. Media coverage from the current Olympics may even motivate audiences to attend the Olympic games in the next host city two years later (Preuss, 2004).

Research by Getz (1998), Kasimati (2003) and de Groot (2005) assume the relationship between tourism and the Olympics is obvious and positive. In 2000, Sydney, Australia hosted the Olympics. The Australian Tourism Commission (ATC) reported 26% of those surveyed regarding the Sydney games stated increase tourism as a reason to host the Olympics. In 1998, an ATC study reported an expected increase in tourism of 1.6 million visitors due to the Olympics (Preuss, 2004). The ATC also reported, in a 1998 study of Germans, 45 percent would consider vacationing to Australia by 2002, knowing that the Olympics would be in Sydney in 2000 (de Groot, 2005). The true number of tourists who visit a host city during the Olympics is thought to be between 400,000 and 800,000 (Preuss, 2004). This broad span reinforces the fact that the number of additional tourists generated is difficult to measure.

One of the major benefits of hosting the Olympics is the enormous worldwide television audience that some argue results in increased international tourism (Malfas, 2004; de Groot, 2005). The media coverage of the Olympics typically includes extensive portrayals of many areas of the host city. This coverage is thought to be one of the key elements convincing potential tourists in the audience to visit the host city in the future. During the 21st Olympic Games, 24 percent of the television coverage was devoted to the sporting events. Another 61 percent covered reruns of the day's events, interviews, and network advertising. The remaining 15 percent was used for segments such as special interest stories (Short, 2004).

The Olympics have been credited with making Barcelona one of the world's main tourist destinations (Duran, 2002). One study concluded that Barcelona experienced the largest tourism growth in Europe due to hosting the Olympics (Duran, 2002) while other reports indicate

Barcelona had below average tourist growth during the same time period (ETOA, 2006). During the 1992 Olympics, Barcelona had 25,055 hotel beds with an average occupancy rate of 64% (ETOA, 2006). Price Waterhouse Coopers reported that the Olympics only generated an additional .4 million tourists (PriceWaterHouseCoopers, 2004). The differing conclusions about Barcelona may be attributable to methodology differences in the analysis. Studies that compare different time periods or locations without adjusting for existing trends or external factors may overstate the increase in tourism attributable to the Olympics.

Beijing, China hosted the 2008 Summer Olympics. Prior to the event large increases in international tourism to China and Beijing were predicted as a result of hosting the Olympics. According to the European Tour Operators Association (ETOA), tourism experts were forecasting a 4.5 million visitor increase in international tourism to China resulting from the Olympics (ETOA, 2009). The actual results show that while China had been averaging an annual 6% growth rate in tourism until March of 2008, tourism dropped 2% in the months leading up to the Olympics. Tourism declined another 5% for the following 12 months; 6 million fewer visitors than the prior year. In July 2008, the month before the Olympics, Beijing reported 30% fewer tourists compared to the same period the previous year. The ETOA reports the Olympics did provide a spike in August followed by a decline estimated to be as large as 25% compared to prior year. The ETOA concluded that post Olympics no host city sees a surge in tourism arrivals (ETOA, 2009).

The potential displacement of non-Olympic tourists by Olympic tourist has been ignored in some prior research. This can result in Olympic tourism at the time of the event being overstated (ETOA, 2006). The displacement effect is a result of local tourists who leave or avoid the area during the Olympics, tourists who cancel a visit because of the Olympics, and tourists who delay visits due to the Olympics. These tourists change their normal travel plans because of the increased congestion and cost of visiting the host city at the time of the Olympics.

The ETOA argues that large-scale media coverage of other sporting events, such as football (soccer), are not associated with increasing tourism to event sites. The ETOA proposes that tourists who visit a city for a sporting event are more interested in the actual sport than the location. Many of the people who attend the sporting event would not travel to the city for any reason other than the event so it's counter intuitive to believe that the Olympics will increase tourism after the games. The ETOA reports that theme parks in Los Angeles showed a decline in revenues during the Olympics, resorts in Spain had a drop in demand during the Olympics, and normal attractions in Sydney saw a decline during the Olympics. The ETOA report that during the 1996 Atlanta Olympics, the average hotel occupancy dropped from 72.9% in 1995, the year before the Olympics, to 68% in 1996, the year of the Olympics. Prior research argues that if a positive effect on tourism is seen, the biggest impact should be observed immediately during and after the Olympics (ETOA, 2006; PriceWaterHouseCoopers, 2004). Other research suggests that the Olympics are too short to render a long-term positive legacy (Chalip, 2002).

Many times the Olympic Organizing Committee of the host city pays for, or sponsors published studies about tourism benefits. Research such as this may be motivated to conclude a favorable result (Kasimati, 2003). Reports of Olympic tourism are often exaggerated due to failing to account for displaced tourists or failing to adjust for existing trends in international tourism (Getz, 1998; Kasimati, 2003; Malfas, 2004; Smith, 2009). Overbuilding for the Olympics and sport facilities constructed for the Olympics are not always useful after the Olympics, these can also have a negative impact on the host city as a tourist destination in the future (Malfas, 2004).

The results related to international tourism increases for the studies conducted over the past decades are contradictory. Some studies claim the Olympics have a long term positive legacy while others say that the length of the event is too short to generate a long-term change in international tourism for the host city. This research will attempt to model the change, if any, in international tourism for the host city resulting from hosting the Olympics. The methodology used will improve on prior studies by controlling for existing trends, external events, and the displacement effect. The data used will improve upon prior studies by using international tourism from all originations versus a single location.

DATA

The number of international tourists visiting a given location can be difficult to measure over an extended time frame. In this research the number of monthly international airline passengers is used as a proxy measurement for international tourism. Monthly international passenger data for the main airport(s) serving each Olympic host city from 1990 through 2012 was obtained. The models used in this research require at least fifty monthly observations prior to the date of the Olympics for each Olympic host city. Data were obtained for six of the nine Olympic host cities during this time period. Table 1 summarizes the Olympic host cities for which data was available and the time span for each series used in this research.

Table 1		
OLYMPIC VENUES, TIME SPAN & EVENT DATE		
Olympic Host City	Data	Olympic Date
Atlanta	1/1990-5/2012	7/1996
London	1/2003-12/2012	7/2012
Salt Lake City	1/1990-5/2012	2/2002
Sydney	1/1985-10/2012	9/2000
Turin	1/2000-10/2012	2/2006
Vancouver	1/1992-7/2012	2/2010

For Atlanta, GA (USA) and Salt Lake City, UT (USA) the data were obtained from the Research and Innovative Technology Administration (RITA) Bureau of Transportation Statistics.

The Atlanta series is international passengers enplaned and deplaned. The Salt Lake City series is all passengers domestic and international enplaned and deplaned. The total passenger volume for Salt Lake City is used to avoid having months where no international passengers were present. The London, England (UK) series was obtained from Heathrow Airport Holdings, formerly British Airports Authority (BAA). Two airports are combined for the London market, Heathrow and Stansted. The London series is international passenger volume. The Sydney, Australia series was obtained from the Australian Government Department of Infrastructure and Transport. The series is international passenger volume. The Turin, Italy data was obtained from Assaeroporti Associazione Italiana Gestori Aeroporti. The series is international passenger volume. The Vancouver, Canada data was obtained from the Vancouver Airport Authority (YVR). The Vancouver series is also international passenger volume.

METHODOLOGY

A large body of work supports the concept that tourist destinations have both trend and seasonal patterns over time (Haywood, 1986; Weaver, 1990; Butler, 1994; Cooper, 1994; Tooman, 1997; Moss, 2003; Moss, 2008a; Moss, 2008b; Lui, 2011). The methodology selected for modeling tourism, therefore, should incorporate these components. In addition, external events such as 9/11 and SARS have been shown to impact tourism (Chalip, 2002; Moss, 2003; Preuss, 2006; Moss, 2008a; Moss, 2008b; Lui, 2011). ARIMA models are capable of incorporating both trend and intervention factors adjusting for significant non-Olympic events such as SARS, the Gulf Wars or 9/11, and will be used in this research.

As noted by Butler (1994), seasonality is extremely important and often overlooked in tourism research. Removing seasonality from a series can provide a more accurate estimation of the trend portion of a forecasting model (Bowerman, 1993). By using a decomposition method, an estimate of seasonal variation can be obtained in the form of seasonal indices which are then used to remove the seasonal variation from the time series; thus, isolating variation attributable to long term trends and interventions (Bowerman, 1993; Markidakis, 1998; Moss, 2003; Moss, 2008a; Moss, 2008b; Lui, 2011). In the decomposition approach, the seasonal indices represent the average percentage of annual passengers for each month of the year. The seasonal index for month j ($j=1, \dots, 12$) is calculated as in Equation 1.

$$\text{Seasonal Index}_j = 1/n_j \sum_i S_{ij}, \quad (1)$$

In Equation 1, j is the month of the year, n_j is the number of the j -th month in the series, S_{ij} is the i -th “raw” seasonal index for month j , $S_t = Y_t / CMA_t$, CMA_t is the centered moving average at time t .

After 9/11 seasonal air travel patterns shifted in some regions of the world (Smith, 2005; Moss, 2013). Events such as 9/11 or SARS can also cause large deviations in the series that are

not attributable to normal seasonal variation (Lui, 2011). To refine the ratio to centered moving average calculations, two steps have been added to the calculation of seasonal indices. First, seasonal indices are calculated for the time periods before and after 9/11 independently. Second, any raw seasonal index more than three standard deviations from the average seasonal index for a given month are removed prior to calculating the final seasonal index for that month. The resulting seasonal indices are then used to seasonally adjust (SA) each series.

The seasonally adjusted series are differenced to achieve stationary series prior to estimation of each ARIMA model. The auto-correlation function (ACF) of each series first and second differences were examined to determine if a linear (first differenced) series or non-linear (second differenced) series is required (Vandaele, 1983). In all cases the first differenced series ACF dropped off substantially faster over time indicating an underlying linear series.

After differencing, each seasonally adjusted ARIMA model is estimated for the series up to the month prior to the Olympics. The resulting ARIMA model is then used to produce forecasts for the month of the Olympics forward. The actual passenger data is used for the lagged variables in the ARIMA model up to the point in the series when the Olympics occur. Over a period of time after the Olympics the forecast adjusts to an annual increase represented by the constant in the ARIMA equation (Vandaele, 1983; RATS, 2010). This annual increase is the underlying trend absent the effects of lagged variables and interventions. The amount of time after the Olympics the forecast takes to become a linear trend line depends upon the lag structure of the ARIMA model. This methodology has the effect of estimating and extending the existing trend beyond the Olympics as if the Olympics had not occurred. The actual post Olympics series values and forecast series values are then compared to model the magnitude, duration, and shape of the intervention effect of the Olympics upon the series. Estimating the change in international passenger volume in this manner takes into account existing trends prior to the Olympics and models the net change avoiding the displacement effect.

RESULTS

Table 2 shows the pre and post 9/11 seasonal indices used to seasonally adjust each series. Two of the series have limited or no pre 9/11 data, therefore, they only have post 9/11 seasonal indices (London, UK and Turin, IT).

Atlanta, GA, USA

The Atlanta Olympics were held in July, 1996. The seasonally adjusted ARIMA model for Atlanta is shown in Equation 2.

$$Z_t = 989.91 - .416Z_{t-1} - .248Z_{t-4} - .324Z_{t-7} - .355Z_{t-8} - 11,041 * 2/91 + 12,115 * 3/95 \quad (2)$$

Where,

Z_t = Seasonally adjusted first differences

$R^2 = .97$

SE = 4,361

Ljung-Box Q-Statistic = 14.736, PV = 0.256

2/91 is attributed to Gulf War I

3/95 is attributed to the Super Bowl

Table 2
Seasonal Indices Pre and Post 9/11

	Atlanta		London		Salt Lake City		Sydney		Turin		Vancouver	
	Pre	Post	Pre	Post	Pre	Post	Pre	Post	Pre	Post	Pre	Post
Jan	85%	98%	n/a	86%	91%	93%	122%	124%	n/a	120%	91%	95%
Feb	74%	81%	n/a	82%	91%	91%	101%	102%	n/a	124%	83%	87%
Mar	101%	104%	n/a	96%	106%	108%	95%	96%	n/a	129%	98%	100%
Apr	100%	100%	n/a	98%	89%	93%	93%	94%	n/a	95%	87%	90%
May	104%	98%	n/a	101%	94%	97%	82%	81%	n/a	88%	101%	98%
Jun	112%	114%	n/a	108%	112%	110%	84%	84%	n/a	94%	112%	109%
Jul	126%	129%	n/a	119%	120%	116%	109%	113%	n/a	98%	130%	128%
Aug	119%	118%	n/a	118%	121%	114%	96%	94%	n/a	95%	140%	133%
Sep	102%	88%	n/a	109%	97%	91%	98%	96%	n/a	97%	110%	103%
Oct	106%	91%	n/a	104%	94%	96%	113%	111%	n/a	87%	89%	86%
Nov	87%	82%	n/a	89%	86%	89%	101%	96%	n/a	78%	75%	76%
Dec	87%	93%	n/a	92%	100%	100%	106%	107%	n/a	91%	87%	92%

The ACF, partial auto-correlation (PACF) and Ljung-Box Q-statistic for 12 lags all indicate the residual series is white noise. All autoregressive variables and interventions in the equation are significant at the 10% or lower significance level. The same results apply to all models presented in this research; therefore, discussion of these statistics will be omitted for the subsequent seasonally adjusted ARIMA models.

To identify interventions in the forecasting equations that occur prior to the Olympics a preliminary forecasting equation is estimated, then the residuals and graphs are analyzed for significant outliers. The outliers are included as interventions in the final forecasting equation. Research is done to identify likely sources of the interventions. The interventions in the ARIMA equation are important to include so that they do not influence the short-term forecast, slope or position of the trend line.

The forecasting equation for Atlanta includes significant interventions for Gulf War I (negative) and hosting the Super Bowl (positive). Figure 1 shows the forecast versus the seasonally adjusted series. The vertical line in the graph is the month of the Olympics. The

forecasting model was estimated using data up to the month prior to the Olympics then forecasts were estimated and extended 24 months post Olympics.

Figure 1

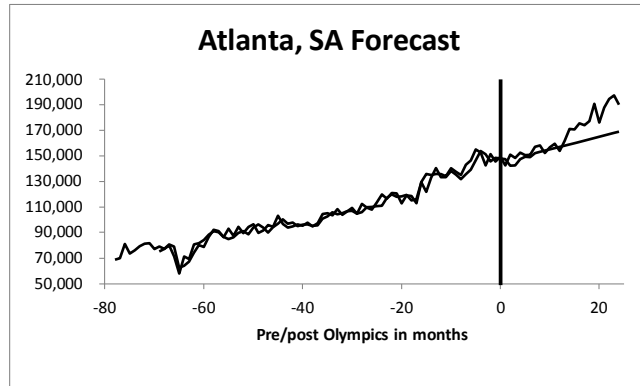


Figure 2 shows the difference between the seasonally adjusted forecast and the seasonally adjusted data measured in standard errors (standardized residual) for the period beginning 24 months prior to the date of the Olympics and extended to 24 months post Olympics. Deviations beyond +/- 3 standard errors are considered significant.

Figure 2

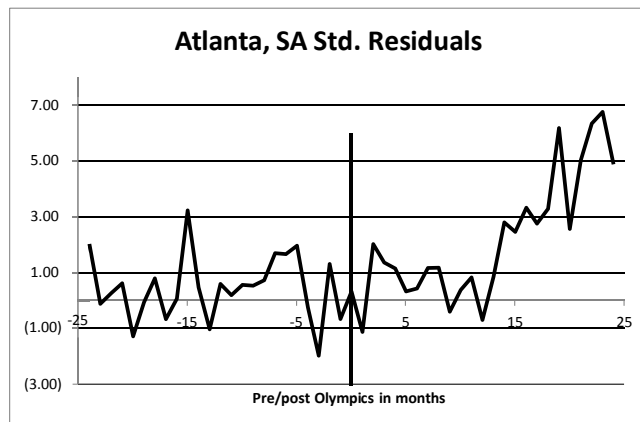


Figure 2 shows significant positive deviations from forecast trend beginning 16 months after the Olympics. Prior research proposes that the effects of the Olympics, both short-term increases in tourism and long-term trend changes, should begin at the time of the Olympics or

prior to the Olympics. Attributing a change in international passenger volume 16 months post Olympics does not fit with the proposed legacy effect. Pre Olympics, Figure 2, shows only one significant deviation from forecast, April 1995. This deviation has a standardized residual value of 3.24, which is not statistically significant when included as an intervention in the forecast. The results show no measureable effect on international passenger volume from the Olympics at the time of the event and no observable change in trend until 16 months post Olympics.

London, UK

The London Olympics were held in July, 2012. The seasonally adjusted ARIMA model for the London series is shown in Equation 3.

$$Z_t = 7,100.5 - .328Z_{t-1} - 1,136,542*4/10 + 1,051,779*5/10 - 474,222*12/10 + 554,635*4/11 \quad (3)$$

Where,

Z_t = Seasonally adjusted first differences

$R^2 = .74$

SE = 164,932

Ljung-Box Q-Statistic = 12.103, PV = 0.437

4/10 is attributable to Volcanic Ash from Iceland

5/10 is attributable to Euro Cup Championships

12/10 is attributable to weather (record cold and snow)

4/11 is attributable to Royal wedding

Although it is not possible to definitively say what caused a jump in the series at a given point in time, likely suspects can be identified by reviewing events taking place that logically could affect travel at the point in time where a deviation in the series exists. The forecasting equation for London includes a negative intervention in April 2010. Both Heathrow and Stansted airports were closed due to ash from the Icelandic volcano at this time. A positive intervention presumably resulting from hosting the Euro Cup Championships in May 2010 was also present. A negative intervention resulting from the record cold spell in December 2010 occurred and finally a positive intervention resulting from the Royal wedding in April 2011 was present. Figure 3 shows the forecast versus the seasonally adjusted series for London.

Figure 4 shows the standardized residuals for the seasonally adjusted London ARIMA model. The post Olympics forecast is limited by data available at the time of this research and is extended five months post Olympics.

Figure 4 shows no significant increase in international passenger volume at the time of the Olympics in London or in the five months following the Olympics.

Figure 3

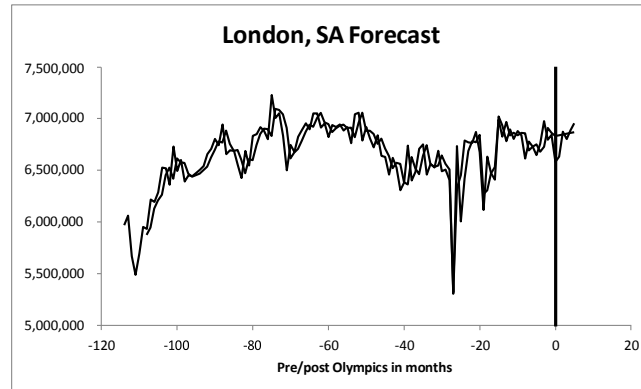
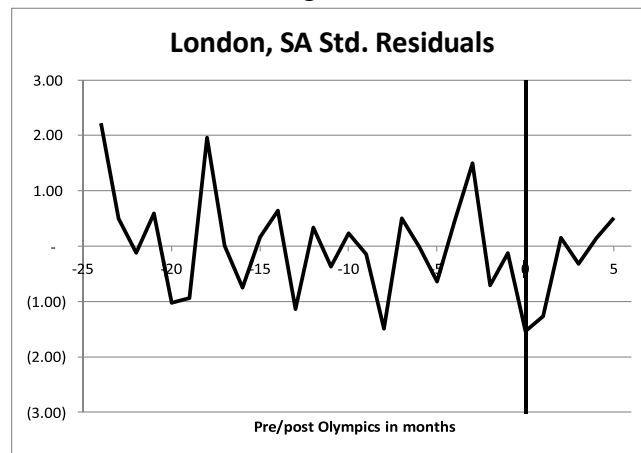


Figure 4



Salt Lake City

The seasonally adjusted ARIMA model for the Salt Lake City Olympics, held in February, 2002, is shown in Equation 4.

$$Z_t = 1,763.64 - .149Z_{t-2} - 161,750*9/11 + 64,194*10/11 \quad (4)$$

Where,

Z_t = Seasonally adjusted first differences

$R^2 = .95$

SE = 27,922

Ljung-Box Q-Statistic = 12.274, PV = 0.424

For Salt Lake City the events of 9/11 in New York are a significant negative intervention. This is consistent with prior research on US air travel (Moss, 2008). Figure 5 shows the forecast versus the seasonally adjusted series for Salt Lake City.

Figure 5

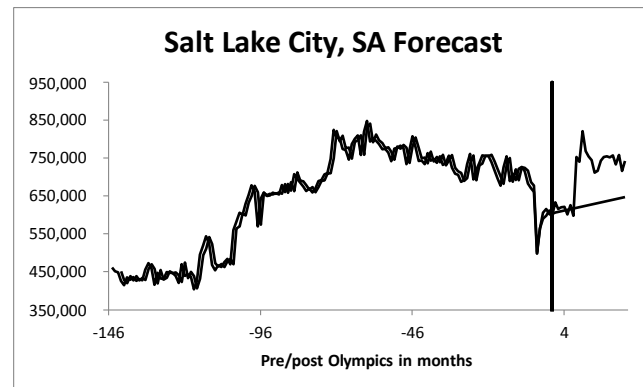
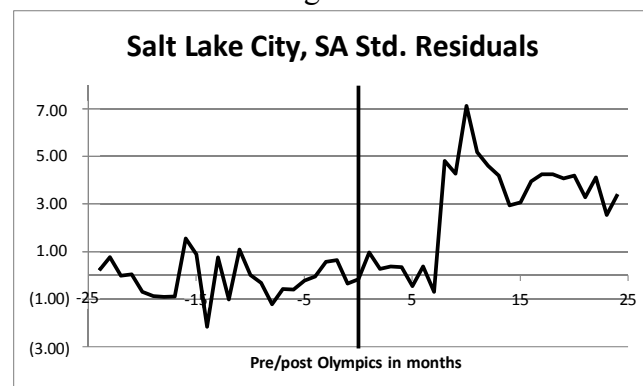


Figure 6 shows the standardized residuals for the seasonally adjusted Salt Lake City ARIMA model.

Figure 6



Although no increase at the time of the Olympics exists, a post-Olympic increase in passenger volume that is sustained and statistically significant is present beginning 8 months after the Olympics. Despite the lack of an increase in passengers at the time of the Olympics the post-Olympic increase is consistent with research that proposes a long-term positive change in

tourism due to hosting the games. The results are not consistent with prior research advocating that an increase in tourism should occur during the Olympics and immediately thereafter.

Sydney, Australia

The Sydney Olympics were held in September, 2000. Equation 5 shows the seasonally adjusted ARIMA model for Sydney.

$$Z_t = 1,024.83 - .501Z_{t-1} - .328Z_{t-2} - .148Z_{t-3} - .171Z_{t-10} + 23,616 * 4/00 \quad (5)$$

Where,

Z_t = Seasonally adjusted first differences

$R^2 = .98$

SE = 8,503

Ljung-Box Q-Statistic = 17.776, PV = 0.123

4/00 is attributable to Host City Marathon

The positive intervention in April 2000 may be attributed to an event called the Host City Marathon. In April 2000, the Sydney Olympic Organizing Committee hosted a marathon on the Olympic course. Over 5,000 runners participated in this opportunity to run the Olympic marathon course. Figure 7 shows the forecast versus the seasonally adjusted series for Sydney.

Figure 7

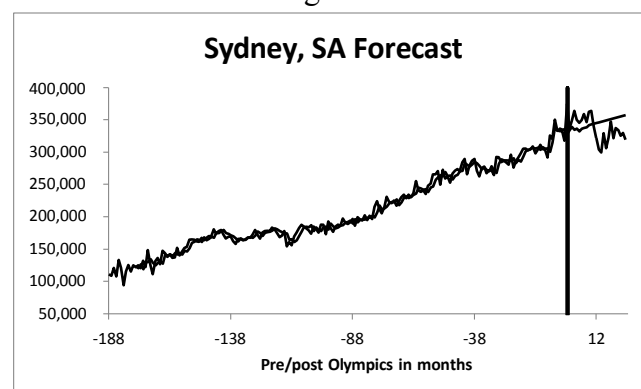
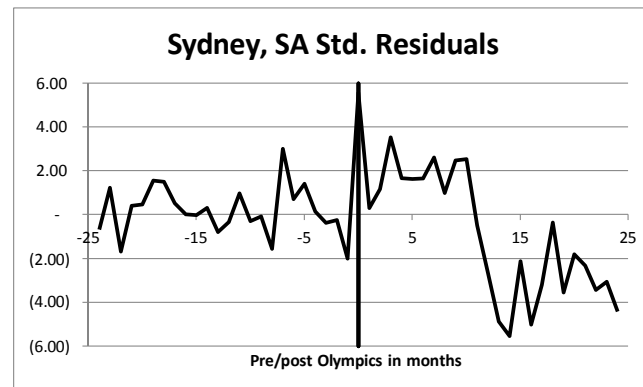


Figure 8 shows the standardized residuals for the Sydney forecast.

Figure 8



The standardized residual graph shown in Figure 8 shows a 5.56 positive standard error increase from trend at the time of the Olympics. Three months after the Olympics another significant positive increase of 3.53 standard errors occurred. This is consistent with a short term increase in tourism surrounding the Olympics. The standardized residuals maintain a positive pattern until 11 months after the games when the standardized residual is -.48 indicating a return to the pre-Olympic trend line. The following month the events of 9/11 occurred. Prior research has shown many travel destinations were adversely affected by 9/11 (Moss, 2008). In this series the deviation from trend attributable to 9/11 is indicated by standardized residuals of -2.68, -4.87, and -5.54 for 9/11-11/11. How much of the change in trend from 9/11 forward is due to the terrorist attacks on 9/11 and how much is attributable to the series returning to the pre-Olympic trend line cannot be determined. It is worth noting that this change did begin the month prior to 9/11.

Turin, Italy

The seasonally adjusted ARIMA model for Turin, February 2006 Olympics, is shown in Equation 6.

$$Z_t = 300.29 - .315Z_{t-1} - 14,273 * 9/11 \quad (6)$$

Where,

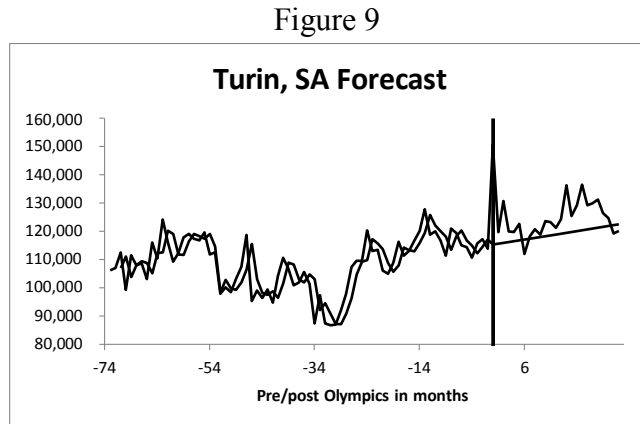
Z_t = Seasonally adjusted first differences

$R^2 = .58$

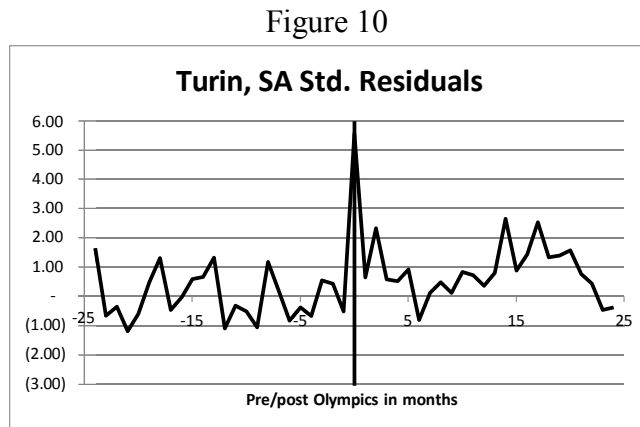
SE = 6,374

Ljung-Box Q-Statistic = 13.266, PV = 0.350

The seasonally adjusted ARIMA model includes a negative intervention for 9/11 consistent with prior research. Figure 9 shows the forecast versus the seasonally adjusted series for Turin.



The standardized residual graph, see Figure 10, shows a 5.57 positive standard error spike at the time of the Olympics. However, the increase in international passenger volume is not sustained post Olympics. This supports prior research that proposes an increase in international tourism at the time of the Olympics but does not support the proposition of long term increases in international tourism.



Vancouver, Canada

The Vancouver Olympics were held in February, 2010. The seasonally adjusted ARIMA model for Vancouver is shown in equation 7.

$$Z_t = 2,695.71 - .171Z_{t-1} - .152Z_{t-4} - .164Z_{t-6} - 115,159 * 9/11 - 88,154 * 4/03 - 61,445 * 5/09 \quad (7)$$

Where,

Z_t = Seasonally adjusted first differences

$R^2 = .97$

SE = 17,801

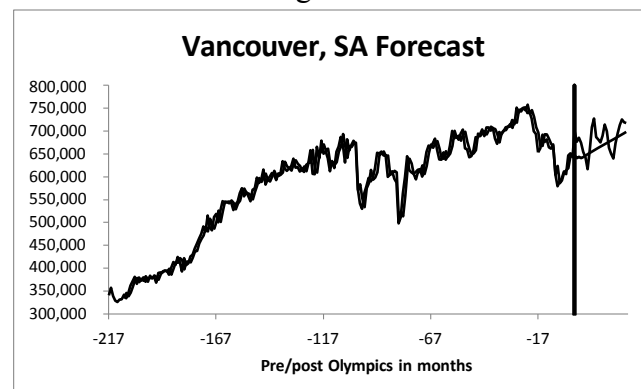
Ljung-Box Q-Statistic = 12.058, PV = 0.441

4/03 is attributable to SARS

5/09 is attributable to Singapore Airlines

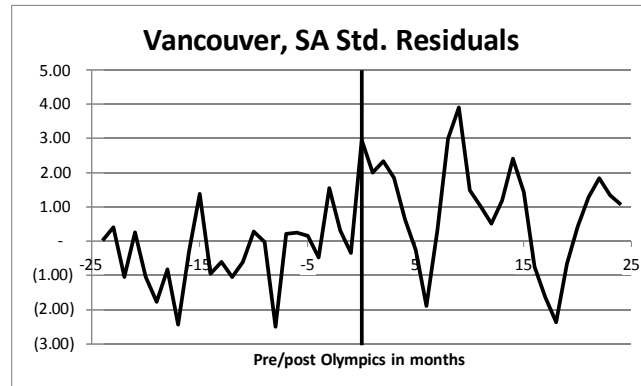
The seasonally adjusted ARIMA model for Vancouver includes negative interventions for 9/11 and SARS consistent with prior research (Liu, 2011). An additional intervention is included in May 2009. This negative shift in the series is attributed to Singapore Airlines terminating service to Vancouver at this time. Figure 11 shows the forecast versus the seasonally adjusted series for Vancouver.

Figure 11



The standardized residual graph, Figure 12, shows a 2.96 positive standard error spike at the time of the Olympics. However, like Turin the increase in international passenger volume is not sustained post Olympics. Positive spikes in international passenger volume are observed 8 and 9 months post Olympics with standard errors of 3 and 3.9.

Figure 12



CONCLUSION

Billions of dollars are spent by host cities bidding for, preparing for, hosting, and marketing the Olympics. Some host cities, such as Sydney, have developed sophisticated plans to court the media over long periods of time before and during the Olympics to maximize the amount of positive coverage the host city receives. They stage events such as the Host City Marathon. The international media coverage of the Olympics is extensive with much of the air time devoted to special interest stories about the host city and region. Often the expenses for the host city in this endeavor are justified by claims of short and long term economic benefits resulting from increased international tourism.

Prior research addressing the amount of international tourism generated by the Olympics has had mixed results. Many of the studies claim large increases in international tourism both in the short and long term occurred as a result of hosting the Olympics. Critics argue that these studies have flaws resulting from the data and methodology used. Specifically, they argue the studies showing positive increases do not adjust for existing trends, extraneous events, seasonality or the displacement effect.

This study used a data set and methodology to attempt to correct these shortcomings. The results are summarized in Table 3.

The results for short term increases in international tourism are mixed. Three of the six host cities show no short term increase in international tourism as measured by international air passengers. It can be argued that Atlanta and London are large airports serving such a large base of international travelers that changes due to the Olympics cannot be measured. The counter argument is that Vancouver and Sydney are also large airports and the change in international air passenger volume is statistically significant for these cities. In addition, other events such as 9/11

and the Super Bowl are statistically significant in the same series where hosting the Olympics is not.

Host City	Winter/Summer	Short term increase for Olympics	Long term change in trend
Atlanta, 1996	Summer	No	No
London, 2012	Summer	No	No
Salt Lake City, 2002	Winter	No	Yes
Sydney, 2000	Summer	Yes	Unclear
Turin, 2006	Winter	Yes	No
Vancouver, 2010	Winter	Yes	No

The results for long term changes in international tourism are much clearer. Only one of the six cities studied, Salt Lake, showed a sustained long term change in international tourism. This change began eight months after the Olympics and was not accompanied by a short term increase at the time of the Olympics.

The combined results support the conclusion of recent prior research that the massive media coverage of the Olympics does not produce a long term change in international tourism for the host city (Gruben, 2012; ETOA, 2009). The long and short term results combined, lend support to the ETOA's position that international tourists will come for the sporting event itself (short term) but that does not translate to interest in the host city as a tourist destination in the long term.

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TRADE EQUILIBRIUM: A MULTI-GENERATIONAL ECONOMIC POLICY

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ABSTRACT

This paper presents a brief statement of the mounting economic problems in America. A brief review of the American efforts to deal with these problems, with a particular attention to the American Jobs Acts of 2004 and 2009 is presented. It is followed by a brief survey of literature. A discussion of the author's theory of trade equilibrium shows that it would prevent further offshoring of American jobs, create millions of net new American jobs, eliminate American foreign debt, and help promote economic growth around the world.

OBJECTIVES OF RESEARCH

This paper has the following objectives:

1. A brief statement of the mounting economic problems in America.
2. A brief review of the American efforts to deal with these problems; with a particular attention to the American Jobs Acts of 2004 and 2009.
3. A brief survey of literature to present what different scholars have said about various American economic problems and what could be done to deal with them.
4. A discussion of this author's theory of trade equilibrium and how it can help America not only protect its current jobs, but also help it create millions of new jobs—as it helps America wipe out its trade deficit.

It is an article for public policy using an academic framework. I have been writing about this topic for the past several years (see References for details). A mountain of data cited in here have been checked and rechecked for accuracy and logic. The author regrets the confusion these data may create for the readers. The writing sequence of the article follows its statement of objectives for better understanding.

MOUNTING ECONOMIC PROBLEMS IN AMERICA²

The American economy, in spite of several efforts to improve it, continues to worsen in terms of its budgets, its national and foreign trade, its national and foreign debts, and its employment as shown by the following data.

National Debt

The total American national debt has two parts: (a) the public debt (it consists of government securities held by the public) and (b) the foreign or intra-governmental debt (it

consists of the American governmental securities held by the foreigners). Here are some numerical data on the American national debt:

1. As of February 2011, the U.S. debt held by the public was \$9.6 trillion and the intra-governmental (foreign) debt was \$4.6 trillion, for a total of \$14.2 trillion.
2. As of November 30, 2012, debt held by the public was approximately \$11.553 trillion or about 72% of GDP. Intra-governmental holdings stood at \$4.816 trillion, giving a combined total debt of \$16.369 trillion. (Wikipedia).
3. As of January 2013, \$5.6 trillion or approximately 47% of the debt held by the public was owned by foreign investors, the largest of which were the People's Republic of China and Japan at just over \$1.1 trillion each. (Wikipedia).

Trade Deficits: Annual

America had a negative trade balance of \$397 billion in 2001, \$801 billion in 2006, \$382 billion in 2009, and \$475 billion in 2012. Its cumulative total negative trade balance jumped to \$4.846 trillion on April 2, 2013.

Cumulative Job Losses Due to Foreign Debt

Since America loses about 3 jobs per \$1 million of net imports, it lost about 14.54 million jobs while accumulating the trade deficit of \$4.846 trillion, noted above, over the years.

Number of Americans Employed and Unemployed

Here are some numbers:

1. The U.S. **total number of non-farm employees** stood at 131.51 million in 2004; as compared to 133.74 million in 2012 (a minor increase).
2. Its **employment to population ratio** (for 16 years and over) declined from 62.4 percent in 2004, to 58.6% in 2012. This trend could worsen with technology induced productivity enhancements.
3. Its number of **persons not in the labor force** increased from 76 million in 2004 to 88 million in 2012 (for various reasons including non-availability of jobs, retirement, etc.).

In other words, since 2004 the number of Americans with jobs has declined, and the number of people without jobs has increased. Consequentially, a declining number of Americans with jobs are supporting an increasing number of fellow Americans without jobs. Millions of people, including children, live under poverty.

AMERICAN EFFORTS TO IMPROVE ITS ECONOMY

America has been trying to improve its economy, its fiscal situation (revenues minus expenses) and jobs for its citizens in many different ways. Several suggestions, such as follows, have been made to accomplish these goals:

Payoff the federal debt; do not add to debt except in emergencies; and borrow only to spur investments and to create jobs.

Balance the budget; do not spend what the country does not have; and place a cap on federal spending.

Eliminate wasteful and unnecessary programs; and evaluate each program for effectiveness and efficiency.

1. Encourage investments; and reduce unnecessary regulations and their costs.
2. Contain and trim social security and healthcare costs.
3. Make sure that everybody pays its fair share of taxes (the Buffett Rule); and close the tax loopholes.
4. Withdraw from international trade agreements such as, WTO, NAFTA, and CAFTA.
5. Place heavy duties on imports especially from China.

In addition to the above mentioned general suggestions to create jobs, America also created two specific laws to do so as briefly noted below.

Jobs Creation Acts of 2004 and 2009

The American Jobs Creation Act was created in 2004; followed by the American Recovery and Reinvestment Act in 2009. They aimed to promote American economy and create jobs through activities such as follows: (a) Build and rebuild American infrastructure (roads, railroads, airports, etc.), (b) Provide tax incentives to large businesses to repatriate their profits parked in foreign countries, (c) Provide tax incentives to large and small businesses to hire the veterans and the long term unemployed, (d) Prevent layoffs, (e) Build and rebuild public schools; and equip them with modern technology. (Sources: U.S. Government and White House publications.)

Problems Continue

These Acts did help create some new jobs in the short term, as they also helped save some jobs from being eliminated. However, they failed to prevent the American job market from continuing to deteriorate; as evidenced by the facts presented above. The fact that the U.S. found it necessary to create a second Jobs Act (of 2009) soon after it created the first Jobs Act (of 2004) within a short period of five years shows the failure of the 2004 Jobs Act in protecting and

creating American jobs. And the data presented above also show that the 2009 Jobs Act has been a failure too.

One may wonder why the 2004 and 2009 Acts cannot create net new jobs; or why does the proportion of Americans in the labor force, as noted above, continue to decline? It has some simple answers. One, it is due to America's growing negative trade balance. Two, it is due to America not taking any measurable actions to correct it.

SURVEY OF LITERATURE

Several suggestions and comments have been made about the U.S. economy and jobs. Here is a sample of what various writers stated in their writings.

The President's Export Council (PEC), appointed by President Obama in July 2010, has made several recommendations in the areas of promoting exports, protecting intellectual property, establishing a single window for exporters at U.S. Customs and Border Protection, and developing export transportation infrastructure (Barlas 2011). President Obama himself announced a National Export Initiative in January 2010, with the goal of doubling U.S. exports over five years (Barlas 2010).

Robert Reich (2010), a former Secretary of Labor, states that the Chinese economy continues to create export jobs, even at the cost of subsidizing foreign buyers, than allow the yuan to rise and thereby risk job shortages at home. Reich also states that a growing share of the U.S. total income is going to the richest Americans, leaving the middle class with relatively less purchasing power unless they go deep into debt. He continues to say that a prolonged jobs and earnings recession in the U.S, when combined with widening inequality, could create political backlash.

Alan Blinder (2009; in a book review by Vu 2010) suggests that the imbalance between workers' wages in developed and developing countries makes the transfer of a large proportion of impersonal service jobs to the developing world a near certainty, and likens its effect on U.S. labor to a "Third Industrial Revolution," with as many as forty million jobs hanging in the balance.

Jagdish Bhagwati (2009; in a book review by Vu 2010), on the other hand, argues that the offshoring debate is really being waged by opponents of free trade who fail to understand the economics of comparative advantage and that trade with poor countries has a negligible impact on our workers' absolute real wages.

Richard B. Freeman (2009; in a book review by Vu 2010) makes an appeal for a strong governmental response to the effects of offshoring—economic inequality in the United States—and calls for the strengthening of labor unions and an aggressive program to reform corporate governance and reinforce the social safety net.

Lori Kletzer (2009; in a book review by Vu 2010) focuses on developing a methodology for classifying which service sector jobs are most vulnerable to offshoring. Her conclusion is that many of the highest paying positions, requiring the highest levels of education, are the most easily offshored.

Douglas A. Irwin (2009; in a book review by Vu 2010) views Blinder's thesis as an assault on the principles of free trade. He goes on to claim that Blinder has failed to provide sufficient evidence to support his concerns. Irwin further argues that that the transition implied by offshoring will be smoother than what Blinder anticipates.

Robert Lawrence (2009; in a book review by Vu 2010), also questions Blinder's conclusions, declaring that he is unconvinced that the scale and pain, caused by offshoring, is going to be greater than we are already familiar with. He makes particular note of the time scales involved in such a large-scale market transition and maintains that the process will unfold so gradually that no severe shock need be feared.

According to Mishel et al. (2002) and Scott (2001), quoted in Hersh and Weller (2003), the disappearance of manufacturing drives displaced workers (and new entrants to the labor force unable to find manufacturing jobs) out of high-paying manufacturing jobs and into low-paying service jobs. Not only do former manufacturing employees suffer a pay cut from this shifting employment mix among industries, but the increased supply of workers to the service sector puts downward pressure on the wages of those workers already employed in service jobs.

Hersch and Weller (2003) recommend a strategic pause in the negotiation and ratification of any new trade agreements. They argue that the past trade agreements have only fueled the U.S. trade deficits. They further state that the past trade agreements have created comparative advantages for countries that eschew labor, environmental, and public health rights, thus sparking a race to the bottom to undermine protections for workers and society at-large.

Hersh and Weller (2003) also recommend a coordinated policy to ease the overvalued U.S. dollar and to prevent future currency misalignments that impair U.S. manufacturing. They also suggest closing the corporate welfare loopholes that amount to billions of dollars in subsidies for the export of U.S. manufacturing jobs and industries.

Hacker (2006; in a book review by Luger (2007) argues that increasingly, Americans find fewer and fewer public or employer benefits when it comes to health care, education, pensions, or job security. As Hacker puts it, economic risk has been shifted from government and corporations to workers and their families. In simple terms, you are on your own. It will take a few decades before the full consequences of this change become apparent, but all indications suggest that a reduced standard of living for the average worker is likely.

According to Hacker (2006; in a book review by Luger 2007), for many Americans, a health care crisis turns into a financial disaster. In fact, approximately one-half of all bankruptcies are the result of catastrophic health care bills.

According to Hacker (2006; in a book review by Luger 2007), Newt Gingrich best expressed the attack on traditional notions of shared risk when he said that "social responsibility is a euphemism for individual irresponsibility."

Graham, Hanlon, and Shevlin (2010) made a survey of tax executives about their companies' decisions surrounding the American Jobs Creation Act of 2004. When asking how the repatriated cash was used, they distinguish between the cash repatriated and other cash "freed up" by the repatriation.

They state that the Act did not require specific tracing of funds and that the use of repatriated funds was not required to be incremental to spending that would have occurred without the repatriation, thus the "freed-up" funds could be spent on anything. Their analysis indicates that the repatriated funds were used for capital reinvestment, training and hiring of employees, U.S. research and development, and the payment of domestic debt. The "freed-up" funds on the other hand appear to have been used primarily to pay down domestic debt and to repurchase shares.

Hersh and Weller (2003) state that the U.S. Export-Import Bank, created by Congress in 1934 to provide favorable financing and loan guarantees in promotion of exports, instead has become a tool for subsidizing the export of manufacturing capacity and jobs that compete directly with U.S. producers and workers.

Merchant and Kumar (2005) state that the current debate over outsourcing U.S. jobs neglects the broader context. While certain sectors of the U.S. economy, particularly the manufacturing sector (e.g., textiles), may be losing jobs due to cheaper imports, that loss may be offset by benefits to U.S. consumers (lower prices), stockholders (profits), and businesses (efficiency, productivity, and global competitiveness).

They continue to state that technology-led improvements in productivity may have played a larger role than trade in the majority of U.S. job losses. Manufacturing jobs have been lost in many other countries on that account. While some less-skilled, low-wage jobs have been lost, the U.S. labor market is moving toward high-skilled, high-wage jobs and education and training may be the solution to labor market woes.

According to Sum and McLaughlin (2010), the recession of 2007-9 turned into a Great Recession for U.S. workers. Substantial shedding of employees and reductions in weekly hours of work by corporations allowed labor productivity to rise sharply after 2008. None of these productivity gains were shared by wage and salary workers in the form of higher

real weekly earnings. These productivity gains were used to raise corporate profits at a higher relative rate than in any other post-World War II recession.

Sum and McLaughlin (2010) state that from 2007 to 2009 the unemployment rate of the United States doubled, rising from 4.6 to 9.3 percent. This increase was at least twice as high as in any of the other OECD members and was four or more times higher than five of these countries. The unemployment rate of Germany actually fell despite a larger drop in its GDP. By 2009, the United States had the highest unemployment rate of these ten countries.

TRADE EQUILIBRIUM A MULTIGENERATION ECONOMIC POLICY

Definition

According to this author, the term “trade-equilibrium,” an otherwise widely used term with different interpretations, may be defined as follows: “Trade Equilibrium is a situation when trading among various countries is such that the trading partners remain generally deficit-free from one another over a cycle of every 2-3 years.”

This theory of trade equilibrium has two major goals: (a) to stop exporting of additional American jobs and (b) to regain the American jobs already exported by “legally requiring” the dollar/trade surplus countries to eliminate their surplus over a ten year period by buying American products (goods and services). Further, according to this theory, it is the responsibility of America’s trading partners with dollar surpluses to make sure to meet the requirements of the trade equilibrium as defined here.

Within these 2-3 years cycles, a foreign country can of course use its surplus dollars to buy products from countries other than America. In that case these other countries would have the surplus dollars and, therefore, must use them to buy products from America to enable America to maintain its trade equilibrium.

Theory of Trade Equilibrium vs Keynes’ Theory

Keynes (1936) recommended that the government should borrow and pump money into the economy to create jobs—artificial or otherwise. The theory of trade equilibrium, however, would only need to use the billions of dollars that are already printed, but are currently sitting in the names of the dollars surplus countries. When these countries use these dollars to buy American goods and services, it would create real American jobs; millions of them—as it creates additional jobs in those foreign countries too.

TRADE EQUILIBRIUM'S POTENTIAL BENEFITS⁴

This author believes that his theory of trade equilibrium—if and when it becomes a practical reality—can help America bolster its economy, protect its jobs from further offshoring, and create millions of new jobs as discussed below.

TRADE EQUILIBRIUM WOULD PROTECT AND CREATE JOBS

There would be no new annual U.S. trade deficit—considering the world as a whole. There would be no additional net export of American jobs.

1. The American balance of trade would have a net trade surplus of about \$484.6 billion a year (through a 10% reduction of \$4.846 trillion of foreign debt, excluding interest). This trade surplus would necessitate an equal amount of net new investments in the American economy.
2. The U.S., due to its annual incremental exports of \$484.6 billion, would create about 1.46 million net new jobs per year for ten years. As such, about **14.6 million jobs would return home** in ten years.
3. **These changes would increase workers' income, reduce poverty, strengthen free enterprise, enhance stockholders' wealth, increase executive bonuses, raise tax revenues, and trim tax rates. They would eliminate foreign debt and reduce public debt.**
4. **The negative consequences on the American jobs of the American trade agreements such as WTO, NAFTA, CAFTA, etc. will all be eliminated.**

Trade Equilibrium, a Solution for Widening Compensation Gap

A fundamental reason behind the widening gap between the compensation of an average worker and an average CEO is the former's declining bargaining power. With the millions of jobs being offshored year after year, the average American worker is more concerned about getting or keeping a job; and less so about what his/her CEO is making. The threat of not getting a job or losing a job is too real to criticize the relatively much larger size of the CEO's compensation.

The enactment of trade equilibrium (see the definition above) would bring full employment for generations to come. Workers would not be afraid of their jobs being offshored. They can then work toward reducing disparity between their and their bosses' compensation.

Trade Equilibrium Would Eliminate Foreign Debt and Reduce Public Debt

Let us assume that American lawmakers pass the law of Trade Equilibrium making it effective January 1, Year 1. This act would then have the following implications for the American foreign debt (data related to interest and compounding have been ignored for this analysis).

1. There would be no new trade deficit and no new foreign debt on this account (see the definition).

2. The existing American foreign debt would be eliminated in ten years (see the definition).

This would also help reduce/eliminate the American public debt. Using Cohen, Freiling, and Robinson's (2012) research findings as a "broad" guideline, the \$484.6 billion dollars of annual new investment in the American economy would generate a total of about \$4.669 billion in additional annual tax revenues consisting of (1) about \$2.875 billion in new federal tax revenues a year and (2) about \$1.794 billion in new state and local tax revenues a year.

The new jobs would also help avoid additional tax expenditures that are incurred to support the unemployed Americans. Further, these tax revenues would take place without making any changes in the current tax code.

Where Would the Dollars Coming Home Go

Under the Trade Equilibrium Act, it would be the responsibility of the foreign countries to decide how to spend these \$484.6 billion dollars in America every year. Subject to the American laws, they can buy whatever American goods and services they want to.

Dollars coming back home would recreate jobs that were lost when the dollars went abroad due to trade deficit. If foreigners spend dollars visiting America as tourists, jobs would be created in industries such as transportation, hospitality, entertainment, banking, and insurance. These in turn, would create jobs in industries such as agriculture, agricultural machinery, transportation equipment, and furniture.

If the foreigners use their surplus dollars to buy equipment to improve their infrastructure, the jobs so created in industries manufacturing these equipment would, in turn, create jobs in industries such as retailing, transportation, and agriculture.

Manufacturing and in service industries are interdependent; they feed each other.

Failure of Economic Stimulus, Currency Valuations, and Other Efforts

Over the years America has spent billions of dollars to protect and create jobs. Unfortunately, however, the stimulus money so spent to develop infrastructure, give tax breaks, provide unemployment benefits, and support educational programs have failed to stop offshoring of millions of jobs year after year for two fundamental reasons. First, many of the American firms receiving the stimulus money invest some of it overseas. Second, the individual recipients of these benefits spend a good portion of these to purchase cheaper products made abroad. It is like trying to fill a bucket full of holes with water.

American efforts to manage currency valuations to protect and create jobs have also miserably failed. Under the theory of trade equilibrium, there won't be any need to artificially manage valuation of currencies. For example, once China realizes that it has to import

products equal to its exports, it would be more than pleased to let its currency flow freely and appreciate in value. This way it would not have to pay as much in yuan to import from America as it does today (with an artificially undervalued yuan).

Likewise, as America sees its dollar appreciating in value (with increasing exports), it won't have to pay as much for its imports the way it does today with dollar carrying a lower value.

Trade Equilibrium Would Benefit Foreign Countries

Using their surplus dollars to buy American products would help these countries to improve their own infrastructure and employment. The return on such investments would be much higher than what they currently earn by investing those dollars in the U.S. bonds. They would also not have to sit on the dollars declining in value.

Mainland China is America's largest single foreign creditor. Of the total American foreign debt of \$4.4 trillion in 2010, China was owed \$1.16 trillion. China should be commended for its achievements. At the same time, it is high time that it begins to use its surplus dollars to buy American products to help America meet its trade equilibrium goals.

At the same time, the U.S. must spread its future imports around to diversify. It is unwise to so heavily depend on China for its imports.

Trade Equilibrium, Increasing Population, and Increasing Productivity

America (and the world) should keep pace with the changing dynamics of economics. One, the world population is growing. Two, productivity, due to improving human skills and leap-frogging technology, is increasing at a rapid rate. As a result, although, the increasing population would generate additional demand for goods and services; the net demand for additional labor, overall, may not increase proportionately, if at all. It actually may decline which in turn would increase unemployment.

Trade equilibrium, on the other hand, would certainly create net new jobs.

CONCLUDING THOUGHTS

Trade Equilibrium Would Offer a Multi-Generational Solution

Trade Equilibrium would protect and create millions of American jobs. With more jobs and higher incomes, Americans would spend more on American and foreign products. The consequential **multiplication of free and fair trade and investments** between and within countries will provide a **multi-generational seamless solution** to the problems of unemployment and poverty world over. The ensuing **global economic growth would promote creativity, innovations, peace and prosperity**. It would be a **win-win, positive-sum economic stimulus, not a zero-sum game**.

Trade Equilibrium May be Initiated by Anyone

Any person or institution can initiate the U.S. move toward Trade Equilibrium. They include, among others, (a) President of the U.S., (b) the U.S. Congress, (c) Democrats, (c) Republicans, (d) the U. S. Chambers of commerce, (e) the AFL-CIO, (f) IMF, (g) IBRD, or (h) anyone else. Of course, Mr. Obama, the U.S. President, would be an ideal choice to get started.

Since the trade equilibrium would provide full employment for workers and enhance their incomes, pro-workers individuals and organizations should be glad to support it. Likewise, since the trade equilibrium would increase investment, corporate profits, shareholders' wealth, and executive bonuses, the free and fair enterprise supporters should be pleased to endorse it. And since the trade equilibrium would raise tax revenues and reduce tax rates; all the policy makers should be happy to lead its enactment.

This author believes that if America can create Jobs Acts of 2004 and 2009 to help create jobs, it can also create a trade equilibrium act that would guarantee full time employment. If it can create the Export Import bank of 1944 to help promote the U.S. exports, it can also legislate the theory of trade equilibrium that would guarantee zero trade deficit going forward and create an export surplus of \$484.6 billion a year for the next ten years.

Enforcement of Trade Equilibrium

This author's theory of trade equilibrium, if and when placed in practice, would involve some of the following issues of enforcement (the discussion of which is beyond the scope of this article):

1. It is the responsibility of the trade surplus countries to make sure that their imports from America are equal to their exports to America using a 2-3 year cycle.
2. America must also make sure that its trading partners abide by the requirements of the theory of trade equilibrium. Enforcement of this requirement would in turn, create several jobs.
3. America may have to make several formal trade agreements with its trading partners to comply with the requirements of the theory of trade equilibrium. This author also believes that a sheer discussion of the theory of trade equilibrium would encourage countries such as China to begin practicing those requirements. It cannot afford to lose America as its customer—unless, of course, if it wants to face an equivalent of “Arab Spring” in China.

Initially it may require America to reevaluate its relationship with the W.T.O. While America has a right to continue to be its member or withdraw from its membership (per W.T.O.'s Article XV), the U.S., however, should first explore the possibility of continuing its membership subject to the requirements of the theory of trade equilibrium. That would be in the W.T.O.'s interest too.

Trade Equilibrium Benefits Must be Thoroughly Evaluated

The United States must **thoroughly evaluate the premises, the mathematics, the simplicity, and the benefits of the theory of Trade Equilibrium** and compare it with similar other approaches, tried or imagined, and then consider legislating it.

SUGGESTIONS FOR ADDITIONAL RESEARCH

In order to fully evaluate the value and feasibility of legislating this author's theory of Trade Equilibrium, America needs to research and discuss the topics such as follows:

1. What would be the effects of eliminating new U.S. trade deficit on the U.S. public debt?
2. What would be the effects of eliminating additional offshoring of American jobs?
3. What would be the effects of reduced unemployment on the U.S. tax expenditures, such as unemployment benefits?
4. What would be the effects of billions of dollars coming back home on the various parts of American economy?
5. What would be the effects on the economy (jobs, infrastructure, return on investment, etc.) of the dollar surplus countries that would use those dollars to buy American products?
6. What would be the effects on the American national pride, security, and economic independence?

ENDNOTES

- 1 The author is very thankful to the anonymous reviewers for their comments on this author's another article that was while based on the same theory, but that compared his theory with the premises and contents of the Simpson Bowles Plan that was published in the Proceedings of the Allied Academies 2013 Conference in New Orleans. Their suggestions were very helpful in writing the current article and presenting certain numerical values in a more readable format.
The author is thankful to Ms. Aishwarya Kothapally for her research assistance; and to Pace University Lubin School of Business for its research support.
- 2 Bureau of Labor Statistics, Bureau of Economic Analysis, the White House, Wikipedia, the Encyclopedia, and, by reference, the relevant sources it used. Some sources have been cited individually wherever they have been.
- 3 Bureau of Economic Analysis, March 14, 2013, and others. (b) Wikipedia (2013). "National debt of the United States," Wikipedia, the free encyclopedia, retrieved on May 27, 2013.
- 4 Sources of data used: Bureau of Labor Statistics, Wikipedia—and by implication the sources it itself used! And others as noted! Analysis and calculations based on these data, if any, are by me.

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AN ECONOMETRIC STUDY OF THE EFFECT OF REMITTANCES ON INFLATION IN INDIA

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ABSTRACT

The prevalent literature on remittances so far mostly focuses on either the use of remittances in or their impact on capital formation and economic (GDP) growth of the recipient countries. In contrast, this study attempts to evaluate the impact of remittances on the domestic price level based on the data for of India. Using a system of a money demand function and a money supply function we derive an inflation rate function as a function of remittance rate, GDP rate, and interest rate change. Since all the variables involved in the model are found to be stationary, we estimate the model on Indian data using the ordinary least squares method. The estimation results suggest that the Indian workers' remittances from foreign countries do increase the domestic price level but the price effect is insignificant. We conclude that, although large compared to other developing countries, the relative size of remittance for India is not large enough to increase the foreign component of the money supply and thereby cause a sizable increase in the nation's money supply and bring about a significant rise in the domestic price level.

INTRODUCTION

Remittances constitute an important portion of foreign currency flow across the borders involving approximately one in six of the world's population. Remittances to developing countries surged to \$93 billion in 2003 a growth of over 200 per cent from 1990. According to a recent World Bank estimates more than 70 percent of this global movement went to developing countries. In 2006, the World Bank reported that remittances surged to approximately \$206 billion. These growing flows of remittances have led analysts to conclude that the growth of remittances has exceeded private capital flows and official development assistance to developing countries. Among the regional recipients, Europe and Central Asia tops the list followed by East Asia and Pacific and South Asia (Table 1). Among individual countries, India tops the list of recipients followed by China and Mexico (Table 2).

Table 1: Regional Distribution of Remittances, 2009 (In billions of dollars)

Region	1990	1995	2001	2002	2003	2009
South Asia	5.6	10	13.1	16.9	18.2	75.1
East Asia and Pacific	3	9.9	13.7	17	17.6	97.1
Europe & Central Asia	3.2	5.6	10.2	10.3	10.4	128.4
Latin America & Caribbean	5.7	12.9	22.9	26.8	29.6	56.6
Middle East & N. Africa	11.4	10	13.2	13	13	35.0
Sub-Saharan Africa	1.5	2.7	3.9	4.1	4.1	20.8

Source: IMF, "Global Monitoring Report 2004" and World Bank, "World Development Indicators, 2011."

Table 2: Largest Recipients of Remittances, 2009

Country	Remittances (Billions of dollars)
India	49.5
China	48.7
Mexico	22.0
Philippines	19.8
France	15.6
Germany	10.9
Bangladesh	10.5
Belgium	10.4
Spain	9.9
Nigeria	9.6

Source: World Bank, "World Development Indicators, 2011.

According to the Global Monitoring Report 2004 published by IMF, the main source of remittance continues to be the US where the rise in remittances coincided with the economic boom of the 1990s and the liberalization of the temporary migration (especially in the technology sector). Conservative estimates put the number of people receiving some form of economic benefit from remittances at one billion – almost one-sixth of the planet's population. World Bank estimates suggest that for every 10 percent increase in remittances to developing countries, the number of people living in poverty is reduced by 1.2 percent. A study by Taylor and Adelman (1996) found that for every dollar received in remittances, Mexico's gross national product increases by \$2.69 for urban households and \$3.17 for rural households. Immigrants in the United States sent \$28.5 billion to Latin America and the Caribbean in 2003. The top three countries in Latin America to receive remittances from U.S. in 2001 were Mexico, El Salvador, and the Dominican Republic. A significant study conducted by the Inter-American Development Bank (IDB) in 2004 reveals that the Latin American-born adults who resided in the United States sent home approximately \$30 billion during 2004. These remittances made up a corresponding 50-80% of the household incomes for the recipients. A general impression about remittance is that it is a phenomenon affecting poor countries. However, the data suggests that of the 10 largest recipients of remittances in the last decade (1992 – 2001), seven were OECD countries and two of the top five recipients were G-5 countries (Table 3). While the magnitude of remittances has been increasing and will undoubtedly remain significant for a long period of time in foreseeable future, the benefit of remittances to both origin and destination countries is not without controversy.

Several studies have found that remittances do indeed help the recipient countries. For example, in 2000, the U.N. reported that remittances increased the GDPs of El Salvador, Jamaica, Jordan, and Nicaragua by 10%. According to the World Bank report, in 2004, remittances accounted for approximately 31%, 25%, and 12% of Tongans, Haitians, and Nicaraguans GDP, respectively. Remittances are said to be usually destined for relatively backward, rural regions that are most in need of development capital (Jones, 1998a:4). Jones (1998b) suggests that there is probably no other more "bottom-up" way of redistributing and enhancing welfare among population in developing countries than these remittances. Remittances appear to be a more effective instrument for income redistribution than large, bureaucratic development programs or development aid. Remittances are less subject to political barriers and controls compared to either product or other capital flows. Studies by Gammeltoft (2002), Keely and Tran (1989), Puri and *Journal of International Business Research, Volume 13, Number 1, 2014*

Ritzema (1999), and Ratha(2003) claim that remittances have proved to be less volatile, less pro-cyclical, and therefore a more reliable source of income than other capital flows to developing countries, such as Foreign Direct Investment. The surge in remittances has given rise to a kind of belief that migrant remittances may be proclaimed as the newest “development mantra” among institutions like the World Bank, governments, and development NGOs (Kapur, 2003; Ratha, 2003). Several studies have shown that remittances may also lead to increased economic activities and wealth (Taylor et al. 1996a, 1996b; De Haas, 2003).

Other studies have found the effect of remittances on the recipient countries either negative or not so promising. For example, Schiff (1994) and Kapur (2003) suggest that the direct benefits of remittances are selective and do not tend to flow to the poorest members of communities nor to the poorest countries. In fact, remittances represent only 1.3 per cent of total GDP of developing countries (Ratha, 2003). Skeldon (1997) has concluded that, although migration evidently emanates from the desire to improve one’s livelihood, it is rarely the poorest that migrates. Rather than absolute poverty, a certain level of socio-economic development, combined with global inequality in development opportunities, seems to be the most important cause of migration. This argument can also explain why leading emigration countries (e.g. Mexico, Morocco, Turkey, Philippines) typically do not belong to the group of least developed countries. Hence, the relation between migration and development is neither direct nor inversely proportional. Although the economic impact of remittances on the recipient countries is still being debated, there is a broad consensus that the demand for both skilled and unskilled migrant labor will persist (Harris, 2002; Martin, 2002) – even if labor participation increases rather drastically (Entzinger,2000).

The studies on remittance so far mostly focus on either the use of remittances or their impact on capital formation and economic (GDP) growth of the recipient countries. There is dearth of studies on the impact of remittances on domestic price level. Therefore, this study attempts to evaluate the impact of remittances on the domestic price level based on the case of India. The findings of this study would be very important domestic monetary policy authorities and investors in Indian stocks. Since India is one of the largest developing economies in the world and the recent growth rates have made it one of the significant players in the world market, it would be of significance to other stake holders in the Indian economy. Section 2 of this study will describe the model, section 3 will present the methodology, section 4 will detail the empirical findings, and section 5 will summarize and conclude the study.

THE MODEL

The money demand function is given by:

$$M^D = a \cdot y^b \cdot p^c \cdot e^{-di} \quad (1)$$

where M^D is the demand for nominal money balances, y is the real income, i is the real interest rate, and p is the price level.

The money supply function is given by:

$$M^S = f(D, FR, FNR) \quad (2)$$

where M^S is the supply of nominal money balances

D = demand deposit

FR = foreign currency reserves from remittances

FNR = foreign currency reserves from other than remittances

If we let the mean effect of D and FNR be reflected by the intercept term, then we can re-specify the equation (2) as,

$$M^S = g(FR) = \alpha \cdot FR^\beta \quad (3)$$

$$\text{Equilibrium requires: } a \cdot y^b \cdot p^c \cdot e^{-di} = \alpha \cdot FR^\beta \quad (4)$$

Taking log on both sides of (4) yields,

$$\log a + b \cdot \log y + c \cdot \log p - d \cdot i = \log \alpha + \beta \log FR \quad (5)$$

Taking total differential of (5) yields,

$$\delta \log a + b \delta \log y + c \cdot \delta \log p - d \delta i = \delta \log \alpha + \beta \delta \log FR \quad (6)$$

Since a and α are constant, the above equation can be rewritten as,

$$b \frac{\delta y}{y} + c \frac{\delta p}{p} - d \delta i = \beta \frac{\delta FR}{FR} \quad (7)$$

Solving for $\frac{\delta p}{p}$ yields,

$$\frac{\delta p}{p} = \frac{\beta}{c} \cdot \frac{\delta FR}{FR} - \frac{b}{c} \cdot \frac{\delta y}{y} + \frac{d}{c} \cdot \delta i \quad (8)$$

$$\frac{\delta p}{p} = \theta \cdot \frac{\delta FR}{FR} - \gamma \cdot \frac{\delta y}{y} + \mu \cdot \delta i \quad (9)$$

Where, $\theta = \frac{\beta}{c}$, $\gamma = \frac{b}{c}$, and $\mu = \frac{d}{c}$

With time subscript, equation (8) can be rewritten as,

$$\frac{p_t - p_{t-1}}{p_{t-1}} = \theta \cdot \frac{FR_t - FR_{t-1}}{FR_{t-1}} - \gamma \cdot \frac{y_t - y_{t-1}}{y_{t-1}} + \mu \cdot (i_t - i_{t-1}) \quad (10)$$

The above equation can be rewritten as,

$$\pi_t = \theta FR_t^* - \gamma y_t^* + \mu i_t^* \quad (11)$$

Where, inflation rate (INFL_RATE): $\pi_t = \frac{p_t - p_{t-1}}{p_{t-1}}$,

Remittance Rate (*REM_RATE*): $FR_t^* = \frac{FR_t - FR_{t-1}}{FR_{t-1}}$,

GDP Rate (*GDP_RATE*): $y_t^* = \frac{y_t - y_{t-1}}{y_{t-1}}$,

and Interest Rate Change (*INT_CHNAGE*): $i_t^* = i_t - i_{t-1}$

DATA AND METHODOLOGY

Our model studies the case of India over the years 1978-2009. The data on all the variables in this study, such as, the price level (p), the foreign remittance (FR), the GDP at current prices, the real interest rate (i), and the GDP deflator was collected from the World Bank publication, "World Development Indicators, 2011." Then a time series on real income (y) was generated using the following formula:

$$y = \frac{\text{GDP at current prices}}{\text{GDP deflator for the current year}} \times 100$$

We first conduct the unit root test on all the variables in the model to see if are stationary. If they are found to be stationary, then we will estimate equation (11) to see if the coefficient associated with the variable FR^* (θ) is positive and statistically significant. If θ is found to be positive and significant, then we will conclude that the foreign currency remittances (FR^*) does cause an increase in the rate of inflation.

EMPIRICAL FINDINGS

We have presented the estimation results (E-views outputs) in the Appendices. Before estimating equation (11), we tested the time series on the dependent variable and on all the independent variables in the equation for the presence of a unit root. The test results presented in Appendix B – E shows that the critical t-statistics corresponding to Augmented Dickey-Fuller test on all the variables are smaller than their corresponding t-statistics at conventional 5 percent significance level, rejecting thereby the null hypothesis of the presence of a unit root. This finding allowed us to estimate the equation using the ordinary least square. The OLS estimates of equation (11) are presented below:

$$\text{INFL_RATE} = 7.746940 + 0.015600 \text{ REM_RATE} - 0.202906 \text{ GDP_RATE} + 0.018053 \text{ INT_CHANGE}$$

(13.12389) (0.708527) (-3.539885) (0.133776)

$$R^2 = 0.312311 \quad F\text{-statistic} = 4.238701 \quad \text{Prob (F-statistic)} = 0.013699$$

The figures in the parentheses are t-statistics associated with the estimated coefficients. Although the R^2 is not so high, but the p-value corresponding to the F-statistic suggests that the Coefficient of Determination is significant and that the inferences can be drawn based on the estimates. All the coefficients have expected sign. For example, an increase (decrease) in the remittance rate or the real interest rate does increase (decrease) the inflation rate. In contrast, a growth (decline) in the GDP rate lowers (raises) the inflation rate. However, the effect of the remittance rate or the interest rate change on the inflation rate is not significant statistically, whereas the effect of the GDP rate on the inflation rate is statistically significant. This finding implies that the foreign

remittance by Indian workers working abroad does increase the domestic inflation rate somewhat, but the increase so far is not statistically significant. The reason for this finding could be a small contribution of Indian workers' remittances in India's GDP. The data from 2009 show that the workers' remittances are only 3.6 percent of the country's GDP. That means the remittance amount is not big enough in relation to the national income to increase the foreign component of the money supply and thereby cause a sizable increase in the nation's money supply and eventually a significant rise in the domestic price level.

SUMMARY AND CONCLUSION

We study the impact of Indian workers' remittances from foreign countries on Indian price level. To accomplish this objective, we derive an inflation rate function from a money demand function (a function of real GDP, price level, and the real interest rate) and the money supply function (a function of demand deposit, foreign currency reserves from remittances and foreign currency reserves from other sources). To ensure that our model produces valid inferences we test for the stationarity of all the variables involved in the model. Our finding indicates that the variables are stationary and that we can safely draw inferences based our model. Subsequently, we estimate our model (inflation rate as a function of the remittance rate, the GDP rate, and the change in the real interest rate) using the ordinary least square. We find that the coefficient associated with the remittance rate is although positive but insignificant. This leads us to conclude that the Indian workers' remittances from foreign countries do increase the domestic price level but the increase is insignificant. One of the reasons for this finding could be the relative contribution of Indian workers' remittances in India's GDP. The data from 2009 shows that the workers' remittances are only 3.6 percent of the country's GDP. That means the remittance amount is not big enough to increase the foreign component of the money supply and thereby bring about a sizable increase in the nation's money supply and eventually a significant rise in the domestic price level. In future as the relative size of remittances increase, the situation could also change and the impact of remittances on domestic prices may become statistically significant. This finding is important for policy makers in India and similar developing countries, especially the monetary policy authorities. Since impact of monetary policy is felt throughout the economy, and in particular in the stock market, this finding will have significance also for investors in India and foreign investors in Indian stocks.

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Appendices

Appendix - A

Data on CPI, GDP, Remittance, and Real Interest Rate

Year	CPI (2005=100)	GDP (Current) (Billions of \$)	GDP Deflator	Real Interest Rate	Remittance (Current) (Billions of \$)	Real GDP (Billions of \$)
	(p)			(i)	(FR)	(y)
1978	12.5	135.4	13	10.7	1164.8	1,041.54
1979	13.3	150.9	15	-1.1	1437	1,006.00
1980	14.8	183.8	16.8	4.5	2757	1,094.05
1981	16.7	190.5	18.6	5.1	2301.4	1,024.19
1982	18.1	197.7	20.1	7.8	2617.7	983.58
1983	20.2	215.2	21.8	7.3	2660.1	987.16
1984	21.9	209.7	23.5	8	2294.8	892.34
1985	23.1	229.9	25.3	8.6	2469.2	908.70
1986	25.1	246.4	27	9.1	2239.9	912.59
1987	27.3	276	29.5	6.5	2665.4	935.59
1988	30	293.1	31.9	7.7	2315.3	918.81
1989	31.9	292.9	34.6	7.4	2613.8	846.53
1990	34.7	317.5	38.3	5.3	2383.7	828.98
1991	39.6	267.5	43.6	3.6	3289.1	613.53
1992	44.2	245.6	47.5	9.1	2897.4	517.05
1993	47	276	52.1	5.9	3522.8	529.75
1994	51.9	323.5	57.3	4.3	5856.7	564.57
1995	57.2	356.3	62.5	5.9	6223	570.08
1996	62.3	388.3	67.2	7.8	8765.7	577.83
1997	66.7	410.9	71.6	6.9	10331	573.88
1998	75.6	416.3	77.3	5.1	9479.3	538.55
1999	79.1	450.5	80.2	8.4	11124.3	561.72
2000	82.3	460.2	83.1	8.5	12883.5	553.79
2001	85.3	477.8	85.6	8.8	14273	558.18
2002	89.1	507.2	88.8	7.8	15735.7	571.17
2003	92.4	599.5	92	7.6	20999.2	651.63
2004	95.9	721.6	100	2	18750.4	721.60
2005	100	834	104.2	6.3	22125.1	800.38
2006	105.8	951.3	110.9	4.5	28333.6	857.80
2007	112.5	1242.4	117.2	6.9	37216.8	1,060.07
2008	121.9	1216	125.1	6.2	49997.3	972.02
2009	135.2	1377.3	134.5	4.3	49468.4	1,024.01

Appendix - B
Testing the Stationarity of the Variable “Inflation Rate” (INFL RATE)

Null Hypothesis: INFL_RATE has a unit root
 Exogenous: Constant
 Lag Length: 0 (Automatic - based on SIC, maxlag=7)

	t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic	-3.461878	0.0159
Test critical values:		
1% level	-3.653730	
5% level	-2.957110	
10% level	-2.617434	

*MacKinnon (1996) one-sided p-values.

Augmented Dickey-Fuller Test Equation
 Dependent Variable: D(INFL_RATE)
 Method: Least Squares
 Date: 01/05/12 Time: 12:53
 Sample: 1978 2009
 Included observations: 32

Variable	Coefficient	Std. Error	t-Statistic	Prob.
INFL_RATE(-1)	-0.586309	0.169362	-3.461878	0.0016
C	4.641568	1.414019	3.282535	0.0026
R-squared	0.285452	Mean dependent var		0.092062
Adjusted R-squared	0.261634	S.D. dependent var		3.435920
S.E. of regression	2.952425	Akaike info criterion		5.063592
Sum squared resid	261.5044	Schwarz criterion		5.155201
Log likelihood	-79.01748	Hannan-Quinn criter.		5.093958
F-statistic	11.98460	Durbin-Watson stat		1.835513

Appendix - C
Testing the Stationarity of the Variable “Remittance Rate” (REM_RATE)

Null Hypothesis: REM_RATE has a unit root
 Exogenous: Constant
 Lag Length: 0 (Automatic - based on SIC, maxlag=7)

	t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic	-6.506664	0.0000
Test critical values:		
1% level	-3.653730	
5% level	-2.957110	
10% level	-2.617434	

*MacKinnon (1996) one-sided p-values.

Augmented Dickey-Fuller Test Equation
 Dependent Variable: D(REM_RATE)
 Method: Least Squares
 Date: 01/05/12 Time: 12:54
 Sample: 1978 2009
 Included observations: 32

Variable	Coefficient	Std. Error	t-Statistic	Prob.
REM_RATE(-1)	-1.154499	0.177433	-6.506664	0.0000
C	17.95801	5.158675	3.481129	0.0016
R-squared	0.585273	Mean dependent var		-1.454220
Adjusted R-squared	0.571448	S.D. dependent var		36.36598
S.E. of regression	23.80657	Akaike info criterion		9.238262
Sum squared resid	17002.58	Schwarz criterion		9.329870
Log likelihood	-145.8122	Hannan-Quinn criter.		9.268627
F-statistic	42.33668	Durbin-Watson stat		1.979033
Prob(F-statistic)	0.000000			

Appendix - D
Testing the Stationarity of the Variable “GDP Rate” (GDP RATE)

Null Hypothesis: GDP_RATE has a unit root
 Exogenous: Constant
 Lag Length: 0 (Automatic - based on SIC, maxlag=7)

	t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic	-4.214274	0.0024
Test critical values:		
1% level	-3.653730	
5% level	-2.957110	
10% level	-2.617434	

*MacKinnon (1996) one-sided p-values.

Augmented Dickey-Fuller Test Equation
 Dependent Variable: D(GDP_RATE)
 Method: Least Squares
 Date: 01/05/12 Time: 12:54
 Sample: 1978 2009
 Included observations: 32

Variable	Coefficient	Std. Error	t-Statistic	Prob.
GDP_RATE(-1)	-0.724235	0.171853	-4.214274	0.0002
C	0.434040	1.583476	0.274106	0.7859
R-squared	0.371861	Mean dependent var		-0.203840
Adjusted R-squared	0.350923	S.D. dependent var		11.06739
S.E. of regression	8.916476	Akaike info criterion		7.274140
Sum squared resid	2385.106	Schwarz criterion		7.365749
Log likelihood	-114.3862	Hannan-Quinn criter.		7.304506
F-statistic	17.76011	Durbin-Watson stat		2.137250
Prob(F-statistic)	0.000211			

Appendix - E

Testing the Stationarity of the Variable “Interest Rate Change” (INT_CHANGE)

Null Hypothesis: INT_CHANGE has a unit root
 Exogenous: Constant
 Lag Length: 0 (Automatic - based on SIC, maxlag=7)

	t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic	-10.58382	0.0000
Test critical values:		
1% level	-3.653730	
5% level	-2.957110	
10% level	-2.617434	

*MacKinnon (1996) one-sided p-values.

Augmented Dickey-Fuller Test Equation
 Dependent Variable: D(INT_CHANGE)
 Method: Least Squares
 Date: 01/05/12 Time: 12:54
 Sample: 1978 2009
 Included observations: 32

Variable	Coefficient	Std. Error	t-Statistic	Prob.
INT_CHANGE(-1)	-1.582388	0.149510	-10.58382	0.0000
C	0.247213	0.550808	0.448818	0.6568
R-squared	0.788758	Mean dependent var		-0.059375
Adjusted R-squared	0.781716	S.D. dependent var		6.659839
S.E. of regression	3.111531	Akaike info criterion		5.168569
Sum squared resid	290.4488	Schwarz criterion		5.260177
Log likelihood	-80.69710	Hannan-Quinn criter.		5.198934
F-statistic	112.0171	Durbin-Watson stat		1.944070
Prob(F-statistic)	0.000000			

Appendix - F
OLS Estimates of Equation (11)

Dependent Variable: INFL_RATE
 Method: Least Squares
 Date: 01/05/12 Time: 12:57
 Sample: 1978 2009
 Included observations: 32

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	7.746940	0.590293	13.12389	0.0000
REM_RATE	0.015600	0.022017	0.708527	0.4845
GDP_RATE	-0.202906	0.057320	-3.539885	0.0014
INT_CHANGE	0.018053	0.134952	0.133776	0.8945
R-squared	0.312311	Mean dependent var		7.851627
Adjusted R-squared	0.238630	S.D. dependent var		3.180147
S.E. of regression	2.774885	Akaike info criterion		4.995564
Sum squared resid	215.5996	Schwarz criterion		5.178781
Log likelihood	-75.92903	Hannan-Quinn criter.		5.056296
F-statistic	4.238701	Durbin-Watson stat		1.578551
Prob(F-statistic)	0.013699			

Appendix - G

Correlogram of Residuals from the Estimation of Equation (11)

Date: 01/06/12 Time: 12:13

Sample: 1978 2009

Included observations: 32

Autocorrelation	Partial Correlation	AC	PAC	Q-Stat	Prob	
. * .	. * .	1	0.136	0.136	0.6445	0.422
. .	. .	2	0.054	0.036	0.7510	0.687
. .	. .	3	0.037	0.025	0.8016	0.849
. .	. .	4	0.036	0.027	0.8525	0.931
. ** .	. ** .	5	-0.206	-0.221	2.5612	0.767
. * .	. * .	6	-0.141	-0.096	3.3987	0.757
. .	. .	7	-0.060	-0.015	3.5542	0.829
. * .	. * .	8	-0.133	-0.110	4.3557	0.824
. ** .	. * .	9	-0.219	-0.178	6.6242	0.676
. * .	. * .	10	-0.132	-0.127	7.4841	0.679
. ** .	. ** .	11	0.224	0.251	10.082	0.523
. .	. .	12	0.031	-0.013	10.136	0.604
. .	. * .	13	-0.016	-0.090	10.151	0.682
. .	. * .	14	0.031	-0.074	10.209	0.747
. ** .	. * .	15	0.224	0.161	13.425	0.569
. * .	. * .	16	-0.122	-0.131	14.432	0.567