

**Volume 21, Number 1**

**ISSN 1948-3147**

**Allied Academies  
International Conference**

**New Orleans  
March 30-April 1, 2016**

**Academy of Accounting  
and Financial Studies**

**PROCEEDINGS**

**Copyright 2016 by Jordan Whitney Enterprises, Inc, Weaverville, NC, USA**

All authors execute a publication permission agreement taking sole responsibility for the information in the manuscript. Jordan Whitney Enterprises, Inc is not responsible for the content of any individual manuscripts. Any omissions or errors are the sole responsibility of the individual authors.

The Academy of Accounting and Financial Studies Proceedings is owned and published by Jordan Whitney Enterprises, Inc, PO Box 1032, Weaverville, NC 28787. Those interested in the *Proceedings*, or communicating with the *Proceedings*, should contact the Executive Director of the Allied Academies at [info@alliedacademies.org](mailto:info@alliedacademies.org).

Copyright 2016 by Jordan Whitney Enterprises, Inc, Weaverville, NC

# Table of Contents

CUSTOMER SERVICE & HOFSTEDE'S CULTURAL DIMENSIONS AMONG DANISH, FRENCH, & AMERICAN FINANCE PROFESSIONALS.....	1
Samuel Deseine University of Texas Dallas	
Clayton Fitchett University of Texas Dallas	
Hannah Steinberg University of Georgia	
MARKET REACTION TO THE TRANSITORY EFFECTS OF IFRS: AN EXAMINATION OF DISAGGREGATED MEASURES.....	5
Theresa DiPonio, Robert Morris University	
Carol MacPhail, Robert Morris University	
CUSTOMER SERVICE & HOFSTEDE'S CULTURAL DIMENSIONS AMONG ARABS, AUSTRALIANS, CANADIANS, GREEK, JAMAICANS, PAKISTANI, SINGAPORIAN, & AMERICAN ACCOUNTING INFORMATION PERSONNEL.....	6
Miguel Duran, University of Texas Dallas	
Sara Irfan, University of Texas Dallas	
Dorcias Sipoche, University of Texas Dallas	
Daniel Blough, University of Texas Dallas	
Dairon Turner, University of Texas Dallas	
Phuong Nguyen, University of Texas Dallas	
Hannah Steinberg, University of Georgia	
STOCK SPLITS.....	11
Daniel Koucheravy, Longwood University	
Frank Bacon, Longwood University	
AFFORDABLE CARE ACT: A TEST OF MARKET EFFICIENCY.....	15
Matthew Logan, Longwood University	
Frank Bacon, Longwood University	
MULTIPLE SUPERVISORS IN AUDIT: FAIRNESS AND THE MANY-TO-ONE PERFORMANCE APPRAISAL ENVIRONMENT.....	19
Rebecca Martin, University of Maryland	
Marcia Simmering Dickerson, Louisiana Tech University	
THE EFFECTS OF CONFLICTING MESSAGES ON AUDIT ACCURACY AND EFFICIENCY.....	20
Rebecca Martin, University of Maryland	
William Stammerjohan, Louisiana Tech University	
Andrea Drake, Louisiana Tech University	
EFFECTS OF THE 2012 PRESIDENTIAL ELECTION ON HEALTHCARE AND ENERGY SECTOR RETURNS.....	21
Jenna Plotzyk, Longwood University	
Frank W. Bacon, Longwood University	

RETURNS DEPENDENCE: THE CASE OF BSE INDICES.....	26
Sanjay Rajagopal, Western Carolina University	
PREDICTION OF FOREIGN EXCHANGE RATE USING ADAPTIVE NEURO-FUZZY INFERENCE SYSTEM .....	29
Hari Sharma, Virginia State University	
Dinesh K. Sharma, University of Maryland Eastern Shore	
Hari S. Hota, Bilaspur University	
RAISING GLOBALLY COMPETITIVE ACCOUNTANTS: RE-DESIGNING THE PHILIPPINE ACCOUNTANCY CURRICULUM.....	33
Arnel Onesimo O. Uy, De La Salle University	

# **CUSTOMER SERVICE & HOFSTEDE'S CULTURAL DIMENSIONS AMONG DANISH, FRENCH, & AMERICAN FINANCE PROFESSIONALS**

**Samuel Deseine University of Texas Dallas  
Clayton Fitchett University of Texas Dallas  
Hannah Steinberg University of Georgia**

## **ABSTRACT**

*Culture is playing an important role in most of the companies' organization but one of the most obvious differences between cultures is the way the companies are relating to customers and suppliers. Geert Hofstede's dimensions are one of the most convenient way to compare different cultures. France and Denmark have very different cultures and therefore their customer services are very unlikely to be similar. With a score of 68 in power distance, individuals are not considered as equals in France and because of that, inequalities are generally accepted. In comparison, Denmark has a very low power distance score meaning that inequalities are not accepted and that people are usually considered as equal. This cultural difference can be attributed to the concept of "janteloven" present in Scandinavian countries and has an impact on the way people communicate to each other. Because of these differences, customer service is probably very different in Denmark than in France. The use of very polite sentences is preferred in France to talk to customers, especially with written communication. In Denmark, people might on the contrary tend to be less formal and address everybody in the same way. France has a score of 43 in masculinity making it a pretty feminine country where people value "work to live" over "live to work". Denmark has a very low score of 16 on masculinity making it one of the most feminine countries in the world. While both countries have feminine cultures, the difference in the scores can lead to different customer services practices. The first one would be working hours that are very different between France and Denmark where people often leave work early to be able to spend time with their family. An example might be the opening hours of hotlines and shops, closing earlier in Denmark than in France. France has a score of 86 on uncertainty avoidance when Denmark has a score of 23. This leads to differences in organization between the two countries. The French tend to have complex corporate structure and plan everything to avoid having surprises. On the contrary, Danes don't mind changing plans overnight. When making decisions, the French wants to have all the information before taking a decision so they know –or think that they know- they will not be deceived. The Danes seems to focus less on information and more on people's opinion. When it comes to customer service, these differences can probably be seen on the fact that the before-purchase customer service has the role of reassuring people in France, a role it does not have in Denmark.*

## **INTRODUCTION**

United States vs France regarding customer service Power Distance In America, there is an assumption that although power is unequal, everyone has the opportunity to obtain it. In France, power distribution is understood to be inherently unequal, and therefore accepted and even afforded to elite customers. Individualism (also correlates to neuroticism) Americans believe in

tolerance towards individualism provided that group opinions are respected. The French hold individualism in high regard, regardless of group sensitivities, and celebrate individualism as a national pride. In terms of customer service, Americans tend to please customers, and the French tend have less care toward the satisfaction of their guests or customers. Masculinity (also correlates to conscientiousness) in France, joie de vive (the joy of life) has a higher priority than the American priorities of achievement and success. In customer service, Americans use customer service as an avenue to achieve wealth and success. The French would prefer to enjoy themselves instead of working harder to please customers for personal gain. Uncertainty Avoidance (also correlates to openness to experience) Americans would analyze the risk involved but then would make an informed choice on risk taking leaning towards a higher tolerance towards risk. The French will take risk, but tend to first ensure the risk is low. In customer service, the US would provide a higher level of service in return for the possibility of a higher return, the French would only offer it in return for a guaranteed reward. Long Term Orientation (also correlates to agreeableness) Americans value short term, immediate profitability. Building on the dimensions above, delivering good customer service ensures that customers reward providers financially. In France, giving customer service would depend on the feeling and the situation of the moment, so delivery customer service is not a priority that can be relied upon to deliver financial rewards. Indulgence (also correlates to extraversion) The French's need to sustain their national pride leads to them not being able to allow themselves to be subservient to others for personal gain; therefore, customer service is not an avenue that is rewarded. Americans believe that they deserve to enjoy themselves, particularly the harder they work. This allows for a culture or customer service to be rewarded for those are willing to sate the desires and wants of others. Future research can be based on the work of Carraher and Colleagues (1991 to present).

## REFERENCES

- Budd, J. & Carraher, S. (1998). Validation of an inventory to measure attributes of strategic management. *Psychological Reports*, 82(3), 1220-1222.
- Burgess, S., Johnson, C., & Carraher, S.M. (2008). Cameron University Leaders and Entrepreneurs: Developing the next generation of leaders and entrepreneurs. *International Journal of Family Business*, 5(1), 45-46.
- Burgess, S., Johnson, C., & Carraher, S.M. (2008). Cameron University Leaders and Entrepreneurs: How to develop the next generation of leaders and entrepreneurs at your university. *International Journal of Family Business*, 5(1), 65-66.
- Carpenter, C. & Carraher, S. M. (2007). An examination of the reliability of a measure of Porter's five factors model among business leaders. *International Journal of Family Business*, 4(1), 87-90.
- Carraher, C. & Carraher, S. (1996). ISO 9000 - An industrial management tool. *Polymeric Materials Encyclopedia* (Vol. 5 pages 3481-3484) edited by J. Salamone, Boca Raton, FL: CRC Press.
- Carraher, C.E., Carraher, S.M., & Stewart, H.H. (2010). Metal-containing polymer structures for enhancing seed germination and plant growth. *Advances in Environmental Biology*, 4(1), 108-116.
- Carraher, C.E., Carraher, S.M., & Stewart, H.H. (2011). Plant growth hormone-containing polymers for enhanced seed germination and plant growth. *Journal of Polymeric Materials*, 28(2), 287-301.
- Carraher, C., Gaonkar, A., Stewart, H., Miao, S., & Carraher, S. (1998). Structural characterization and effects of Gibberellic acid-containing Organotin polymers on sawgrass and cattail germination and seedling growth for everglades restoration. In *Tailored Polymeric Materials for Controlled Delivery Systems* (pages 295-308) edited by Iain McCulloch and Shalaby W. Shalaby, Washington, DC: American Chemical Society & Oxford University Press.
- Carraher, C., Stewart, H., Carraher, S., Chamely, Learned, W., Helmy, J., Abey, K., & Salamone, A. (2002). Condensation polymers as controlled release materials for enhanced plant and food production: Influence of gibberellic acid and gibberellic acid-containing polymers on food crop seed. In *Functional Condensation Polymers* (Chapter 16, pages 223-234) edited by Charles E. Carraher, Jr. & Graham G. Swift, New York: Kluwer Academic/Plenum Publishers.

- Carraher, S.(1991). A validity study of the pay satisfaction questionnaire (PSQ). *Educational and Psychological Measurement*, 51(2), 491-495.
- Carraher, S. (1991). On the dimensionality of the pay satisfaction questionnaire. *Psychological Reports*, 69(3 Pt. 1), 887-890.
- Carraher, S. (1992). *PSY 3363: Industrial Psychology*. Norman, OK: U. of Oklahoma.
- Carraher, S. (1993). Another look at the dimensionality of a learning style questionnaire. *Educational and Psychological Measurement*, 53(2), 411-415.
- Carraher, S. (1995). On the dimensionality of a learning style questionnaire. *Psychological Reports*, 77 (1), 19-23.
- Carraher, S. (2000). Pressing Problems in Modern Organizations (That Keep Us Up At Night). *Journal of Leadership Studies*, 7(3), 136-138.
- Carraher, S. (2003). The father of cross-cultural research: An interview with Geert Hofstede. *Journal of Applied Management & Entrepreneurship*, 8(2), 97-106.
- Carraher, S. (2005). An Examination of entrepreneurial orientation: A validation study in 68 countries in Africa, Asia, Europe, and North America. *International Journal of Family Business*, 2(1), 95-100.
- Carraher, S. (2006). Felt fair pay of small to medium sized enterprise (SME) owners in Switzerland: An examination of Jaques' equity construct. *Journal of International Business and Entrepreneurship Development*, 3(1/2), 109-120.
- Carraher, S. (2006). Attitude towards benefits among SME owners in Eastern Europe: A 30- month study. *Global Business and Finance Review*, 11(1), 41-48.
- Carraher, S. (2008) *Small Business Institute® Research Review* Volume 35 [304 pages] SBANC.
- Carraher, S.M. (2008). A graduate certificate in entrepreneurial studies for medical and non-medical entrepreneurs. *International Journal of Family Business*, 5(1), 13-14.
- Carraher, S.M. (2008). How to integrate a board of advisors in to the academic process. *International Journal of Family Business*, 5(1), 43.
- Carraher, S.M. (2008). On-line SBI teams: Costco and beyond. *International Journal of Family Business*, 5(1), 47.
- Carraher, S.M. (2008). Youth entrepreneurship: Strategic exercises for developing entrepreneurship among elementary school students. *International Journal of Family Business*, 5(1), 67-68.
- Carraher, S.M. (2008). Using E-Bay to teach global and technological entrepreneurship *International Journal of Family Business*, 5(1), 63-64.
- Carraher, S.M. (2009). Business Education Accreditation and the Changing Global Marketplace: John Fernandes of AACSB. *Journal of Applied Management & Entrepreneurship*, 14(1), 128-138.
- Carraher, S.M. (2011). Turnover prediction using attitudes towards benefits, pay, and pay satisfaction among employees and entrepreneurs in Estonia, Latvia, & Lithuania. *Baltic Journal of Management*, 6(1), 25-52.
- Carraher, S.M. (2012). The future of the Journal of Management History. *Journal of Management History*, 18(1).
- Carraher, S.M. (2012). Global and empirical management history? *Journal of Management History*, 18(3).
- Carraher, S.M. (2012). Social entrepreneurship: interviews, journal surveys, and measures. *Journal of Management History*, 18(4).
- Carraher, S.M. (2013). ISI, social entrepreneurship, and research. *Journal of Management History*, 19(1).
- Carraher, S.M. (2013). Signaling intelligence, management history, marry-go-round, and research. *Journal of Management History*, 19(2).
- Carraher, S.M. (2013). Follett, Barnard and Taylor. *Journal of Management History*, 19(4).
- Carraher Shawn M. (2014). Consumer behavior, online communities, collaboration, IFRS, and Tung. *Journal of Technology Management in China*, 9(1).
- Carraher, S.M. (2014). Technology, AACSB and research suggestions. *Journal of Technology Management in China*, 9(2).
- Carraher, S.M. (2014). Cambridge Business & Economics Conference best papers and Anne Tsui. *Journal of Technology Management in China*, 9(3).
- Carraher, S.M. (2014). Leadership, entrepreneurship, and suggestions for future research. *Journal of Management History*, 20(1).
- Carraher Shawn, (2014). Dutton, management philosophy, realistic job previews, and Weber. *Journal of Management History*, 20(2).
- Carraher Shawn, (2014). Kathryn Harrigan, Management History, and Michael Peng. *Journal of Management History*, 20(3).
- Carraher Shawn M., (2014). AACSB standards, Academy of Management and 3000 Citations. *Journal of Management History*, 20(4).
- Carraher, S.M. (2014). Leadership, entrepreneurship, and suggestions for future research. *Journal of Management History*, 20(1).

- Carraher, S.M. (2014). Dutton, management philosophy, realistic job previews, and Weber. *Journal of Management History*, 20(2).
- Carraher, S.M., Buchanan, J.K., & Puia, G. (2010). Entrepreneurial Need for Achievement in China, Latvia, and the USA. *Baltic Journal of Management*, 5(3), 378-396.
- Carraher, S. & Buckley, M. R. (1996). Cognitive complexity and the perceived dimensionality of pay satisfaction. *Journal of Applied Psychology*, 81(1), 102-109.
- Carraher, S. & Buckley, M. (2005). Attitudes towards benefits among SME owners in Western Europe: An 18-month study. *Journal of Applied Management & Entrepreneurship*, 10(4), 45-57.
- Carraher, S.M. & Buckley, M.R. (2008). Attitudes towards benefits and behavioral intentions and their relationship to Absenteeism, Performance, and Turnover among nurses. *Academy of Health Care Management Journal*, 4(2), 89-109.
- Carraher, S. Buckley, M., & Carraher, C. (2002). Cognitive complexity with employees from entrepreneurial financial information service organizations and educational institutions: An extension & replication looking at pay, benefits, and leadership. *Academy of Strategic Management Journal*, 1, 43-56.
- Carraher, S.M., Buckley, M.R., & Carraher, C.E. (2008). Research challenges in sustainable strategic management: Change and sustainability. *International Journal of Sustainable Strategic Management*, 1 (1), 2-15.
- Carraher, S., Buckley, M. & Cote, J. (1999). Multitrait-multimethod information management: Global strategic analysis issues. *Global Business & Finance Review*, 4(2), 29-36.
- Carraher, S., Buckley, M., & Cote, J. (2000). Strategic entrepreneurialism in analysis: Global problems in research. *Global Business & Finance Review*, 5(2), 77-86.
- Carraher, S., Buckley, M., Mea, W., Carraher, S.C., & Carraher, C. (2006). Entrepreneurship and leadership: Why we have an ethical obligation to assess change in entrepreneurial research. *International Journal of Family Business*, 3 (1), 19-31.
- Carraher, S., Buckley, M., Scott, C., Parnell, J., & Carraher, C. (2002). Customer service selection in a global entrepreneurial information services organization. *Journal of Applied Management and Entrepreneurship*, 7(2), 45-55.
- Carraher, S. & Carraher, C. (1994). ISO 9000 - theories of management. *Polymer News*, 19, 373-376.
- Carraher, S. & Carraher, C. (1995). Total quality management applied to industry - ISO 9000. *Journal of Polymer Materials*, 12, 1-9.
- Carraher, S. & Carraher, C. (1996). ISO environmental management standards: ISO 14,000. *Polymer News*, 21, 167-169.
- Carraher, S. & Carraher, C. (1996). ISO 9000. *Polymer News*, 21, 21-24.
- Carraher, S. & Carraher, S.C. (2005). Felt fair pay of small to medium, sized enterprise (SME) owners in Finland and Latvia: An examination of Jaques' equity construct. *Journal of Small Business Strategy*, 16(1), 1-8.
- Carraher, S. & Carraher, S.C. (2006). Human resource issues among SME's in Eastern Europe: A 30 month study in Belarus, Poland, and Ukraine. *International Journal of Entrepreneurship*, 10, 97-108.
- Carraher, S., Carraher, S.C., & Mintu-Wimsatt, A. (2005). Customer service management in Western and Central Europe: A concurrent validation strategy in entrepreneurial financial information services organizations. *Journal of Business Strategies*, 22(1), 41-54.



# **MARKET REACTION TO THE TRANSITORY EFFECTS OF IFRS: AN EXAMINATION OF DISAGGREGATED MEASURES**

**Theresa DiPonio, Robert Morris University  
Carol MacPhail, Robert Morris University**

## **ABSTRACT**

*This study examines how IFRS is applied, disaggregates the cumulative effect of the IFRS transition into magnitude measurements of the standard-to-standard differences (by standard) and management discretionary choices (by choice), and tests which transitory effects at every level of disaggregation alter investor behavior. Employing eight regression models, findings from the study identify specific standards and management discretionary choices associated with market reaction. Evidence from this study demonstrates the value of disaggregated measures to obtain a more comprehensive understanding of market reaction and associations with transitory effects of IFRS. Findings from the study suggest that the market favors management discretionary choices that decrease retained earnings and potentially increase future net income. Overall, model results suggest that we gain a more comprehensive understanding of the specific standards that alter market behavior and how the market responds to positive and negative equity adjustments.*

# **CUSTOMER SERVICE & HOFSTEDE'S CULTURAL DIMENSIONS AMONG ARABS, AUSTRALIANS, CANADIANS, GREEK, JAMAICANS, PAKISTANI, SINGAPORIAN, & AMERICAN ACCOUNTING INFORMATION PERSONNEL**

**Miguel Duran, University of Texas Dallas**  
**Sara Irfan, University of Texas Dallas**  
**Dorcas Sipoche, University of Texas Dallas**  
**Daniel Blough, University of Texas Dallas**  
**Dairon Turner, University of Texas Dallas**  
**Phuong Nguyen, University of Texas Dallas**  
**Hannah Steinberg, University of Georgia**

## **ABSTRACT**

*When comparing countries like Canada and Pakistan, one would assume they are polar opposites with little or no similarities. Economic standing and religion are the two influences of culture in these regions. Pakistan has a Masculinity score of 50 while Canada has a score of 52. These numbers show that these two countries aren't highly masculine or feminine, but instead a mixture of both. They strive for both wanting to be the best and also liking what they do. This is the only dimension that these two countries are very similar in. The Individualism dimension has the highest score difference between the two countries with Canada at 80 and Pakistan at 14. Based on these scores Pakistan is a more collectivist society and Canada is much more individualistic. Pakistan has a Power Distance score of 55 while Canada has a score of 39. With an intermediate score of 55 it isn't possible to determine a preference for Pakistan, but for Canada a score of 39 means that the society tends to favor equality for all people. Pakistan has an Uncertainty Avoidance score of 70 which means that it has a high preference for avoiding uncertainty and has a need for rules and regulations. Canada on the other hand has a Uncertainty Avoidance score of 48 which means that the society tends to be more accepting of new ideas and are more willing to try new things. Canada has a Long Term Orientation score of 36 which makes it a normative society while Pakistan has a score of 50 leaving it intermediate and without preference. Canada has a score of 68 when it comes to Indulgence which means that this society prefers spending money freely, enjoying leisure time, having fun and are optimistic. Pakistan has a low score of Indulgence at 0 which means it is a very restrained society, tends to be pessimistic and cynical. By analyzing these scores one can determine the general culture and atmosphere of a society. Based on these scores one can conclude that Canadians tend to score high on openness, extroversion and agreeableness while Pakistanis tend to score high on neuroticism and have a strong need for conscientiousness. The customer service in Canada tends to be very simple, straight forward, orderly and almost guaranteed, while in Pakistan it just depends on what part of the country you are in. In more developed regions customer service is significantly strong and "in your face" while in others it's almost nonexistent.*

## INTRODUCTION

With regard to the Hofstede's 6D model the two countries may be comparable when it comes to Masculinity and Power distance, specifically due to their past history. Jamaica having been colonized by the British and the United Kingdom having had a monarchy that separated the royals from the commoners. However in other areas such as being indulgent and individualistic, Jamaica is more community oriented hence much less indulgent than the United Kingdom where in the present society individuals are encouraged to embrace their individuality which tends to encourage indulgence. In the area of Long term orientation, the United Kingdom, due to its history and the need to hold on to some traditions is a long term oriented society. On the other hand it is too soon to determine Jamaica's long term orientation especially since they got their independence from the United Kingdom about 54\* years ago on August 6, 1962. In customer service both countries will tend to exercise good customer service especially to the foreigners or tourists. This is vital to both because Jamaica depends on tourism as part of its economy, while the UK on the other hand plays an important role and one of the aviation connection hubs in Europe for international travelers.

In both the U.S. and Canada, customer service is generally reviewed negatively. From cost saving automated voice services to understaffing, customer service complaints rose from 24% to 32% last year in Canada alone. Many people reported exhibiting behaviors ranging from hanging up the phone, storming out of the store, insisting on speaking to a supervisors, and using vulgar language. In the United states, different regions of the country exhibit different characteristics of the big five personality traits. For example, people from the south and midwest generally exhibit more extroverted and agreeable traits, while in the northeast people are less extroverted. In fact, the northeast scored poorly in every characteristic except neuroticism. As for Hofstede's 6 dimensions, the U.S. and Canada are nearly identical when it comes to power distance, uncertainty avoidance, and indulgence. However, the U.S. ranks higher in individualism and masculinity while Canada is higher in long term orientation. I believe this to represent a stronger sense of self in the United States, while Canada has a higher long term group success mentality.

Customer service can be described as the interactions between customers and an organization. With this said, comparing countries uncertainty avoidance can be a large factor in how customer service is conducted and deemed either acceptable or unacceptable. In the assessment of uncertainty avoidance, Greece has a significantly low tolerance for ambiguity in contrast to a country such as Singapore, who has a high tolerance for such circumstances of ambiguity. Greece's customer service would ideally have to be relatively more accurate and to the point speaking with there customers in comparison with a country such as Singapore. For example, Greece's customer service representatives would be more precise with the information that they convey to their customers while Singapore's representatives could leave room for interpretation. Singapore's customers would be alright with estimations and approximations while Greece's customers would not be.

The score for power distance for Singapore was high at 74 as compared to United States. These scores suggesting that Singaporeans valuing hierarchy among members in society. Therefore, offering customer service in Singapore works as in high power distance culture, one social status must be clear to be respected by others. Singaporeans are likely to assess services on a hierarchical quality level and this is more marked if quality is perceived as associated with those who occupy higher positions in society. Hofstede's scores indicate that United Sates is high in

uncertainty-avoidance and individualism (with a score of 46 and 91) compared to Singapore (with a score of 8 and 20 ). As a result, customer service in Singapore should focus on needs of a society, family and group rather than individual due to the low individualism index. Moreover, marketing customer service in Singapore should be continuously innovative, quality added and and customer interactions are to be improved as the uncertainty avoidance is very low.

Hofstede ratings between Saudi Arabia and Australia show how different culture is between the two countries. Saudi Arabia has an Uncertainty Avoidance (UAI) of 80 and a Power Distance (PDI) of 95. These indicators suggest that traditional leaders separate themselves from others, they are highly-rule oriented with law, and the society has definitive class systems. Australia on the other hand, has an index of 51 UAI and 36 PDI; which indicates a greater equality between classes and less restrictive laws. One of the bigger differences between the two is their Individualism (IDV) score. Saudi Arabia's of 90 IDV indicates a collectivist society which puts family and group as a priority. Almost opposite is Australia's IDV of 25. Australia's culture focuses more on the individual and self-image is defined as "I" instead of "we". It is obvious from these indicators provided by Hofstede that Saudi Arabia and Australia are very different when comparing their society and culture.

## REFERENCES

- Carraher, S.M., Paridon, T., Courington, J., & Burgess, S. (2008). Strategically teaching students to publish using health care, general population, and entrepreneurial samples. *International Journal of Family Business*, 5(1), 41-42.
- Carraher, S. & Parnell, J. (2008). Customer service during peak (in season) and non-peak (off season) times: A multi-country (Austria, Switzerland, United Kingdom and United States) examination of entrepreneurial tourist focused core personnel. *International Journal of Entrepreneurship*, 12, 39-56.
- Carraher, S., Parnell, J., Carraher, S.C., Carraher, C., & Sullivan, S. (2006). Customer service, entrepreneurial orientation, and performance: A study in health care organizations in Hong Kong, Italy, New Zealand, the United Kingdom, and the USA. *Journal of Applied Management & Entrepreneurship*, 11(4), 33-48.
- Carraher, S.M., Parnell, J., & Spillan, J. (2009). Customer service-orientation of small retail business owners in Austria, the Czech Republic, Hungary, Latvia, Slovakia, and Slovenia. *Baltic Journal of Management*, 4 (3), 251-268.
- Carraher, S., Scott, C., & Carraher, S.C. (2004). A comparison of polychronicity levels among small business owners and non-business owners in the U.S., China, Ukraine, Poland, Hungary, Bulgaria, and Mexico. *International Journal of Family Business*, 1(1), 97-101.
- Carraher, S. & Sullivan, S. (2003). Employees' contributions to quality: An examination of the Service Orientation Index within entrepreneurial organizations. *Global Business & Finance Review*, 8(1) 103-110.
- Carraher, S., Sullivan, S., & Carraher, C. (2004). Validation of a measure of international stress: Findings from multinational health service organization professionals. *Journal of Applied Management & Entrepreneurship* 9(3), 3-21.
- Carraher, S., Sullivan, S. & Carraher, S.C. (2005). An examination of the stress experience by entrepreneurial expatriate health care professionals working in Benin, Bolivia, Burkina Faso, Ethiopia, Ghana, Niger, Nigeria, Paraguay, South Africa, and Zambia. *International Journal of Entrepreneurship*, 9, 45-66.
- Carraher, S.M., Sullivan, S.E., & Crocitto, M. (2008). Mentoring across global boundaries: An empirical examination of home- and host-country mentors on expatriate career outcomes. *Journal of International Business Studies*, 39(8), 1310-1326.
- Carraher, S.M. & Van Auken, H. (2013). The use of financial statements for decision making by small firms. *Journal of Small Business & Entrepreneurship*, 26(3), 323-336.
- Carraher, S.M. & Welsh, D. H. (2009; 2015). *Global Entrepreneurship*. Kendall Hunt Publishing [2<sup>nd</sup> Edition [2015].
- Carraher S.M., Welsh, Dianne H.B., and Svilokos, A. (2016). Validation of a measure of social entrepreneurship *European Journal of International Management*.
- Carraher, S. & Whitely, W. (1998). Motivations for work and their influence on pay across six countries. *Global Business and Finance Review*, 3, 49-56.

- Carraher, S.M., Yuyuenyongwatana, R., Sadler, T., & Baird, T. (2009). Polychronicity, leadership, and language influences among European nurses: Social differences in accounting and finances. *International Journal of Family Business*, 6(1), 35-43.
- Chait, H., Carraher, S., & Buckley, M. (2000). Measuring service orientation with biodata. *Journal of Managerial Issues*, 12, 109-120.
- Chan, S. & Carraher, S. (2006). Chanian chocolate: Ethical leadership in new business start-ups. *International Journal of Family Business*, 3(1), 81-97.
- Crocitto, M., Sullivan, S., & Carraher, S. (2005). Global mentoring as a means of career development and knowledge creation: A learning based framework and agenda for future research. *Career Development International*, 10 (6/7), 522-535.
- Davis, T., Schwarz, A. & Carraher, S. (1998). Validation study of the motivation for occupational choice scale. *Psychological Reports*, 82(2), 491-494.
- Deng, F.J., Huang, L.Y., Carraher, S.M., & Duan, J. (2009). International expansion of family firms: An integrative framework using Taiwanese manufacturers. *Academy of Entrepreneurship Journal*, 15(1), 25-42.
- Francis, D., Huang, L., & Carraher, S. (2004). Top management teams and friendship: Results from the USA and Taiwan. *International Journal of Family Business*, 1(1), 73-86.
- Hart, D. & Carraher, S. (1995). The development of an instrument to measure attitudes towards benefits. *Educational and Psychological Measurement*, 55(3), 498-502.
- Huang, L.Y. & Carraher, S. (2004). How effective are expatriate management and guanxi networks: Evidence from Chinese Industries. *International Journal of Family Business*, 1(1), 1-23 .
- Huang, L. & Carraher, S. (2009). China [an Area Studies Chapter]. In: S. Carraher & D. Welsh (Eds). *Global Entrepreneurship*.
- Karsteter, K., Brown, N., & Carraher, S. (2006). From the Artist's hand: Managing arts and crafts businesses. *International Journal of Family Business*, 3(1), 69-78.
- Keyes, C., Vinson, T., Hay, S. & Carraher, S. M. (2007). Parrish photography Part 1: Strategic Ethical Leadership. *International Journal of Family Business*, 4(1), 67-82.
- Krishnan, V.S., Duan, J., Carraher, S.M., & Chan, S. (2007). GPS Real Estate Services. *Journal of Applied Management & Entrepreneurship*, 12(4), 51-59.
- Lester, D., Parnell, J., & Carraher, S. (2003). Organizational life cycle: A five-stage empirical scale. *International Journal of Organizational Analysis*, 11(4), 339-354.
- Lester, D., Parnell, J.A. & Carraher, S.M. (2010). Assessing the desktop manager. *Journal of Management Development*, 29(3), 246-264.
- McBride, A., Mendoza, J., & Carraher, S. (1997). Development of a biodata index to measure service-orientation. *Psychological Reports*, 81(3 Pt 2), 1395-1407.
- Paridon, T. & Carraher, S.M. (2009). Entrepreneurial marketing: Customer shopping value and patronage behavior. *Journal of Applied Management & Entrepreneurship*, 14 (2), 3-28.
- Paridon, T., Carraher, S., & Carraher, S.C. (2006). The income effect in personal shopping value, consumer self-confidence, and information sharing (word of mouth communication) research. *Academy of Marketing Studies*, 10(2), 107-124.
- Paridon, T., Taylor, S., Cook, R., & Carraher, S. M. (2008). SBI mentoring: Training SBI directors to be directors. *International Journal of Family Business*, 5(1), 35-36.
- Scarpello, V. & Carraher, S.M. (2008). Are pay satisfaction and pay fairness the same construct? A cross-country examination among the self-employed in Latvia, Germany, the UK, and the USA. *Baltic Journal of Management*, 3(1), 23-39.
- Sethi, V. & Carraher, S. (1993). Developing measures for assessing the organizational impact of information technology: A comment on Mahmood and Soon's paper. *Decision Sciences*, 24, 867-877.
- Sturman, M. & Carraher, S. (2007). Using a Random-effects model to test differing conceptualizations of multidimensional constructs. *Organizational Research Methods*, 10 (1), 108-135.
- Sullivan, S.E., Carraher, S.M., Baker, L., Cochrane, D., & Robinson, F. (2009). The entrepreneurial dilemma: Grow or status quo?: A real case. *Journal of Applied Management & Entrepreneurship*, 14(4), 37-53.
- Sullivan, S.E., Forret, M., Carraher, S.M., & Mainiero, L. (2009). Using the kaleidoscope career model to examine generational differences in work attitudes. *Career Development International*, 14(3), 284-302.
- VanAuken, H. & Carraher, S.M. (2012). An analysis of funding decisions for niche agricultural producers. *Journal of Developmental Entrepreneurship*, 17(2), 12500121-125001215.
- Van Auken, H. & Carraher, S. (2013). Influences on frequency of preparation of financial statements among SMEs. *Journal of Innovation Management*, 1(1), 143-157.

- Welsh, D.H.B. & Carraher, S.M. (2009). An examination of the relationship between the mission of the university, the business school, and the entrepreneurship center: An application of Chandler's strategy and structure hypothesis. *Journal of Applied Management & Entrepreneurship*, 14(4), 25-36.
- Welsh, D.H. & Carraher, S.M. (2011). *Case Studies in Global Entrepreneurship*. Kendall Hunt P.
- Williams, M.L., Brower, H.H., Ford, L.R., Williams, L.J., & Carraher, S.M. (2008). A comprehensive model and measure of compensation satisfaction. *Journal of Occupational and Organizational Psychology*, 81(4), 639-668.
- Yuyenyongwatana, R. & Carraher, S.M. (2008/2009). Academic journal ranking: Important to strategic management and general management researchers? *Journal of Business Strategies*, 25(2), 1-8.

# STOCK SPLITS

**Daniel Koucheravy, Longwood University**

**Frank Bacon, Longwood University**

## ABSTRACT

*When a company's executives decide to carry out a stock split, they are not actually adding any value to their outstanding shares of stock. More specifically, they are lowering the price of their stock and adding to the total numbers of stocks outstanding. While this may seem like a fairly straightforward course of action, the resulting actions from shareholders and the market are not nearly straightforward; some investors may simply close out their positions and decide to move onto something less complicated; stock splits are among the most prominent of corporate policies to be influenced by small investors. It also may take a few days for new shares to be delivered, and in the fast-paced world of the stock market, some investors simply do not enjoy having their assets tied up.*

*The effect of the stock split on the stock's price is not solely based on the split itself; the response from the market also lends a hand. The effect can also be attributed to the increase in liquidity and the company's more diverse position that typically follows. Another area where stock splits can have an impact is a stop order. Such orders instruct the broker to sell a stock if the price goes above or below a given level. Often, people use a stop order to protect against significant losses, especially in cases where they can't, or don't intend to, monitor the stock price regularly. As for situations when the stock split occurs before a dividend record date, the dividend will for the most part be paid out for the newly created shares as well, except that the dividend likely will be split compared to previous time periods. This is due to the fact that companies want to maintain the amount of dividends issued.*

## RESEARCH PROBLEM

This study will analyze the role that information plays in stock split announcement effects by examining pure stock split announcements across a range of stocks differing in terms of their information. Why do companies issue splits if you still have the same amount of money? Liquidity. Some companies believe that their stock should be inexpensive so more people can buy it. This creates a condition where more of the company's stock is bought and sold. And generally is viewed by investors as a positive signal about the company's future performance. The problem, in theory, is that the increased activity will also leads to bigger gains and drops in the stock, making it more volatile.

In the liquidity-related hypotheses, the positive abnormal return is attributed to improved liquidity or lower risk through one of three things: stock price range, tick size or broker-mediated trading. The trading range hypothesis proposes that a stock split is used to return the stock price to a more affordable range. The optimal tick size hypothesis suggests that stock splits improve liquidity by changing the tick-to-price ratio, thereby attracting traders. The commission-induced sponsorship hypothesis suggests that stock splits may improve liquidity by increasing the profits brokers make per trade, giving brokers an incentive to increase trading in client accounts.

## LITERATURE REVIEW

For this study, I have reviewed a number of articles on stock splits, including why they are performed, their change in frequency over time, and the informational content of multiple stock splits. This has opened up a wealth of information on stock splits, giving a larger and more encapsulating image on stock splits and the market.

Fama defined market efficiency in terms of how quick the stock market reacts to the information and suggested three kinds of market efficiency: Weak form, semi-strong and strong form efficiency. If the market is weak form efficient, then stock price reacts so fast to all past information that no investor can earn an above normal return (higher than the market, or the return on the S&P500 index).

A second type of market efficiency is semi-strong. Semi-Strong form efficiency deals with the notion that stock price react so fast to all public information that no investor can earn an above normal return when acting on information. Public announcements of stock splits, repurchases, and dividend increases are examples of public information. So for example, if an investor buys stock on the announcement and still does not make an above normal return (higher than the S&P 500), then the market is semi-strong form efficient. Splits usually result in high market valuations, but a study done by Fama (1970), Dodd, Patell and Wolfson, found that there is no evidence of abnormal return after the release of public information. They concluded that the market assimilates and takes into consideration public information very fast, within 15 minutes of the disclosure (Malkiel). Studies which test semi-strong form efficiency consist of: Berry (1994) who looked for association in the pattern of hourly public information and aggregate measures of intraday market activity and Ball (1968), which documents the claim that no investor can earn an above normal return on publicly available information.

Weak form efficiency expresses that a company's stock price is based on past prices and information, while strong form efficiency states that the stock price is a reflection of all information, public and private. Both of these theories have great importance however; this study focuses on stock split announcements.

## METHODOLOGY

The study sample analyzes 30 randomly selected, two-for-one stock split announcements between January 1<sup>st</sup> 2014 and September 1<sup>st</sup> 2014. The random sample was selected from two for one stock split announcements traded either on the NYSE or NASDAQ. Table 1 (found further down) describes the sample. This study uses the standard risk adjusted event study methodology. The announcement date, obtained from finance.yahoo.com, is the date of the firm's announcement of the stock split. The required historical financial data, i.e. the stock price and S&P500 index during the event study period was also obtained from finance.yahoo.com.

To test for semi-strong market efficiency the following null and alternative hypotheses are used for the stock split samples:

*H1<sub>0</sub>: The adjusted stock price return of the sample of firms announcing stock splits is not significantly affected by information on the announcement date.*

*H1<sub>1</sub>: The adjusted stock price return of the sample of firms announcing stock splits is significantly positively affected by information on the announcement date.*

*H2<sub>0</sub>: The adjusted stock price return of the sample of firms announcing stock splits is not significantly affected by information around the announcement date as defined by the event period.*

*H2<sub>1</sub>: The adjusted stock price return of the sample of firms announcing stock splits is significantly positively affected by information around the announcement date as defined by the event period.*

Then, holding period returns of the companies and the corresponding S&P 500 index for each day in this study period were calculated using the following formula:

$$(current\ day\ close\ price - previous\ day\ close\ price) / previous\ day\ close\ price$$



A regression analysis was then performed using the daily return of each company and the corresponding S&P 500 daily return (the dependent and independent variables, respectively) to obtain the intercept alpha and coefficient beta. Table 2 shows these results.

The expected return for each stock, for each day between day -30 and day 30, was calculated as: *Expected return = alpha + beta (R<sub>m</sub>)*; where R<sub>m</sub> is the return on the S&P 500. The Excess Return was then calculated by subtracting the Expected Return (ER) from the Actual Return (AR). Average Excess Return was then calculated by adding up all the excess returns for the given day, and dividing by the total number of firms (30, in this case). In addition, the Cumulative AER (CAER) was calculated by adding up each day's AER. Both the Average Excess Return (AER) and the Cumulative Average Excess Return were plotted and can be found on Chart 1 and Chart 2, respectively.

## QUANTITATIVE TESTS AND RESULTS

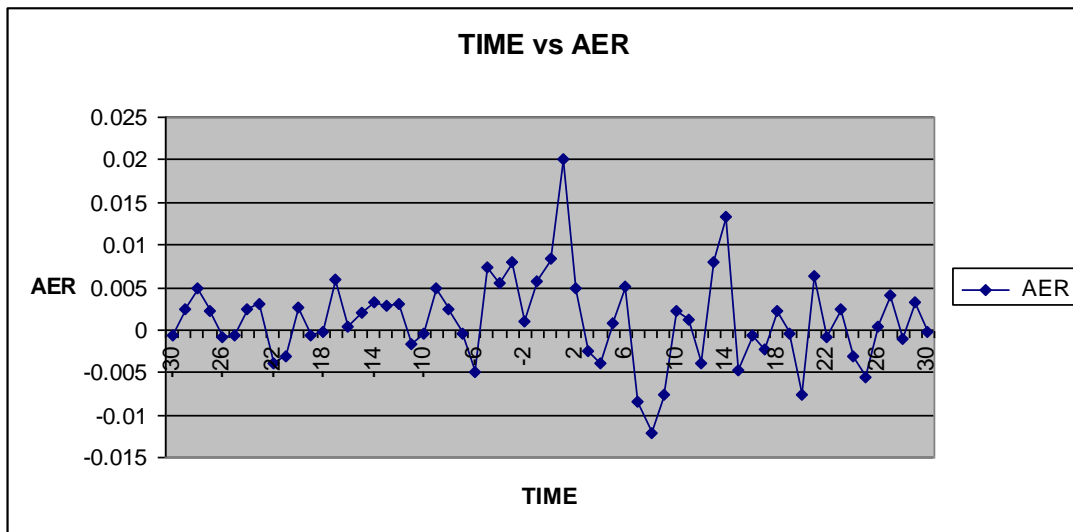
Was the information surrounding the event significant? One would definitely expect a significant difference between the expected average daily returns and the actual results, if the information of a stock split actually had a market reaction. To statistically test for a difference in the Actual Daily Average Returns (for the firms over the time periods day -30 to day +30) and the Expected Daily Average Returns (for the firms over the time periods day -30 to day +30), we conducted a paired sample t-test and found a significant difference at the 5% level between actual average daily returns and the expected average daily returns. This supports the hypothesis H<sub>21</sub>: *The adjusted stock price return of the sample of firms announcing stock splits is significantly positively affected by information around the announcement date as defined by the event period.* This supports the significance of stock split announcement information.

Another purpose of this analysis was to test the efficiency of the market in reacting to the announcement of a regular two for one stock split event. Specifically, do we observe weak, semi-strong, or strong form market efficiency? The key in the analysis is to determine if the AER and CAER are significantly different from zero. Observation of Chart 2 (graph of CAER from day -30 to day +30) confirms the significant positive reaction of the risk adjusted returns of the sample of firms tested, up to 29 days prior to the announcement of regular two for one stock splits.

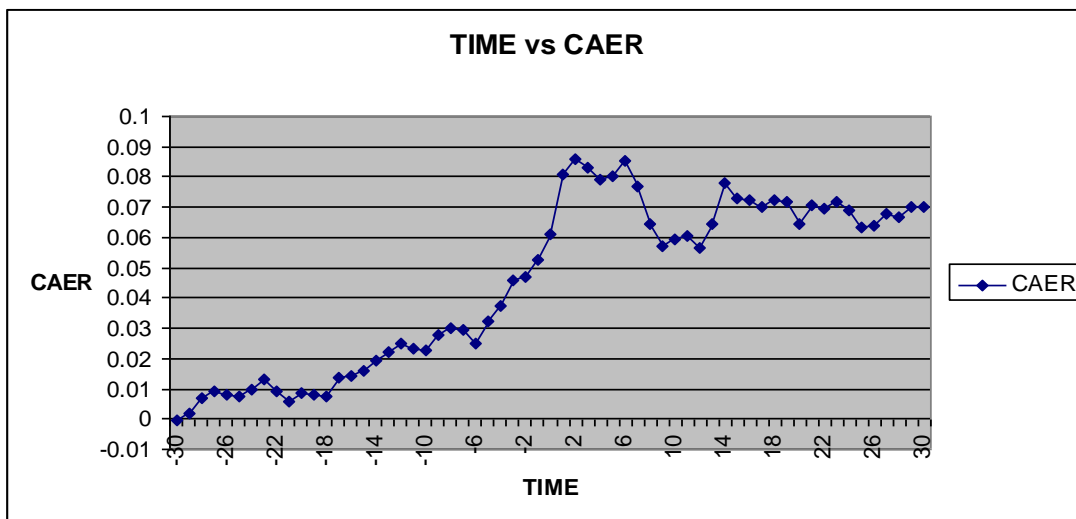
## CONCLUSION

This study tested the effect of announcing regular two for one stock splits on the stock price's risk adjusted rate of return for a randomly selected sample of 30 firms from the time period January 1<sup>st</sup>, 2014 to September 1<sup>st</sup>, 2014. These stocks were traded on the NYSE or NASDAQ. Appropriate statistical tests for significance were conducted. Results show a significant positive market reaction prior to the firms' announcement of regular two for one stock splits. Findings also support efficient market theory at the semi-strong form level. Specifically, for this study, stock split announcements are viewed as a signal of good news. The market's positive reaction indicates that, in general, stakeholders and management have little to fear from initiating stock splits.

**Chart 1**  
**AVERAGE EXCESS RETURN OVER EVENT PERIOD**



**Chart 2**  
**CUMULATIVE AVERAGE EXCESS RETURN OVER EVENT PERIOD**



**REFERENCES**

Fama, E. F. (1998). Market Efficiency, Long-Term Returns, and Behavioral Finance. *Journal of Financial Economics*, Volume 39, Number 3 (September), 283-306.

Desai, A., Nimalendran, M., & Venkataraman, S. (n.d.). Changes In Trading Activity Following Stock Splits And Their Effect On Volatility And The Adverse-Information Component Of The Bid-Ask Spread. *Journal of Financial Research*, 159-183.

Huang, G., Liano, K., Manakyan, H., & Pan, M. (n.d.). The Information Content of Multiple Stock Splits. *Financial Review*, 543-567.

Michayluk, D., & Zhao, L. (n.d.). Stock Splits and Bond Yields: Isolating the Signaling Hypothesis. *SSRN Electronic Journal SSRN Journal*.

# **AFFORDABLE CARE ACT: A TEST OF MARKET EFFICIENCY**

**Matthew Logan, Longwood University**  
**Frank Bacon, Longwood University**

## **ABSTRACT**

*The purpose of this study is to test market efficiency with respect to the passage of the Affordable Care Act using standard event study methodology. The Affordable Care Act was signed into law on March 23<sup>rd</sup>, 2010. Specifically this study will analyze the effect of this healthcare bill on ten different healthcare providers and their respective stock prices. The weak, semi-strong, and strong form market hypothesis which tests investor's ability to earn an abnormal return based on the signing of the Affordable Care Act. This study will focus on the semi-strong form in an effort to test the efficiency of the ACA public information. Evidence here supports a semi-strong market efficiency with prices rising until the day of signing, then they begin to fall immediately after.*

## **INTRODUCTION**

The Affordable Care Act is the most significant healthcare overhaul since the passage of Medicare and Medicaid in 1965. The Act aimed to increase the uninsured rate in the United States but also lower the cost of health care. This could be worrisome for healthcare providers due to the fact that they will now have to compete with the Government. If the Government sets the prices low then this will hurt health care providers.

Under the act, hospitals, physicians and other healthcare providers will have to transform their practices and companies financially and technologically to meet the quality standards of the ACA. The goal is to lower costs and produce better health outcomes.

The public can see the ACA two ways. One, it could really lower the operating costs of healthcare providers and therefore increasing profit. Or two, it could cause providers to charge costumers less than they want to and they could end up losing profit. Investors will try and capitalize on these losses or gains.

In the past, major bills passed in congress and signed by the President have led to significant changes in returns in the market. This test will show the effect of the ACA on the return of specific healthcare providers around the date of March 22<sup>nd</sup>, 2010.

The three forms of market efficiency, weak, semi-strong, and strong, explain how quickly the market reacts to public information, such as the signing of the ACA. The efficient market hypothesis states that investors should not be able to achieve an abnormally high return in the market, due to the fact that all pertinent information will have already affected prices.

## **LITERATURE REVIEW**

In the days before the signing of the ACA people were unsure what affect it would have on the market. Prior to the ACA there was a wide variation in medical loss ratios within states and big and small providers. Analysts believed that the new treatment standards implemented by the ACA would lead to higher value insurance options. This can be beneficial to providers or can result in losses. Before the ACA, insurers with medical loss ratios below the standard could avoid paying rebates by lowering premiums, increasing scope of coverage, or exit the market among other options. After the ACA these rebates will be harder to avoid which in return will hurt providers. But because they will have to provide a better insurance plan, it can attract more customers which will help them (Clemans-Cope, 2013).

The biggest change that the ACA will bring to the market is more health coverage in the private and public sector. It makes sense to believe that more coverage will bring more revenue which will equal higher profits. This can explain why there is a rise in returns in the days prior to the signing of the ACA.

**METHODOLOGY**

The study sample contains ten health care providers that are greatly affected by government regulations. Some of these ten companies are among the biggest in the health care industry and will most certainly be affected by the ACA in the long or short term. This study tests how quickly the ten firms’ returns react to the signing of the Affordable Care Act by President Barack Obama on March 23<sup>rd</sup>, 2010. Analysis of the event will include observations beginning 180 prior to the event date, March 23<sup>rd</sup>, 2010, ending 30 days after the event date.

In order to test semi-strong market efficiency with respect the signing of the ACA and how stock returns react around the event date, we will use the following null and alternate hypotheses:

- H1<sub>0</sub>: The risk adjusted return of the stock price of the sample of health care providers is not significantly affected by this type of information on the event date.*
- H1<sub>1</sub>: The risk adjusted return of the stock price of the sample of health care providers is significantly negatively affected by this information on the event date.*
- H2<sub>0</sub>: The risk adjusted return of the stock price of the sample of health care providers is not significantly affected by this type of information around the event date.*
- H2<sub>1</sub>: The risk adjusted return of the stock price of the sample of health care providers is significantly negatively affected by this type of information around the event date.*

The Standard Risk Adjusted Event Study methodology will be used. The data will be taken from finance.yahoo.com, such as the historical data from the ten health care providers and the s&p 500. The day the ACA was signed will be day 0.

1. All of the information about each stock price and the market price within the time frame of -180 days to +30 days are retrieved. The time period from -30 days to +30 days is referred to as the event period.
2. The holding period return for all firms (**R**) and the market (**R<sub>m</sub>**) will be calculated by using the following formula:

**(Current day close price – Previous day close price)/ Previous day close price**

A regression analysis was performed to compare the actual daily return of each stock to the actual daily return of the S&P 500. The return of the firm is the dependent variable (Y) and the market return is the independent variable (X). The regression will cover the pre-event period, -180 days to -30 days, to find the intercept alpha and the standardized coefficient beta. This is shown in Table 1.

**Table 1  
FIRMS’ ALPHA AND BETA**

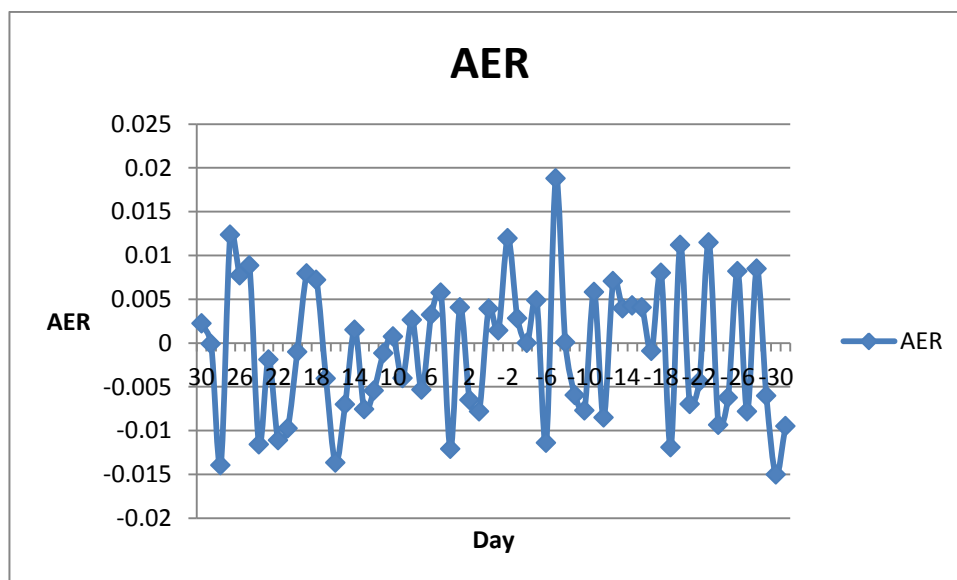
Company	Alpha	Beta
Mednax (MD)	.00139	.588135
United Health Group Inc. (UNH)	.001488	.677673
Psychemedics Corp.	.002	.087845
Quest Diagnostics inc. (DGX)	-0.00058	.528344
Healthsouth corp. (HLS)	.001058	.968643
Davita Healthcare partners inc (DVA)	.000583	.471544
Aetna Inc (AET)	.000835	.66541
Acadia Healthcare Company (ACHC)	.000711	.126829
Humana Inc. (HUM)	.002212	.828107
Cigna Corp. (CI)	.001601	.986216

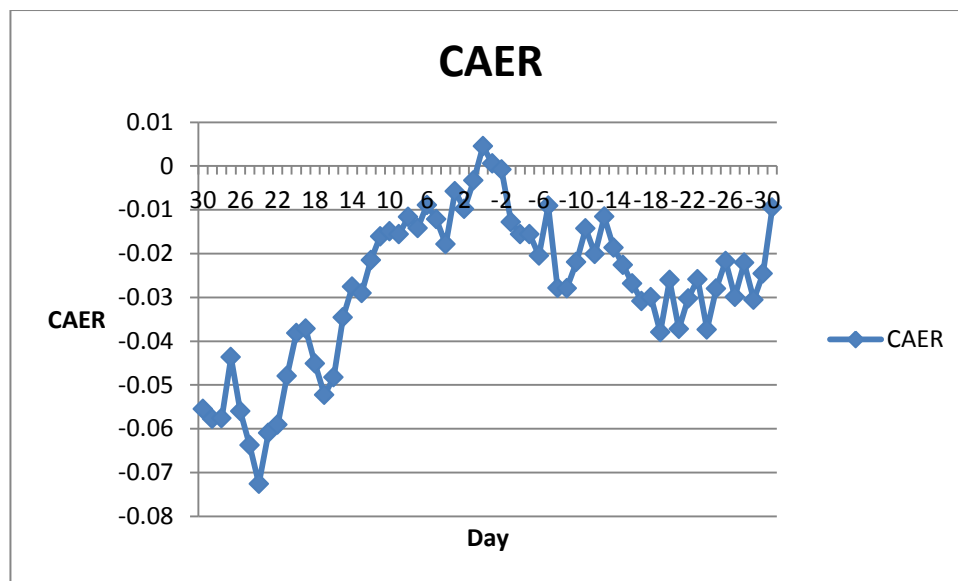
3. The risk adjusted method was used to get the normal expected returns. The expected returns for each stock, for each day (-30 days to +30 days) was calculated using the following formula:  $E(R) = \alpha + \beta (R_m)$ ,  $R_m$  is the return on the market.
4. The excess return (ER) was calculated using the following:  $ER = \text{the Actual Return (R)} - \text{the expected return } E(R)$
5. Average Excess Returns (AER) was then calculated from days -30 to +30 by simply averaging excess returns for each day:  $AER = \text{sum of excess returns for day} / \text{number of firms (10)}$
6. Cumulative AER, or CAER, was then found by simply adding the AERs for each day from -30 to +30.
7. Graphs of AER and CAER were created from days -30 to +30.

### QUANTITATIVE TESTS AND RESULTS

This study looks to test the speed at which the market reacts to certain information, and investor’s ability to earn an abnormal return compared to the market. Did the market react to President Obama signing the Affordable Care Act? Was there a significant effect on the stock returns because of this information? The signals that were coming prior to day 0 were mixed. Some people thought it would benefit, and some thought it was going to hurt health providers. Regardless of benefit vs hurt there is expected to be a difference in the actual average daily returns of the event period and the expected daily returns of the event period. If significant risk adjusted difference is observed over the event period then the hypothesis is supported, which states that this type of information did significantly either increase or decrease stock price. A paired sample t-test was conducted and found that the signing of the ACA may have been insignificant in effecting the risk adjusted stock prices. A reaction in the market can be seen during the event period but the ACA may not be the reason.

The AER and CAER graphs below show the market efficiency. The graphs show their relationship to time, specifically day 0, or the day the ACA was signed. When looking at the CAER graph it is obvious that the signing of the ACA had an impact on the market. It gradually grew up until day 0, then immediately began to fall the day it was signed. This proves that it would not be possible for an investor to outperform the market. The market is showing signs of semi-strong market efficiency.





### CONCLUSION

This event study examined the effects of the signing of the Affordable Care Act on stock prices, testing market efficiency. Ten firms that provide health care and could possibly be affected by the ACA were used as the sample study with stock prices retrieved from yahoo finance 180 days before signing and 30 days after. All stocks were traded on the NYSE. The Standard Risk Adjusted Event Study methodology, provided from finance literature, was used to compare the firms’ returns to the returns of the S&P 500.

The data shows the market was affected on day 0 but further analysis shows the data may not be significant in being the reason for that action. The semi-strong efficiency theory is shown throughout the event period. There was no time to react to the market once the news was out that the ACA was signed into law.

Because there was mixed signals in the days leading up to the signing, investors may not have been able to predict what the market will do. Although with a health care reform this large the full effect may not be seen for years, we can see that it had a negative effect on the firms’ stock prices immediately after signing, continuing for at least 30 days after.

### REFERENCES

Clemans-Cope, Lisa, Lindaa Blumberg, Stephen Zuckerman, & Jeremy Roth. (2013). Wide Variation in Medical Loss Ratios within States in 2010 Suggests the Affordable Care Act’s Standards Could Lead to Higher Value Insurance Options. *Journal of Insurance Regulation*, 120-38.

Gruber, Jonathan. (2011). The impacts of the affordable care act: how reasonable are the projections? <http://economics.mit.edu/files/6829>. National bureau of economic research.

Fisher, Ken. (2015) Five market trends you can bank on. *Forbes* 195.7: n. pag. Business Source Complete [EBSCO]. Web. 01 Dec. 2015.

Ross, Stephen A., Randolph Westerfield, & Jeffrey F. Jaffe. *Corporate Finance*. N.p: n.p., n.d. Print.Finance.Yahoo.com

# **MULTIPLE SUPERVISORS IN AUDIT: FAIRNESS AND THE MANY-TO-ONE PERFORMANCE APPRAISAL ENVIRONMENT**

**Rebecca Martin, University of Maryland**  
**Marcia Simmering Dickerson, Louisiana Tech University**

## **ABSTRACT**

*Auditing presents a unique environment in which associate auditors (lower-level auditors) are often managed by multiple supervisors. Prior research indicates that increased fairness can improve organizational outcomes such as job satisfaction and performance, but this has yet to be investigated in a setting with multiple supervisors. The present study examines the role of internal locus of control and consistent standards on perceptions of procedural justice, predicting organizational commitment and perceived learning in a multiple-supervisor environment. Using a student sample, we find support for this model and present implications of our findings.*

# THE EFFECTS OF CONFLICTING MESSAGES ON AUDIT ACCURACY AND EFFICIENCY

**Rebecca Martin, University of Maryland**  
**William Stammerjohan, Louisiana Tech University**  
**Andrea Drake, Louisiana Tech University**

## ABSTRACT

*In an increasingly competitive environment, auditors are faced with conflicting messages related to time pressure to finish an audit within an established time budget, while also ensuring a thorough and high quality audit. Most auditing firms have an official policy forbidding lower level auditors from Underreporting the Time (URT) they spend on an audit. However, middle level managers who are under pressure to meet strict time constraints often implicitly encourage their subordinates to URT to meet the pre-determined time budgets. This experimental study examines how different messages from the audit firm and its managers can have important effects on audit accuracy and efficiency. We find that the presence of conflicting messages results in lower accuracy on audit tasks than when subjects had only the message that firm policy forbade URT. However, such conflicting messages resulted in higher levels of audit efficiency than when subjects were given only the message that firm policy forbade URT. These results indicate the impact that different messages can have on alternative measures of audit performance.*



# EFFECTS OF THE 2012 PRESIDENTIAL ELECTION ON HEALTHCARE AND ENERGY SECTOR RETURNS

**Jenna Plotzyk, Longwood University**  
**Frank W. Bacon, Longwood University**

## ABSTRACT

*How does the market respond to a presidential election? How efficient is the market in reacting to a Democratic or Republican candidate winning an election? This event study tests market efficiency theory by analyzing the impact of the results of the 2012 presidential election on the stock price returns from two samples of 10 firms in 2 major sectors associated with the Democratic and Republican parties. This study used the standard risk adjusted event study methodology found in finance literature. Evidence confirms some improvement in Democratic associated stocks (healthcare companies) following the event day 0 (November 6, 2012). In addition, stocks associated with the Republican Party (energy corporations) also experienced increases in stock returns; however, returns were still in the negative spectrum. Results indicate the reaction between the two sectors' returns are not significantly different; consistent with semi-strong form market efficiency theory and the belief that presidential elections, regardless of the winner's party affiliation, improve the market overall.*

## INTRODUCTION

This event study tests market efficiency theory by analyzing the impact of the 2012 presidential election on the stock prices of sectors affiliated with Democratic and Republican parties; 10 healthcare and 10 energy companies, respectively. This research tests whether the returns in these sectors following the 2012 Election Day (November 6, 2012) subsequently react positively or negatively to the winner's party affiliation. The 2012 election resulted in a Democratic Party winner – Barack Obama. It could be anticipated that the reaction between the two samples of firms would be inversely related due to the expected increase of the healthcare industry returns and the expected decrease of the energy corporation returns.

Tests for market efficiency theory can illustrate the effect of a presidential election on the stock market and companies' returns. There are three forms of market efficiency: weak, semi-strong and strong form efficient. In 1970, Gene Fama, a researcher for the University of Chicago, defined market efficiency by how fast the stock market reacts to information. He goes on to explain that a market is weak form efficient when the past information has no effect on future information; investors cannot earn higher returns by acting on old information. Semi-strong market efficiency gives the assumption that all public information is known and stock prices adjust too quickly for investors to make an above average return on the announcement of an event. Finally, a market is strong form efficient when all public and private information is known and stock prices reflect that assumption.

The purpose of this event study is to test whether the results of the 2012 presidential election exhibit weak or semi-strong market efficiency theory. The study tests a random sample of 20 firms – 10 healthcare companies and 10 energy corporations using the risk adjusted event study methodology found in finance literature. If there is no significant correlation between sectors, there may not be an opportunity for investors to earn an above average return and evidence would support efficient market theory.

## LITERATURE REVIEW

Market efficiency theory implies that for any group of stocks, “the return earned by simply holding the stocks should equal or exceed the return earned by using any trading rule” (Allvine and

O'Neill 1980). In regard to presidential election cycles Forbes states, "theory also holds that stock performance gradually increases [during] the third year of a president's term [and] the fourth year often sees above average returns" (Davidson 2012). In line with this theory, the election year of 2012 will see strong returns.

There are untested theories that abnormal returns in stock prices can predict the outcome of a presidential election prior to the event. However, the presence of prediction markets eliminates possible insider information having any significance. Wolfers and Zitzewitz researched the accuracy of the Iowa Electronic Markets for presidential elections and in the weeks prior to the presidential elections from 1988 – 2000, it was found that "markets have predicted vote shares for the Democratic and Republican candidates with an average absolute error of around 1½ percentage points" (2004). Since these prediction markets are public information, the semi-strong form of market efficiency theory states that stock prices will adjust so that investors cannot make above average returns on the information produced.

As stated above, three types of market efficiency theory include weak, semi-strong, and strong form. Strong form market efficiency theory is defined as "all available public and private information is fully reflected in a security's market price" (Finnerty 1976). This theory suggests that no investor can earn above normal returns on any type of information because the market adjusts so fast. One potential test of whether a market is strong-form is "to determine whether insiders earn better than average returns from their market transactions" (Finnerty 1976). This insider trading is illegal and hard to prove. This event study asserts that results of presidential elections are reflected in companies' stock prices according to the semi-strong form of market efficiency, suggesting that all available public information determines stock price.

## METHODOLOGY

This event study analyzed the risk adjusted rate of return for two samples of 10 firms before and after the 2012 presidential election to test for semi-strong efficient market hypothesis. The two samples of 10 healthcare companies and 10 energy corporations were randomly selected. The purpose of choosing companies from healthcare and energy sectors is to test how sectors associated with Democratic and Republican Parties respond to the results of a presidential election – specifically the 2012 election with the winning of a democratic nominee, Barack Obama.

The event day (day 0) is November 6, Election Day in 2012. The pre-event period is defined as -180 days to -31 days prior to the event. The event period is defined as -30 to +30 days surrounding the event. Historical stock prices were obtained for all companies on these dates through Yahoo! Finance and analyzed in the 9 steps that follow.

1. Historical stock prices for all companies and the S&P 500 were obtained for the event study duration of -180 trading day to +30 calendar days, where -30 to +30 is the event period and day 0 is the event day.
2. The holding period returns for the sample firms and the S&P 500 were calculated using the following formula:

$$\text{Current daily return} = \frac{\text{current day close price} - \text{previous day close price}}{\text{previous day close price}}$$

3. A regression analysis was performed using the actual daily returns of each company (dependent variable) and the corresponding S&P 500 daily return (independent variable) over the course of the pre-event period. The firms' alphas and betas relative to the S&P 500 were obtained and are shown in Tables 1 and 2 for the healthcare firms and energy corporations, respectively.

The parameter estimation during the pre-event period is as follows:

$$R_{i,t} = a + b(R_m) + e$$

<b>Table 1 ALPHAS AND BETAS FOR 10 HEALTHCARE COMPANIES</b>			
<b>Firm Name</b>	<b>Ticker</b>	<b>Alpha</b>	<b>Beta</b>
Aetna Inc.	AET	-0.000179	0.670815
AmerisourceBergen Corporation	ABC	-0.00014	0.578521
Anthem Inc.	ANTM	-0.00104	0.794768
Cardinal Health Inc.	CAH	0.000929	0.642772
CVS Health Corporation	CVS	0.000247	0.66583
Express Script Holding Company	ESRX	0.00116	1.037355
Johnson & Johnson	JNJ	0.00496	0.493806
McKesson Corporation	MCK	1.17E-05	0.504721
UnitedHealth Group Inc.	UNH	-0.00019	0.63743
Walgreens Boots Alliance Inc.	WBA	0.000543	0.673539

<b>Table 2 ALPHAS AND BETAS FOR 10 ENERGY COMPANIES</b>			
<b>Firm Name</b>	<b>Ticker</b>	<b>Alpha</b>	<b>Beta</b>
Ameren Corporation	AEE	-0.00024	0.444034
Chesapeake Energy Corporation	CHK	-0.0016	1.836553
Chevron Corporation	CVX	0.000136	1.095741
Entergy Corporation	ETR	-6.9E-05	0.420414
Eversource Energy	ES	0.000562	0.482392
Exxon Mobile Corporation	XON	0.000216	0.934621
Hess Corporation	HES	-0.00102	1.586376
Noble Energy Inc.	NBL	0.000227	1.447515
Pengrowth Energy Corporation	PGH	-0.00342	1.452758
Spectra Energy Corporation	SE	-0.0007	0.726815

- Using the alphas and beta obtained during regression, the normal expected returns were calculated for the event period (day -30 to +30) using the risk adjusted method and the following formula:

$$E(R) = \text{alpha (a)} + \text{beta (b)} R_m$$

\* where  $R_m$  = the HPR or actual daily return on the S&P 500.

- The excess returns were then calculated for the event period with the formula that follows:  
**ER = Actual Return – Expected Return E(R).**
- From day -30 to +30, the average excess returns (AER) were calculated by averaging the excess returns found in step 5 using the formula that follows:

$$AER = \frac{\text{Sum of ERs for firms on each day}}{N \text{ number of firms}}$$

\*for this study, N = 10 since 10 firms were used in each regression analysis

- The Cumulative AER (CAER) was then calculated by continuously adding the AERs from each day (- 30 to +30) to one another.
- Graphs of the AER and CAER were then plotted for the event period (day -30 to +30).
- All steps were completed twice, first for the 10 healthcare companies and then for the 10 energy corporations.

To test for semi-strong market efficiency on the results of the 2012 presidential election, the following null and alternative hypotheses were used for the two types of sectors:

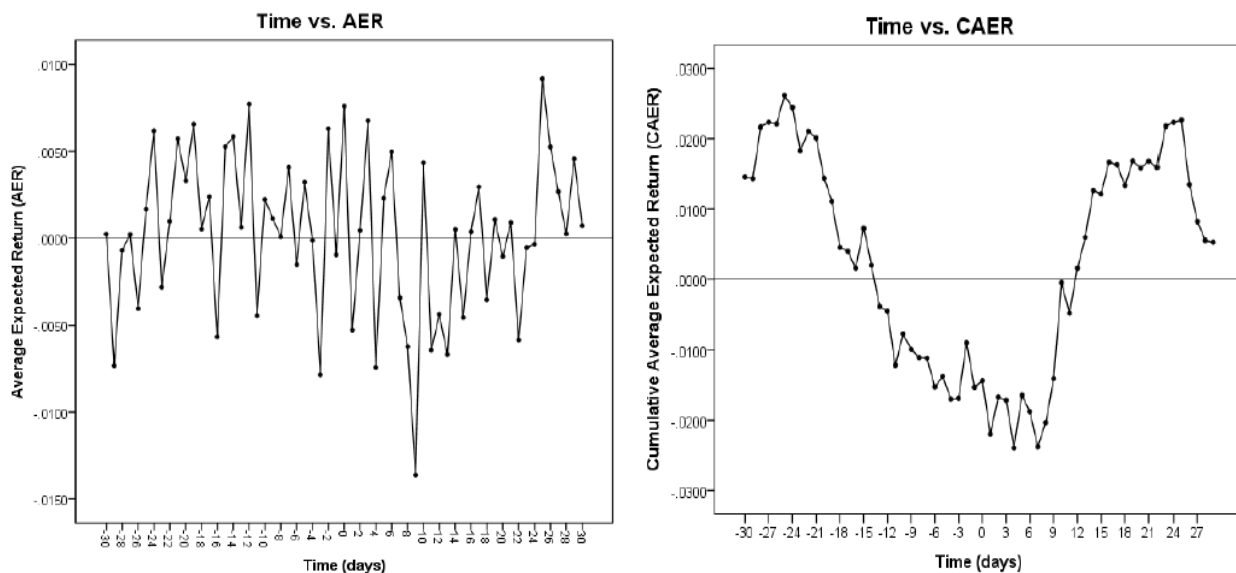
- $H1_0$ : The risk adjusted return of the stock price of the sample of 10 healthcare firms is not significantly affected by the results of the presidential election on November 6, 2012 surrounding the event period.
- $H1_a$ : The risk adjusted return of the stock price of the sample of 10 healthcare firms is significantly affected by presidential election on resulting in a Democratic candidate winning.
- $H2_0$ : The risk adjusted return of the stock price of the sample of 10 energy firms is not significantly affected by the results of the presidential election surrounding the event period.

- H2<sub>a</sub>: The risk adjusted return of the stock price of the sample of 10 energy firms is significantly affected by presidential election resulting in a Democratic candidate winning.*
- H3<sub>0</sub>: The reaction of the risk adjusted return of the stock price of the sample of 10 healthcare firms is not significantly different from the reaction of the risk adjusted return of stock price of the sample of 10 energy firms for the 2012 presidential election resulting in a Democratic win.*
- H3<sub>a</sub>: The reaction of the risk adjusted return of the stock price of the sample of 10 healthcare firms is significantly different from the reaction of the risk adjusted return of stock price of the sample of 10 energy firms for the 2012 presidential election resulting in a Democratic win.*

### QUANTITATIVE TESTS AND RESULTS

Did the market react to the 2012 presidential election and was the information surrounding the event significant? If there was a presence of new, substantial information surrounding the event, it would be expected that the difference in Actual Daily Returns and Expected Daily Returns (from day -30 to day +30) would differ significantly. If a significant risk adjusted difference is detected, then we support the alternative hypotheses that the results of the election significantly increased or decreased returns on stocks. To statistically test for a difference in the risk adjusted daily average excess returns and the cumulative average excess daily returns (for the firms over the time period day -30 to day +30), a paired sample t-test was performed and found a significant difference at a 5% level between actual and expected risk adjusted returns of the two samples of firms. Average Excess Return (AER) graphs are displayed for each group of firms in Figure 1 and 3. Results here support the alternate hypotheses H1<sub>a</sub> and H2<sub>a</sub>: The risk adjusted return of the stock price of the two samples of firms around the event period of the 2012 presidential election is significantly affected around the event (day 0) as defined by the event period.

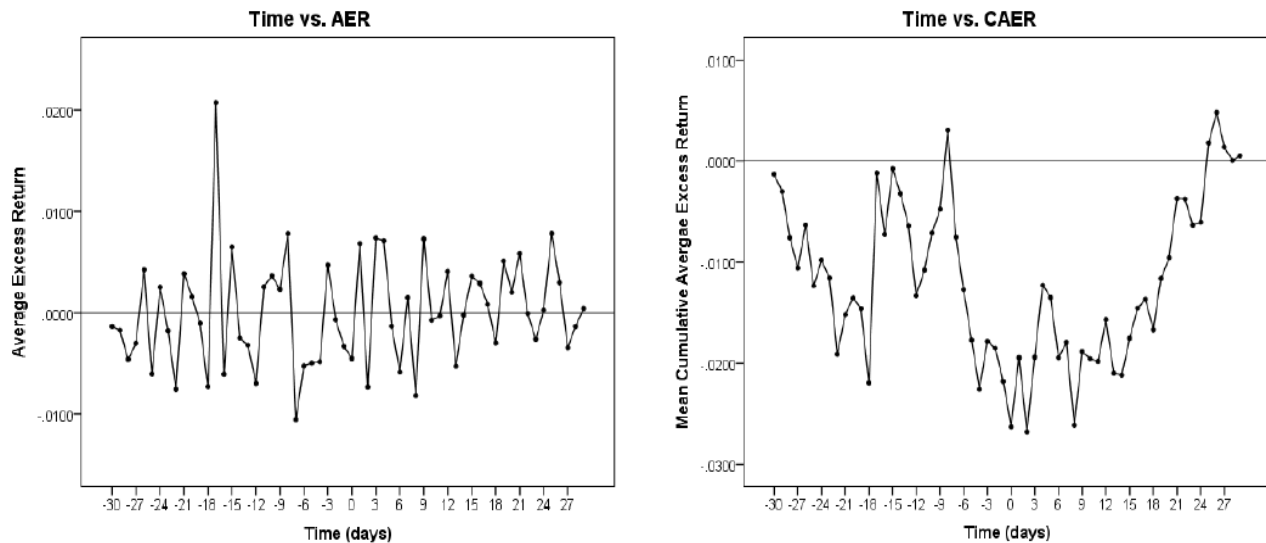
**Figures 1 and 2**  
**AER AND CAER OF 10 HEALTHCARE COMPANIES VS. EVENT PERIOD OF 2012 ELECTION**



Another purpose of this analysis was to test the efficiency of the market in reacting to the 2012 presidential election. The key in the analysis is to determine if the AER and CAER are significantly different from zero or that there is a visible graphical or statistical relationship are significantly different from zero or that there is a visible graphical or statistical relationship between

time and either AER or CAER. T-tests of AER and CAER both tested different from zero at the 5% level of significance. Likewise, observation of the CAER charts (seen in Figures 2 and 4) confirms the significant positive reaction of the risk adjusted returns for the two samples of firms up to 25 days following event day 0.

**Figures 3 and 4**  
**AER AND CAER OF 10 ENERGY COMPANIES VS. EVENT PERIOD OF 2012 ELECTION**



## CONCLUSION

The purpose of this event study was to test market efficiency theory by analyzing the impact of the results of the 2012 presidential election on two samples of 10 firms each. Evidence shows, in the CAER graphs above, a decrease in risk adjusted returns for both samples prior to the election with an increase following Election Day 2012 on November 6. Since both CAER graphs are similar in cumulative returns, it can be concluded that there may not be an opportunity for investors to earn an above average return and evidence would support efficient market theory. Results are consistent with semi-strong form market efficiency theory and that the market reacts so fast to all public information that investors cannot make an above average return. It was expected that returns within in an election year would increase; therefore, even though investors can obtain profits from buy into the healthcare and energy sectors, their returns will not be above normal since higher profits were already foreseen.

## REFERENCES

- Allvine, Fred C., and Daniel E. O'Neill. (2015). Stock Market Returns and the Presidential Election Cycle: Implications for Market Efficiency. *Financial Analysts Journal*, 36(5), 49–56.
- Davidson, Liz. Financial Tips During a Presidential Election Season. *Forbes*. Forbes Magazine, 21 Mar. 2012. Web. 30 Nov. 2015.
- Finnerty, Joseph E. Insiders and Market Efficiency. *The Journal of Finance* 31.4 (1976): 1141–1148. Web 30 Nov. 2015
- Wolfers, Justin & Eric Zitzewitz, (2004). Prediction Markets. *Journal of Economic Perspectives, American Economic Association*, 18(2), 107-126.

# RETURNS DEPENDENCE: THE CASE OF BSE INDICES

Sanjay Rajagopal, Western Carolina University

## ABSTRACT

*The present work proposes to extend the literature on market efficiency within the context of the emerging Indian market by analyzing the behavior of equity returns in several major sectors of the economy, such as Banking, Healthcare, Information Technology (IT), and Telecommunications. In order to test for the existence of long memory, it applies the classical rescaled-range (R/S) analysis to the returns based on the full range of price information available for each of these sectors on the Bombay Stock Exchange (BSE). Preliminary results of the classical R/S analysis suggest that some of the sectors studied are characterized by a degree of persistence in returns. The existence of such pricing inefficiencies might allow exploitable opportunities for excess returns in specific sectors of this emerging market.*

## INTRODUCTION

Since the 1990s, India has emerged as an important player in the global economy. Concomitantly, the country has attracted increasing capital flows, and the question of informational efficiency in the pricing of assets in this market has assumed some significance (Dicle et al, 2010). The existing studies on the informational efficiency of this country's capital markets are in not in perfect agreement, but on the margin results suggest some degree of dependence in returns (see, for example, Poshakwale, 2002; Sarkar & Mukhopadhyay, 2005; and Mishra et al, 2011).

This study seeks to contribute to the literature on market efficiency within the context of the emerging Indian market by analyzing the behavior of equity returns in several major sectors of the economy—Banking, Healthcare, Information Technology (IT), and Telecommunications. The classical rescaled-range (R/S) analysis as proposed by Mandelbrot (1972) is used to estimate the Hurst exponent (self-affinity index) of the returns series in order to assess the existence of log memory in returns. Results suggest that a couple of the sectors exhibit some persistence in returns. This finding agrees with recent studies of broader Indian market indices, such as that by Mishra et al (2011). This work contrasts with most existing studies in that the latter concern themselves primarily with broader market indices. A recent study by Palamalai & Kalaivani (2015) does conduct tests of weak-form efficiency for Indian sectoral indices. In contrast to their focus on a 5 ½-year period beginning in 2009, the present analysis considers returns behavior over the full window for which data are available, amounting to between 10 and 16 years. Also, in contrast to that work, the present study tests for the presence of long memory in returns, as against autocorrelations at relatively shorter lags. The issue of pricing inefficiencies is of interest, for instance, to traders who may wish to exploit such inefficiencies in order to generate excess returns through technical trading rules.

## DATA, METHODOLOGY, & RESULTS

The following table provides information about the data range for the indices considered in the study. Data are accessed from the BSE website, bseindia.com.

<b>BSE Index</b>	<b>Ticker</b>	<b>Start Date to Dec 31, 2015</b>	<b># Observations</b>
Bankex	BANKEX	Jan. 2, 2002	3490
Healthcare	SPBSHLIP	Feb. 1, 1999	4214
IT	SPBSITIP	Feb. 1, 1999	4214
Telecom	SPBSTLIP	Sep. 16, 2005	2551

Table 2 below provides a summary of the descriptive statistics for the returns on the indices studied. Tests indicate that the returns are not normally distributed.

<b>Index</b>	<b>N</b>	<b>Mean %</b>	<b>St Err</b>	<b>Skewness</b>	<b>Kurtosis</b>	<b>Normality Tests<sup>^</sup></b>		
						<b>AD</b>	<b>RJ</b>	<b>KS</b>
Bankex	3490	0.1040	0.033	0.17	6.33	28.387***	0.973***	0.058***
Healthcare	4214	0.0770	0.021	0.10	8.31	55.816***	0.962***	0.073***
IT	4214	0.0860	0.037	0.02	7.05	82.254***	0.956***	0.089***
Telecom	2551	0.0346	0.041	0.10	4.34	16.703***	0.981***	0.055***

The study applies Mandelbrot’s (1972) rescaled-range (R/S) analysis to estimate the self-affinity index (Hurst exponent, H) of the index returns series. For a random series, or independent process,  $H = 0.50$ . If  $0.50 < H \leq 1$ , then the series is characterized as “persistent”— elements in the series influence other elements in the series. Table 3 below presents the results for the sectoral indices considered.

<b>Index</b>	<b>Data Range (Daily Returns)</b>	<b>N</b>	<b>Estimated H</b>
BSE Bankex	1-1-2002--12-31-2015	3489	0.542
BSE Healthcare	2-2-1999--12-31-2015	4213	0.555**
BSE IT	2-2-1999--12-31-2015	4213	0.550***
BSE Telecom	2-2-1999--12-31-2015	2550	0.496
	**Significant at 5%		
	***Significant at 1%		

## REFERENCES

- Dicle, M.F., Beyhan, A. & Yao, L. J. (2010). Market efficiency and international diversification: Evidence from India. *International Review of Economics and Finance*, 19, 313-339.
- Mandelbrot, B. B. (1972). Statistical methodology for non-periodic cycles: From the covariance to R/S analysis. *Annals of Economic and Social Measurement*, 1(3), 255-290.
- Mishra, R.K., S. Sehgal, & N.R. Bhanumurthy (2011) A Search for Long Range Dependence and Chaotic Structure in Indian Stock Market. *Review of Financial Economics*, 20, 96-104.
- Palamalia, S.& M. Kalaivani (2015). Are Indian Stock Markets Weak-Form Efficient?—Evidence from NSE and BSE Sectoral Indices. *The IUP Journal of Financial Risk Management*, 12(4), 7-34
- Poshakwale, S. (2002). The random walk hypothesis in the emerging Indian stock market. *Journal of Business Finance and Accounting*, 29(9/10), 1275-1299.
- Sarkar, N. & D. Mukhopadhyay (2005). Testing Predictability and Nonlinear Dependence in the Indian Stock Market. *Emerging Markets Finance and Trade*, 41(6), 7-44.



# **PREDICTION OF FOREIGN EXCHANGE RATE USING ADAPTIVE NEURO-FUZZY INFERENCE SYSTEM**

**Hari Sharma, Virginia State University**  
**Dinesh K. Sharma, University of Maryland Eastern Shore**  
**Hari S. Hota, Bilaspur University**

## **ABSTRACT**

*In this paper, we propose an Adaptive Neuro-Fuzzy Inference System (ANFIS) to predict the foreign exchange rate of three Asian countries: China, Japan, and India with respect to US dollar. Foreign exchange rate datasets of recent five financial years of Chinese yuan renminbi/US dollar (CNY/USD), Japanese yen /US dollar (JPY/USD), and Indian rupees/US dollar (INR/USD) are obtained and preprocessed to ANFIS for prediction. A rule base derived through ANFIS is utilized further for testing the data. The results are obtained in terms of MAPE, which shows that daily CNY/USD exchange rate has the least MAPE as compared to other two exchange rates predictions. Thus, the prediction for daily CNY/USD were more precise than other two predictions (INR/USD and JPY/USD).*

## **INTRODUCTION**

Researchers are focusing on designing and developing sophisticated models to predict foreign exchange (FX) rates using the latest techniques such as computational intelligence, signal processing as well as econometrics, ever since the collapse of the Bretton-Woods system in 1973. The forecast of FX rates is important because a precise prediction of currency exchange rates can help in assessing risk and returns in the global economy and thus, they are one of the most significant economic indices, which needs ongoing attention in the international monetary markets. The FX market is equally lucrative within financial markets (Baillie & McMahon, 1989). Researchers have been supporting the market by developing sophisticated models by integrating tools and techniques for capturing trends in economic and financial variables (Meese & Rogoff, 1983; Kilian & Taylor, 2003; Ni & Yin, 2009). The prediction of FX rates is complex because of several micro and macroeconomic variables as well as political and psychological variables. Since the dynamics of the global economic is ever evolving, there is a need for continuous research in designing and developing models using the latest tools and techniques to understand the impact of all factors individually and collectively on FX rates. Thus, the modeling for prediction of FX rates presents challenges and opportunities for researcher and mathematical modelers to support the global economy by making predictions as precise as possible.

The literature reveals that ANN is superior to the conventional statistical models (Coats & Faut, 1993; Salchengerger et al., 1992; Fletcher & Goss, 1993; Sharma et al., 2014). Over the past two decades, several mathematical models in finance area have applied ANN to predict the trends of foreign exchange rates successfully (Weigend et al., 1991; Refenes et al., 1993; Kodogiannis and Lolis, 2002; Lisi & Schiavo, 1999; Nag & Mitra, 2002; Vojinovic et al., 2001; Yao & Tan, 2000; Chen & Leung, 2004; Chun & Kim, 2003; Sharma et al., 2014; Galeshchuk, 2016).

The foreign exchange market is a very dynamic market. Therefore, it is difficult to apply traditional statistical modeling to make precise predictions. This research study presents an

Adaptive Neuro-Fuzzy Inference System (ANFIS) to predict exchange rate of three Asian countries (China, Japan, and India) with respect to the US dollar.

## EXPERIMENTAL SETUP

This section describes the detail of experimental work carried out with the help of MATLAB software.

### Data Description and Normalization

Daily time series data of the foreign exchange (FX) rate of three different currencies of three Asian countries namely India, China and Japan against US dollar from January 4, 2010 to December 31, 2015 are downloaded (<http://fx.sauder.ubc.ca>). The details of FX data used for the experimental purpose, which reflects that there are 1200 daily observations considered as training data while 302 observations are considered as testing data. Data are normalized with simple normalization technique by dividing highest value with all samples of each data set, for the purpose of data smoothing in between ranging from 0 to 1 for smooth learning of ANN and ANFIS model to produce better results.

### Performance Matrices

Any predictive model may be verified using various performance matrices, out of which Mean Absolute Percentage Error (MAPE) reflects the performance of the predictive model in more practical and understandable manner, other than this Mean Absolute Error (MAE) and Root Mean Square Error (RMSE) are also used to verify the models. Mathematical formulae of these matrices are as follows:

$$MAE = \frac{1}{n} \sum_{i=1}^n |P_i - A_i| \quad (1)$$

$$MAPE = \frac{100}{n} \sum_{i=1}^n \frac{|P_i - A_i|}{A_i} \quad (2)$$

$$RMSE = \left[ \sqrt{\frac{1}{n} \sum_{i=1}^n (P_i - A_i)^2} \right] \quad (3)$$

Where,  $P_i$  is predicted output,  $A_i$  is actual output and  $n$  is a total number of samples.

### ANFIS for FX Rate Prediction

A combination of ANN and Fuzzy logic as ANFIS is also popular as hybrid of these two techniques. The benefits of using ANFIS is to generate rule base which can easily be generated once Membership functions (MFs) are tuned. ANFIS was first introduced by Jang (1993) by embedding the Fuzzy Inference System (FIS) into their framework of adaptive networks. ANFIS supports Sugeno-type FIS whose output is always crisp, unlike Mamdani type FIS where output is always fuzzy. ANFIS uses least-square and back propagation gradient descent methods along with a hybrid learning algorithm to identify the parameters and fuzzy if-then rules with a single output. An adaptive network is a network structure consisting of various nodes connected by directional links with 5 different layers.

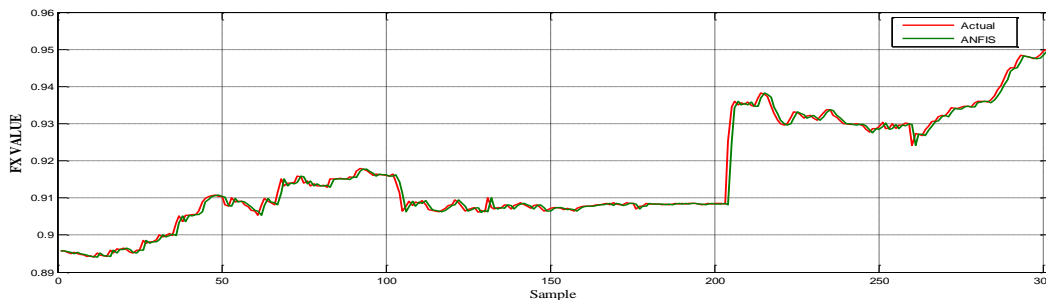
FX rate predictive models with ANFIS technique is simulated by writing MATLAB code. The FX rate data from Excel files is uploaded and is specifically analyzed in terms of number of

MFs using a bell-shaped membership function, which is considered appropriate for ANFIS. The applied membership function is more suitable to capture knowledge as compared to other MFs such as triangular MF. The function may have more than one highest degree of membership values for multiple input values, unlike triangular MF. The system receives normalized current day FX rate data, as input to produce next-day FX value of three different FX currencies. Two ANFIS models one with two bell shape MFs and other with three MFs are tested. Predicted ANFIS output is compared with actual FX rate in terms of performance matrices MAE, MAPE, and RMSE using equations 1, 2 and 3 respectively.

### RESULT ANALYSIS

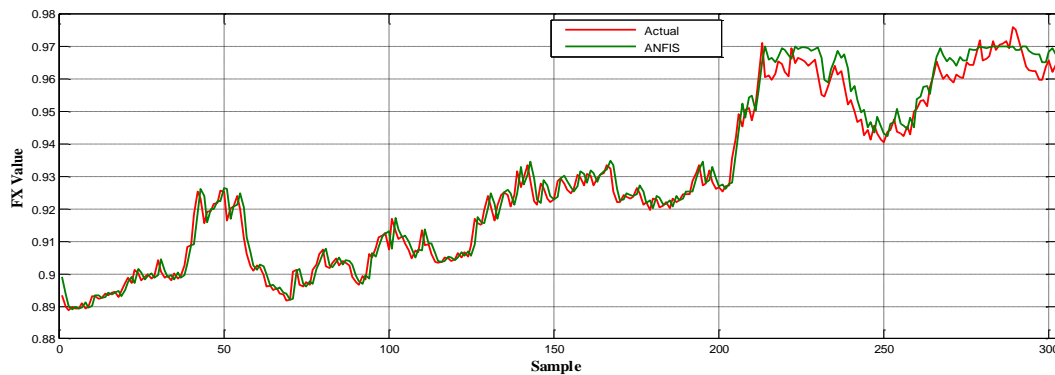
As stated experimental setup is carried out by writing MATLAB code. Trained ANFIS models are tested with latest 20% testing samples and comparative graph in between actual and predicted output for CNY/USD, INR/USD, and JPY/USD are shown in Figures 1, 2 and 3 respectively. The calculated performance matrices for three FXs is given in Table 1. Table values for MAPE and other two measures in case of two and three MFs are negligible. Also, results are consistent with the training as well as at the testing stages. MAPE values were lower all three MFs as compared to two MFs for each FX rate data, but the trend was just opposite for testing samples, for example, MAPE for CNY/USD with two MFs is 0.0868 which is lower than MAPE (0.8670) with three MFs except for JPY/USD. The lower value of MAPE with less number of MFs is always appreciated because it will generate fewer number of rules to be stored in rule base of ANFIS.

**FIGURE 1**  
**COMPARISON OF ACTUAL AND PREDICTED FX RATE OF CNY/USD USING ANFIS WITH TWO MFs**

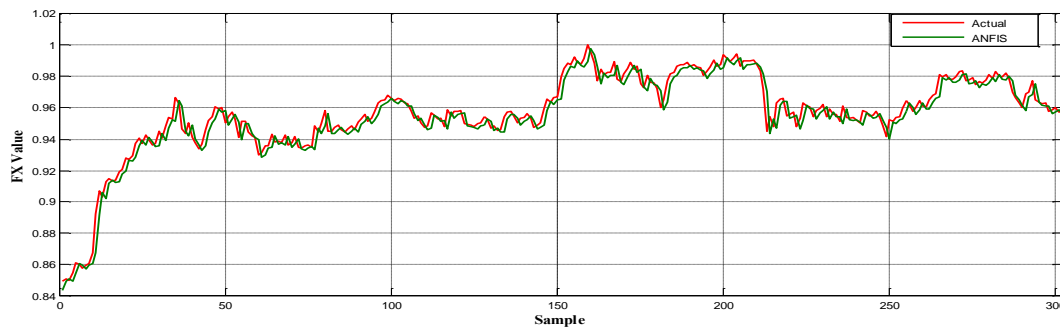


Currency	No of MF	MAE	MAPE	RMSE
CNY/USD	2	0.0007	0.0868	0.0015
	3	0.0007	0.0870	0.0015
INR/USD	2	0.0030	0.3248	0.0039
	3	0.0032	0.3447	0.0042
JPY/USD	2	0.0043	0.4507	0.0058
	3	0.0043	0.4551	0.0057

**Figure 2**  
**COMPARISON OF ACTUAL AND PREDICTED FX RATE OF INR/USD USING ANFIS WITH TWO MFS**



**Figure 3**  
**COMPARISON OF ACTUAL AND PREDICTED FX RATE OF JPY/USD USING ANFIS WITH TWO MFS**



**CONCLUDING REMARKS**

Foreign Exchange (FX) rate prediction is similar to any financial time series data forecasting. This study investigated an application of ANN techniques for predicting FX rate of three Asian currencies against US dollar using ANFIS technique. The analysis is demonstrated in terms of type and number of MF, with two bell-shaped membership functions that were considered as FX rate predicting model. It has been observed that the model outperformed for all currency predictions, which is reflected in the lowest MAPE as 0.0868, 0.3248, and 0.4507 respectively for CNY/USD, INR/USD and JPY/USD. We hope this study will provide a basis for ANFIS and other hybrid models with consideration of additional input variables.

**REFERENCES**

Chen, A. & M.T. Leung (2004). Regression neural network for error correction in foreign exchange forecasting and trading. *Computers and Operations Research*, 31, 1049-1068.

Galeshchuk, S. (2016). Neural networks performance in exchange rate prediction. *Neurocomputing*, 172, 446–452.

Meese, R. & K. Rogoff (1983). Empirical exchange rate models of the seventies: do they fit out of sample? *Journal of International Economics*, 14, 3-24.

Ni, H., & H. Yin (2009). Exchange rate prediction using hybrid neural networks and trading indicators. *Neurocomputing*, 72(13-15), 2815-2823.

Sharma, D., H. Sharma & H. Hota (2014). An Application of Time Delay Neural Network for Designing a Foreign Exchange Rate Predictive. Paper presented at the *45th Annual Meeting of the Decision Sciences Institute*, Tampa, Florida, November 22-25, 2014.

Yao, J. & C. Tan (2000). A case study on using neural networks to perform technical forecasting of forex. *Neurocomputing*, 34, 79-98.

# **RAISING GLOBALLY COMPETITIVE ACCOUNTANTS: RE-DESIGNING THE PHILIPPINE ACCOUNTANCY CURRICULUM**

**Arnel Onesimo O. Uy, De La Salle University**

## **INTRODUCTION**

In a recent study of Oxford Economics (2012), they examined how rapid globalization and the transformation of the business environment will affect workforce needs in the future. Their research reveals not only that tomorrow's landscape for global talent will be dramatically different than that of today, but that some countries and industries will need to adapt more quickly to accommodate these rapid shifts. These market shifts shape the business requirements for future talents including professional accountants.

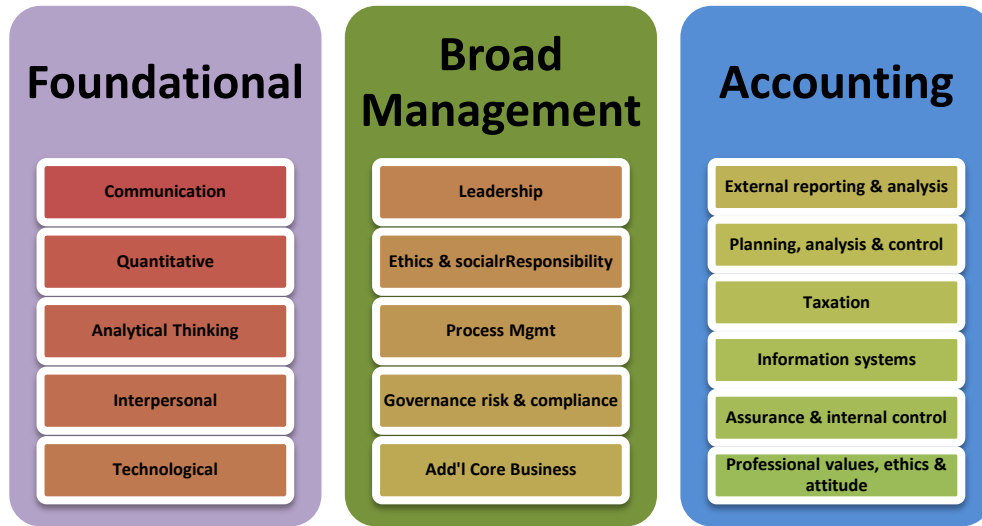
### **Accounting Education**

While Fra Luca Bartolomeo d Pacioli has always been credited as the father of accounting and bookkeeping, modern accounting education was introduced in 1959 when the Ford Foundation and Carnegie Commission issued a call for its creation after reviewing and criticizing business education. What followed was a series of recommendations made by different commissions initiated by accounting organizations such as the American Accounting Association (AAA) and the American Institute of Certified Public Accountants (AICPA) such as the Trueblood Commission in 1963 and the Pathways Commission in 2012. The various recommendations by these commissions have not always been heeded by universities when they design accounting curriculum. Most accounting programs remained focus on preparing graduates for a career in public accounting by providing them with tools needed for immediate productivity such as financial accounting rules and regulations, and auditing procedures and standards (Wheeler, 1991). They did not provide them with a knowledge base that would allow them to adapt to changing environment during the course of their careers.

Lawson, Blocher, Brewer, Cokins, Sorensen, Stout, Sundem, Wolcott, and Wouters (2012) summarizes that there are two problems that persists despite prior efforts to effect change in accounting programs. First, most curricula continue to focus on preparation for entry-level requirements despite continual calls for a longer-term perspective. And second, accounting education remains largely focused on preparing graduates for careers in public accounting and auditing despite several attempts to align academic curricula with the competencies required in the work place. In 1989, for instance, the Big 8 accounting firms released a white paper calling for reforms in accounting curricula to develop analytical and critical thinking and not passing entry-level professional exams. Accounting educators were encouraged to develop a base of competencies that would last throughout an accountant's career and produce creative, adaptive life-long learners.

These recommendations highlight two important characteristics of the competencies – integrated and strategic. Figure 1 shows the integrated competency framework proposed by the IMA-MAS Curriculum Task Force.

**Figure 1**  
**COMPETENCY FRAMEWORK FOR ACCOUNTING EDUCATION**  
*(IMA-MAS Curriculum Task Force, 2014)*



**International Education Standards**

Globally, International Federation of Accountants (IFAC) is a worldwide organization for the accountancy profession dedicated to serving the public interest by strengthening the profession and contributing to the development of strong international economies. IFAC is comprised of over 175 members and in more than 130 countries and jurisdictions, representing almost 3 million accountants in public practice, education, government service, industry, and commerce.

In 2014, the IEASB released the revised standards for the IPD. These revised IPD standards (IES 1 to 5) is effective July 1, 2015 and supersedes the 2010 IES. The revision of the IESs will help promote consistency in practice and share good practices in the learning and development of a professional accountant resulting from changes in the environment of accounting education and the experience gained from implementation of the 2010 IESs by IFAC member bodies.

**Philippine Accounting Education**

In the Philippines, higher education institutions and programs are regulated by the government thru the Commission of Higher Education (CHED). CHED regularly issues program standards and guidelines for baccalaureate and graduate programs, including the BS in Accountancy. The accountancy profession, on the other hand, is regulated by a government body under the Professional Regulatory Commission (PRC) called the Board of Accountancy (BOA). BOA is tasked to regulate the profession including the issuance of the syllabus for entry-level professional examinations called the Board Licensure Examinations for Certified Public Accountant or BLECPA.

**Educational Reforms**

There are two major reforms currently in the Philippine education system. The first one is the K to 12 program which covers Kindergarten and 12 years of basic education (six years of

primary education, four years of Junior High School, and two years of Senior High School [SHS]) in order to provide sufficient time for mastery of concepts and skills, develop lifelong learners, and prepare graduates for tertiary education, middle-level skills development, employment, and entrepreneurship. This is pursuant to the RA 10533, also known as the “Enhanced Basic Education Act of 2013”. Implementation of the program will commence in school year 2012–2013. Grade 1 entrants in SY 2012–2013 are the first batch to fully undergo the program, and current 1st year Junior High School students (or Grade 7) are the first to undergo the enhanced secondary education program. Thus, the first cohort of the SHS will complete the new program in 2018.

The second major reform is in the higher education level where the general education curriculum was amended and the philosophy of outcomes based education (OBE) adopted. The shift to competency-based learning standards or OBE will enable a more effective integration of intellectual discipline, thos and values associated with liberal education.

### **ASEAN Integration**

The establishment of the ASEAN Economic Community (AEC) in 2015 is a major milestone in the regional economic integration agenda in ASEAN. ASEAN fully recognizes the opportunities for further growth and employment that the services sector and thus, pursued the liberalization of the services sector in the region. More specifically, AEC has promoted trade in services as well as the flow of skilled labor through the establishment of Mutual Recognition Arrangements (MRAs) for professional services. Under the ASEAN Framework Agreement on Services (AFAS), ASEAN has made concerted efforts to enhance cooperation among Member States, setting specific targets for the process of liberalizing and integrating the services sector in the region to enable the free flow of services envisioned in the AEC. Accounting is one of the identified professions which will be covered by MRAs.

### **Problem Statement**

What is the impact of the educational reforms, new international education standards as well as the different developments in the accounting profession to the accountancy curriculum? How will these developments shape the components of a globally competitive accounting curriculum for the Philippines?

## **METHODOLOGY**

The study used the results of the focus group discussions (FGDs) conducted by the CHED Technical Committee on Accountancy last Jun 4, 2015. These FGDs were organized to aid the CHED Technical Committee for Accountancy in drafting a revised program standards and guidelines considering the perspectives of the various stakeholders regarding the impact of the AEC and the developments in the profession. There were four (4) FGDs conducted with various stakeholders.

- FGD #1 – Members of the Board of Accountancy
- FGD #2 – Sectoral representatives of the accountancy practice
- FGD #3 – Employers and business leaders
- FGD #4 – Representatives from the different certification bodies

## **RESULTS AND DISCUSSION**

### **Trends in Accountancy Profession**

From the review of literature as well as the discussions in the FGDs, there are two (2) notable trends affecting the accountancy profession which will impact the design of the accounting curriculum.

The first trend is about harmonization and integration. Harmonization of standards can be seen as ASEAN gears up for integration and develops a regional qualification framework (ASEAN Qualification Reference Framework or AQRF) which compares among others the qualification of professionals across the ASEAN countries. The push for creating mechanism for mutual recognition of professionals thru the MRAs is also another indicator that supports this trend.

The second trend which is evident in the FGDs is the growth in specializations in the accountancy profession with the creation of other certifications and accreditations apart from those engaged in public accounting/practice. The increased acceptance by the business sector of these new roles for professional accountants and zeal of excellence given by the certifying bodies further expanded value of professional accountants. The rise in the number of certified management accountants (CMA) as well as the certified internal auditors (CIA) are examples of this trend. Furthermore, the members of BOA and business leaders/employers are in agreement that there will be a continuous increase in the demand for the specializations and will further broaden the roles played by accountants in the organizations they are part of.

### **Proposed Accounting Education Framework**

It was also evident in the FGDs that this notable transformations in the environment of the professional accountants requires a framework to facilitate the navigation of the different factors affecting the development and design of accounting program in the country. The unique regulatory setting in the Philippines where different agencies as well as the revisions in the IES are considered in the Philippine Accounting Education Framework (PAEF). PAEF is a conceptual layered structure supporting the design and implementation of various accounting degrees in the country. It shows the interrelations of vocational certifications, academic degrees (bachelors, graduate) as well as other professional certifications with reference to the Philippine Qualifications Framework (PQF), AQRF and the IES. Figure 2 shows how all these elements are reconciled into a simplified structure for ease of understanding.



**Figure 2**  
**PROPOSED PHILIPPINE ACCOUNTING EDUCATION FRAMEWORK**

Qualification Level	Degree	Regulatory Agency	IES Level
PQF/AQRF 8	Doctorate	CHED	Continuing Professional Development (CPD)
PQF/AQRF 7	Master		
<i>accredited CPD programs</i>			
PQF/AQRF 6	Bachelor	CHED	Initial Professional Development (IPD)
PQF/AQRF 1-5	NC / Diploma	TESDA	Technical/Vocational

**Accounting Programs**

Currently, CHED has issued program standards to two (2) bachelor level accountancy programs, BS Accountancy (2007) and BS Accounting Technology (2008). However, in light of the trends we see and more particularly, in order to cater to the emerging growth in the specializations in the accountancy profession as well as the anticipated outcome of the new K-12 basic education, four (4) different yet related accounting programs in the bachelor level are needed. These are revised BS in Accountancy (BSA) for the CPA track, BS in Management Accounting (BSMA) for the management accounting track, BS in Internal Audit (BSIA) for the governance, risk and compliance track, and the BS in Accounting Information System (BSAIS) for the information and technology track. Figure 3 presents this together with possible certifications for each track.

**Figure 3**  
**PROPOSED FOUR-TRACK ACCOUNTANCY PROGRAMS**

<i>Initial Professional Development (IPD)</i>					
PQF/AQRF 6	Bachelor	<b>CPA</b>	<b>CMA, CGMA</b>	<b>CIA, CFE, CrFA</b>	<b>CISA, CISSP</b>
		<i>CMA, CGMA, CIA, CFE, CrFA, CISA, CISSP, CAT</i>	<i>CIA, CFE, CrFA, CISA, CISSP, CAT</i>	<i>CMA, CGMA, CISA, CISSP, CAT</i>	<i>CMA, CGMA, CIA, CFE, CrFA, CAT</i>
		<b>BS in Accountancy</b>	<b>BS in Management Accounting</b>	<b>BS in Internal Auditing</b>	<b>BS in Accounting Information Systems</b>

**CONCLUSIONS**

With the completion of the first cohort of the senior high school program (K-12) in 2018, Philippine higher education institutions should re-design their accounting curriculum considering the integrated and strategic competencies required by the IES as well as prepare to offer new accounting programs aimed at developing future accountants in their specialized and expanded roles. Furthermore, the need to integrate a capstone program within the curriculum will further prepare the prospective accountants to a longer-term career in accounting.

## REFERENCES

- International Accounting Education Standards Board. (2014). Handbook of International Education Pronouncements: 2014 Edition. Available at: <https://www.ifac.org/publications-resources/2014-handbook-international-education-pronouncements>
- Lawson, R. A., Blocher, E. J., Brewer, P. C., Cokins, G., Sorensen, J. E., Stout, D. E., & Wouters, M. F. (2014). Focusing Accounting Curricula on Students' Long-Run Careers: Recommendations for an Integrated Competency-Based Framework for Accounting Education. *Issues In Accounting Education*, 29(2), 295-317.
- Oxford Economics. (2012). Global Talent 2021: How the new geography of talent will transform human resource strategies. Available at: <https://www.oxfordeconomics.com/Media/Default/Thought%20Leadership/global-talent-2021.pdf>
- Pathways Commission. (2012). Charting a National Strategy for the Next Generation of Accountants. Available at: [http://commons.aahq.org/files/0b14318188/Pathways\\_Commission\\_Final\\_Report\\_Complete.pdf](http://commons.aahq.org/files/0b14318188/Pathways_Commission_Final_Report_Complete.pdf)
- Wheeler, J. (1991.) Educating for the “profession” of accounting. In Models of Accounting Education, edited by Norgaard, C. C., and G. L. Sundem. Bainbridge Island, WA: Accounting Education Change Commission.