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Mahmut Yardimcioglu

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LETTER FROM THE EDITOR

Welcome to the *Academy of Accounting and Financial Studies Journal*. The *Journal* is the official publication of the Academy of Accounting and Financial Studies, an affiliate of the Allied Academies, Inc., a non profit association of scholars whose purpose is to encourage and support the advancement and exchange of knowledge, understanding and teaching throughout the world. The mission of the *AAFSJ* is to publish theoretical and empirical research which can advance the literatures of accountancy and finance.

As has been the case with the previous issues of the *AAFSJ*, the articles contained in this volume have been double blind refereed. The acceptance rate for manuscripts in this issue, 25%, conforms to our editorial policies.

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

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OPERATING CASH FLOW AND CREDITWORTHINESS ASSESSMENT

Domenico Piatti, University of Bergamo, Italy

ABSTRACT

Despite the fact that financial distress often occurs because of liquidity problems, most of the models for predicting business failure neglect the informational role of operating cash flow. The aim of this research is to test whether cash flow ratios can improve firm assessment and better predict financial distress.

This research relies on a definition of default distinct from what is usually accepted in literature examining failed firms. In this study, default is a situation of temporary financial distress not strong enough to bankrupt a firm or to generate substandard loans and bad debts. The classification of firm as sound or in financial distress has been determined by cluster analysis carried out on a ratio set computed using information from both banks internal records and the Italian Central Credit Registry. The logistic regression analysis is employed to obtain the final model

In the literature the business failure prediction model using cash flow is not vast and show conflicting results. This paper gives a contribution to a broader understanding by relying on a different default definition and linking financial ratios with cash flow.

The empirical analysis, carried out on an homogeneous sample of 275 small- and medium-sized Italian companies, shows that cash flow ratios, unlike financial ratios, do not have a higher predictive capacity if used separately from financial ratios. Using cash flow ratios with financial ratios can, instead, enhance the performance of business failure prediction models in discriminating between sound and unsound firms even if with a short-term effect.

INTRODUCTION

The success of a business failure prediction model lies in its ability to assess firm creditworthiness given a limited information set. In this way, these models can reduce monitoring costs (Resti, Sironi, 2007) but may cause an inadequate assessment of the potential for smaller companies (Berger and Udell, 2002). In addition, although there are numerous models of business failure prediction in the literature, only some of them specifically consider the use of cash flows to predict financial distress (Gentry et al., 1985; Gilbert et al., 1990; Charitou et al., 2004). Information related to cash flow movements provides, in effect, a dynamic vision of firm management unlike financial ratios, which show only a static point of view. The aim of this work is, therefore, to test whether the use of operating cash flow information can lead

to a significant improvement in the performance of business failure prediction models, with particular reference to Italian SMEs, which constitute the backbone of the Italian economy. This research differs from prior studies in the following respects.

First, default in this study is defined as a situation of temporary and slight financial distress not serious enough to generate substandard loans and bad debts. This definition differs both from the regulatory concept of default and from the definition used by most of the models in the literature, which are related to bankruptcy, insolvency or liquidation (Altman and Hotchkiss, 2006). This choice is motivated by the fact that insolvent firms present serious liquidity problems and could, out of necessity, compensate for the reduction of net working capital flow by acting on business cycle maturities and generating variable cash flows, which are not suitable for the aim of this research.

Second, the classification of financial distress is objective, carried out by cluster analysis and is not based on the judgments of banks themselves.

The third aspect is the development of a model that combines cash flow ratios and financial ratios with reference to small- and medium-sized Italian enterprises. Logistic regression analysis is employed using a stepwise variable selection process.

The study is structured as follows. Section 2 provides a literature review. Section 3 presents the research design. Section 4 shows the empirical results, and section 5 sets out the main conclusions.

LITERATURE REVIEW

The first attempts to use the behaviour of financial ratios for predictive purposes are based on statistical univariate approaches, characterised by the separate observations of various financial ratios in the years immediately prior to the bankruptcies of companies compared with those of sound firms (Hickman, 1957; Saulnier, 1968). In this context, Beaver (1966) showed that 5 years prior to bankruptcy, insolvent companies presented a decrease in sales volume, a decrease in cash flow and income levels and growing debt compared to healthy companies. The univariate techniques' inability to simultaneously grasp the interrelationships between the various indicators led to the need to introduce multivariate statistical techniques. Altman (1968), using multivariate discriminant analysis, found that the financial ratios of healthy companies were different from those of insolvent ones and that this diversity became progressively stronger as the date of bankruptcy approached. Since the initial work of Altman, the number and complexity of studies on business failure prediction have seen an exponential increase. From the work of Beaver until 2007, there were more than 165 related models published in English alone (Bellovary et al., 2007).

Differences among the business failure prediction models can be found in a) the input variables, b) the temporal horizon, c) the statistical approaches and d) the definition of default.

With reference to the input variables, the theory does not uniquely define a framework for the financial ratios that is better able to predict default. Given the absence of an economic theory for a firm crises, many authors have sought to test the effectiveness of financial ratios in forecasting insolvencies by using various balance sheet ratios (Ezzamel et al., 1987) based both on empirical work (Skogsvik, 1990) and on specific research objectives (Edmister, 1972; Keasey and Watson, 1987). Despite this diversity, there is a certain commonality among the various financial ratios. In Beaver (1966), for example, the ratio between cash flow and total debt is the ratio with the greatest failure predictive capacity. This ratio allows for the prediction of insolvencies with a margin of error of 13% and 24% in the first and fifth year prior to bankruptcy, respectively. Liquidity, i.e., the ratio between current assets and liabilities, is, on average, better for healthy businesses. Leverage tends to be greater than 70% for unsound firms and considerably lower for healthy firms (Tamari, 1966). In addition to the differing degrees of liquidity and leverage with respect to healthy companies, insolvent firms generally have higher stock levels due to difficulties in selling, a greater presence of fixed assets and a higher level of commercial debt. It is worth pointing out that, however, the number of input variables, ie financial ratios, does not seem to affect the predictive performance of models (Messier and Hansen, 1988; Wilson and Sharda, 1994; Tsukuda and Baba, 1994; Jo et al., 1997).

Even the temporal horizon is an element of differentiation in the various studies. In particular, an analysis of the behaviours of businesses may begin 6 (Martin, 1977; Skogsvick, 1990; Gilson and Vetsuypens, 1993), 5 (Deakin, 1972, Wilcox, 1973; Altman et al., 1977; Frydman et al., 1985), 4 (Sinkey, 1975; Kahya and Theodossiou, 1999) or 3 years before the collapse (Appetiti, 1984; Lo, 1986; Izan, 1994; Levitan, Knoblett, 1985).

Regarding the methodology, discriminant analysis appears to be the most important technique in the '60s and '70s, whereas logit and probit analysis is much more common in the '80s (Ohlson, 1980). In the '90s, the use of neural networks becomes predominant.

Business failure models also differ for the default definition on which they rely. Many studies only consider default to be the extreme case of bankruptcy (Altman, 1981; Fernandez, 1988). Others focus on voluntary liquidation (Taffler and Tishaw, 1977). Others rely on the regulatory approach, which includes the following situations: (a) bad debt, (b) substandard debt and (c) loans 90 days¹ past due (Basel Committee on Banking Supervision, 2006). Other authors consider default to be when a firm's profitability is lower than the risk free rate or when the firm has a large amount of loans past due (Unal, 1988). Still others consider situations of financial difficulty that do not result in failure (Gentry, 1985; Johnsen and Melicher, 1994).

At any rate, most of the research in the business failure prediction literature considers only financial ratios as independent variables and neglect the role of cash flow, despite the fact that financial difficulties often occur because of liquidity distress. Casey and Bartczak (1985) first proposed testing the marginal informational value of operating cash flows in insolvency forecasting. Their results suggest that operating cash flows do not provide incremental predictive power with respect to the other accrual-based financial ratios. Unlike other studies, Gentry et al.

(1985) used independent variables such as the incidence of the individual components of cash flow (operating cash flow, financing cash flow, investment cash flow and cash flows linked to the payment of dividends and financial burdens) over the total cash flow. They suggested that only the cash flow linked to dividends was characterised by a certain discriminating power. Raja et al. (1980) found that only the ratio of operating cash flow over total debt had a significant discriminating power. On the contrary, Ward (1994) showed that only the operating cash flows for the energy industry had discriminating power. Gombola et al. (1987) came to the opposite conclusion. They showed that the operating cash flows of healthy and bankrupt companies were significantly different. Even Gilbert (1990) and Charitou et al. (2004) found that by combining financial ratios with operating cash flows and dividing by current liabilities and debts, respectively, the discriminating capacity of the model could be improved compared to the model obtained using only financial ratios.

On the whole, the empirical evidence using cash flow within the business failure prediction models is not vast and shows conflicting results. This disparity may be partly attributable to differences in sample size and the number and types of ratios used. In addition, all of the research samples are represented by the presence of healthy firms and bankrupt companies except in the study of Gentry et al. (1987), wherein the sample is characterised by the presence of firms that are healthy and those with financial difficulties but not severe enough to result in bankruptcy. This study shows that with respect to financial ratios, cash flow, and particularly the operating cash flow, has a greater capacity to discriminate healthy companies from those with slight financial difficulties with a positive benefit in assessing the firm creditworthiness.

METHODOLOGY AND MODEL

The data used in this research were provided by mutual banks mainly located in north-eastern Italy, which have outsourced their information technology processes to the Centro Sistemi Direzionali (CSD). CSD provided a sample of 275 firms operating in north-eastern Italy, with a turnover of more than 100 thousand euros. In particular, CSD provided the following information: 1) monthly surveys from both the banks' internal records and the Italian Credit Registry² related to the period between January 2009 and February 2011 for a total 26 observations per firm and 2) accrual-based information for the period of 2006-2008³.

Two different time periods are used for the development of a rating model. The first period, between January 2009 and February 2011, corresponds to the "observation period" during which firms are controlled to verify to which state of the world they belong. The second three-year period from 2006 to 2008 represents the "period of data collection" and corresponds to the time interval for which the predictor variables of the state of the world must be reported. Table 1 shows the distribution of companies in the sample by industry activity and class of turnover.

Table 1: firm distribution based on productive sectors and on turnover class

Productive sectors	firm distribution based on productive sectors		Turnover class in thousands	Firm distribution based on turnover class
Agriculture	10,5%		< 5.000	7,6%
Industry	38,2%		5-10.000	33,8%
Service industry	16,7%		10-20.000	31,3%
Commerce	30,9%		20-50.000	18,2%
transport	3,6%		>50.000	9,1%

Default is not uniquely defined in the literature (Everett and Watson, 1998; Daubie and Meskens, 2001), as shown by the number of definitions adopted, including bankruptcy (Altman, 1968), crisis (Chowdhury and Lang, 1993) organisational exit (Swaminathan, 1996) and collapse (Argenti, 1986). In this study, however, as it is already said, default is associated with a situation of temporary and slight financial distress not serious enough to generate substandard loans and bad debts, such as payments delayed for a period between 30 and 90 days, delays in mortgage payments, overdue exposure and breaching the overdraft ceiling.

This broad definition of default has been chosen for two reasons. The first connects to the fact that companies in financial distress show less erratic cash flows than very unsound companies, which are often forced to liquidate their assets to make their payments (Varetto, 1999). The second reason is related to the ability to assess financial distress at the initial stage, which would allow firms to introduce corrective strategies to solve financial problems as soon as possible before going bankrupt. Our definition of default can intercept difficult situations in advance but could also lead to subjective judgment. To avoid this danger, the classification of firms as sound or in financial distress is the result of objective statistical techniques (cluster analysis), not the judgments of the loan-granting banks. In this way, the classification obtained is autonomous and independent of the subjective considerations of the banks themselves.

The classification of the firms as sound or in financial distress has been determined using a cluster analysis⁴ that is carried out using a set of 12 ratios computed using information from both banks' internal records and the Italian Central Credit Registry. Each ratio has been calculated with reference to 26 pieces of monthly information related to the period of observation between 1/1/2009 and 28/2/2011. Appendix 1 lists all these indicators and the methods of their quantification. Through cluster analysis, a dependent dichotomous variable is built that is zero for sound firms and one for firms in financial distress. With regard to the independent variables, 54 indicators have been selected in the study. They represent the following profiles: 1) liquidity, 2) productivity, 3) profitability, 4) leverage, 5) ratio of coverage of interest expenses, 6) development and size and 7) cash flows generation.

For homogeneous terminology, the ratios associated with the first six profiles specified above will be called financial ratios, and indicators related to the seventh profile will be called cash flow ratios. It should be noted that all the cash flow ratios related to the seventh profile have

operating cash flow as the numerator and other accrual-based data as the denominator. All the ratios have been calculated based on accounting data related to the period of data collection of 2006-2008 and are listed in Appendix 2. For all the ratios, to get to the final model, the outliers are censored to prevent model instability. In particular, some variables have been truncated using the fifth and 95th percentiles of the distribution. The percentage of censored quotes is given in Appendix 2.

Given the absence of the commonly accepted financial ratio framework, a four-step process is followed to choose, among the 54 ratios, the most important covariates to be included in the less discretionary final model. In the first step, the F-test⁵ was applied to each financial and cash flow ratio to verify the null hypothesis of the mean between two groups (sound firms and firms with financial distress for each year of observation). The rejection of this hypothesis results in considering the financial ratio a possible candidate for the model. In this regard, Appendix 2 shows in the last 3 columns, with one column for each observation year, the statistical significance associated with the rejection of the null hypothesis. In the second step, only the cash flow ratios that presented the best discriminating ability in the first step were subjected to backward and forward stepwise statistical selection procedures to identify a subset of cash flow ratios with a significant predictive power. In the third step, only the financial ratios that presented the best discriminating ability in the first step were subjected to backward and forward stepwise statistical selection procedures to identify a subset of financial ratios with significant predictive power. In the fourth and final step, the subsets identified in the second and third step (respectively cash flow and financial ratios) are merged in order to reach a final complete model, characterised by the presence of both cash flow and financial ratios. In addition, as an alternative to static analysis, following Edmister (1972) and Appetiti (1984), the averages of the financial and cash flows ratios computed for 2 years (2007 and 2008) and 3 years (2006, 2007 and 2008) have been used as independent variables in the model. Finally, for year 2008, the trend of the independent variables computed over 3 years (from 2006 to 2008) has been added as a regressor to the independent variables of the final model. The trend includes upward and downward financial and cash flows ratio movements obtained by comparing values at the end of 2008 with those at the end of 2006. Depending on the movement, a dichotomous variable has been built for each covariate with a value of 1 for upward movement and 0 for downward movement. Unlike the methodology of Edmister (1972), in the present research, the dichotomous variable that synthesises the trend does not replace the other independent variables but rather adds to them. In this way, the model simultaneously presents the static information of the year immediately preceding the classification of firms (the year 2008) and the dynamic information synthesised from the trend, which represents an implicit correction of any accounting manipulations (Falbo, 1991).

Logistic regression has been applied to the model that uses the coefficients of the financial and cash flow ratios to determine the probability that a firm will enter the class zero (sound) or class 1 (with financial distress). In particular, the model allows a set of independent

variables represented by ratios to link to a dependent dichotomous variable. The logit binary model (Wooldridge J., 2009; Cameron and Trivedi, 2010) assumes also that the stochastic error follows a logistic distribution.

Two critical values have been used to classify firms between the 2 classes. The first, which is equal to 0.5, assumed an equal probability of belonging to groups. The second, which is equal to 0.4, is the ratio between the number of firms with financial distress and the total number of sample firms. This threshold takes into account that the number of sound and non-sound firms is not balanced. In some research, the critical threshold is determined in such a way as to minimise the classification error (Lin and Piesse, 2001), but in this way there is the risk of providing a result closely linked to the characteristics of the sample (Jones, 1987).

EMPIRICAL RESULTS

The sample of 275 firms is split into two subsets by cluster analysis. 177 companies, equal to 64.36% of the sample, belong to the subset of sound firms, whereas 98 companies, equal to 35.64%, are classified as firms in financial distress. Table 2 shows some statistics about the ratios coming from the banks' internal records and the Italian Credit Registry records, which are used to implement cluster analysis.

	Sound firms		Firms with financial distress		Total sample	
	Mean	STD	Mean	STD	Mean	STD
Variables based on the Italian Credit Registry Record						
Months in which exposure is in breach of overdraft ceiling	4.32	5.74	19.30	9.67	9.66	10.29
Months in which exposure for receivables financing is in breach of overdraft ceiling	2.73	4.25	12.89	8.53	6.35	7.82
Months in which exposure exceeds the limit of long-term financing	4.62	5.18	14.45	10.06	8.12	8.68
Loan amount outstanding over the loan amount granted by the Italian banking system	27.76%	24.20%	62.95%	28.45%	40.30%	30.79%
Average score computed in the Italian Credit Registry records	2.72%	5.11%	19.76%	20.06%	8.79%	15.04%
Variables based on the banks' internal record						
Number of months in which there are unpaid instalments on mortgages	0.02	0.13	0.56	1.86	0.21	1.14
Number of unpaid checks	0.37	1.99	1.64	4.15	0.83	3.00

	Sound firms		Firms with financial distress		Total sample	
	Mean	STD	Mean	STD	Mean	STD
Variables based on the Italian Credit Registry Record						
Number of days in which there is an exposure in breach of overdraft ceiling/days in the period of 1/1/2009-28/2/2011	0.29	1.20	3.23	7.31	1.34	4.67
% recall of invoices in receivables financing	2.80%	4.77%	23.80%	24.28%	10.28%	18.02%
% receivables not paid	1.39%	7.94%	6.01%	13.69%	3.04%	10.57%
Average score computed in the Italian Credit Registry records	7.30%	13.92%	14.29%	11.45%	9.79%	13.49%
Variables based on the banks' internal record	5.63%	6.71%	40.65%	23.33%	18.11%	22.45%

Table 2 demonstrates that, on average, sound firms, when compared to firms with financial distress, have both fewer incidences of past due and overdue and greater punctuality in maturities. The statistics of the financial and cash flow ratios whose means are significantly different between the two subsets (test-F of Fisher) are shown in Table 3. Note that ratios are 41 fewer than the original ones (54).

	2008				2007				2006			
	Sound firms		Firms with financial distress		Sound firms		Firms with financial distress		Sound firms		Firms with financial distress	
Vari	MEAN	STD	MEAN	STD	MEAN	STD	MEAN	STD	MEAN	STD	MEAN	STD
CA/CL	1,24	0,38	1,07	0,24	1,27	0,38	1,12	0,31	1,24	0,38	1,14	0,33
Quick Ratio	0,86	0,35	0,73	0,25	0,88	0,36	0,76	0,28	0,87	0,36	0,78	0,31
CA/Stock	90,01	258,50	42,33	169,38	76,82	232,90	52,60	201,15	77,66	238,76	56,12	203,16
BC	87,88	89,55	127,08	93,36	88,46	90,57	107,58	87,67	72,72	89,50	82,95	85,83
DSS	66,76	73,31	86,94	71,76	68,47	69,85	83,97	68,15	66,37	67,07	82,32	66,28
TA Turns	1,55	1,06	1,16	0,83	1,51	1,00	1,20	0,71	1,45	0,96	1,22	0,81
CA Turns	2,22	1,42	1,64	1,06	2,12	1,36	1,65	0,92	2,07	1,30	1,69	1,04
EBITD/TA	7,13%	4,62%	5,81%	3,53%	7,84%	4,73%	6,57%	3,62%	7,08%	4,40%	6,72%	4,17%
AP/S	52,0%	32,2%	71,55%	30,19%	52,9%	32,3%	67,30%	27,86%	54,30%	32,85%	65,27%	29,69%
DEP/FA	13,3%	10,7%	11,08%	9,58%	15,1%	11,5%	11,49%	8,30%	14,94%	11,73%	12,48%	10,28%
ROA	4,53%	5,14%	3,13%	4,46%	5,27%	5,25%	3,95%	4,12%	4,39%	5,24%	3,89%	4,63%
ROD	2,81%	1,62%	3,87%	1,57%	2,46%	1,49%	3,45%	1,70%	2,02%	1,25%	2,90%	1,45%
ROE	8,61%	22,6%	-0,32%	22,92%	16,0%	48,3%	4,42%	20,70%	6,42%	23,04%	4,90%	23,14%
NI/TA	1,58%	3,81%	-0,70%	3,75%	2,28%	4,02%	0,46%	2,65%	1,35%	4,19%	0,41%	2,94%
NI/S	1,19%	4,40%	-0,77%	3,90%	1,80%	3,99%	0,55%	2,76%	1,28%	3,89%	0,06%	3,70%

Vari	2008				2007				2006			
	Sound firms		Firms with financial distress		Sound firms		Firms with financial distress		Sound firms		Firms with financial distress	
	MEAN	STD	MEAN	STD	MEAN	STD	MEAN	STD	MEAN	STD	MEAN	STD
EBIT/E	35,1%	63,5%	57,40%	106,87%	45,4%	66,9%	78,91%	114,94%	36,51%	58,90%	71,24%	111,60%
NI/D	2,43%	5,86%	-0,57%	3,48%	3,17%	5,98%	0,70%	2,53%	2,19%	5,62%	0,66%	3,03%
E/TA	2,30	2,56	1,75	2,09	2,61	2,83	2,00	2,46	2,52	2,81	1,94	2,40
S/D	2,10	1,84	1,35	0,96	2,03	2,10	1,36	0,77	1,96	2,21	1,41	0,92
EBITD/D	9,62%	6,82%	6,82%	4,08%	10,3%	6,72%	7,51%	4,34%	9,45%	6,51%	7,77%	4,99%
E/D	35,3%	42,3%	19,1%	18,7%	31,1%	37,0%	15,7%	18,5%	31,4%	37,5%	16,9%	19,3%
LEV	8,83	10,17	13,33	13,37	9,68	10,39	16,52	14,12	9,89	10,47	15,81	14,36
D/E	7,83	10,17	12,34	13,36	8,68	10,39	15,52	14,12	8,89	10,47	14,81	14,36
D/TA	0,78	0,15	0,86	0,11	0,80	0,14	0,88	0,11	0,80	0,15	0,88	0,11
EBIT/NI	24,52	40,05	43,09	45,44	20,75	35,71	36,32	44,51	23,59	38,72	32,66	42,82
EBIT/IE	2,98	4,45	1,05	1,18	3,72	4,64	1,55	1,91	4,03	5,26	1,86	2,67
IE/TA	2,2%	1,3%	3,3%	1,5%	2,0%	1,3%	3,0%	1,4%	1,6%	1,1%	2,5%	1,2%
IE/S	2,5%	4,0%	3,7%	2,7%	2,2%	3,5%	3,3%	3,0%	1,9%	3,1%	3,1%	4,0%
I/S	8,9%	22,2%	12,9%	27,6%	3,5%	6,0%	8,0%	22,5%	14,6%	33,6%	25,1%	52,1%
EGR	23,1%	38,3%	39,7%	55,5%	16,8%	32,2%	11,6%	31,1%	35,4%	57,6%	41,1%	59,7%
SGR	13,1%	21,2%	6,0%	18,5%	14,3%	19,3%	16,4%	21,9%	10,0%	19,1%	10,5%	19,5%
TAGR	10,9%	24,7%	13,6%	21,7%	14,9%	31,4%	22,4%	35,2%	47,9%	79,8%	56,5%	84,1%
OCF/D	9,0%	22,2%	-6,6%	58,0%	-2,8%	25,5%	-8,9%	28,2%	-45,4%	310%	-116,2%	484,0%
OCF/S	2,8%	64,5%	-10,7%	79,6%	2,9%	85,0%	-15,6%	83,9%	-19,8%	93,9%	-64,9%	202,4%
TCF/D	5,1%	21,7%	-11,0%	57,6%	-6,6%	24,4%	-12,9%	27,9%	-48,8%	309%	-119,6%	483,3%
OCF/I	245%	687%	53,2%	829,8%	-83%	922%	-185,3%	852,7%	15,3%	707%	1,4%	801,1%
OCF/TA	3,1%	15,9%	-10,1%	56,1%	-6,0%	20,2%	-11,4%	25,1%	-37,8%	227%	-119,1%	485,7%
OCF/CL	15,4%	43,5%	-6,7%	60,1%	-3,3%	42,8%	-10,9%	35,8%	-76,1%	463%	-541,8%	4227,4%
OCF/NOWC	35,0%	227%	-10,3%	159,1%	23,8%	288%	-48,2%	263,8%	143%	5358%	-2291,6%	18710,1%
OCF/NFP	-0,259	4,345	-0,627	9,023	-0,169	6,203	-0,662	6,058	40,097	481,05	-10,089	491,901
OCF/IE	3,656	9,491	-1,039	7,715	-1,198	12,576	-2,509	8,540	-1,958	16,237	-4,590	15,822

In the table, only those indicators for which the test F Fisher of equality of the mean between the two groups (sound firms and firms with financial distress) is rejected are shown. For the broader significance of the initials of the indicators, refer to Appendix 2.

Table 4 reports the results of the logit model with regard to three specifications. In the first specification, only variables related to the cash flow ratios are used. In the second specification, only financial ratios are used, and in the third specification, the complete model is shown. To interpret the results, negative coefficients indicate that the variable has a positive influence on the probability that a firm is assigned to the class of sound firms (the class assigned a value of zero).

Table 4: logistic regression results. The dependent variable has a value of 0 for sound firms and a value of 1 for firms in financial distress									
	2008			2007			2006		
Covariates	1° spec.	2° spec.	3° spec.	1° spec.	2° spec.	3° spec.	1° spec.	2° spec.	3° spec.
OCF/IE	-0.0619*** (0.0169)		-0.0509** (0.0198)	-0.00557 (0.0107)		0.0174 (0.0156)	-0.00946 (0.00775)		-0.00856 (0.00997)
OCF/NOWC	-0.0989 (0.0695)		-0.219*** (0.0730)	-0.103* (0.0609)		-0.0629 (0.0679)	-0.00172 (0.00108)		-0.000483 (0.00144)
OCF/NFP	-0.0141 (0.0149)		-0.0263* (0.0148)	-0.00925 (0.0228)		0.00471 (0.0275)	-0.000274 (0.000382)		-0.000387 (0.000331)
CA/CL		-2.222*** (0.567)	-2.455*** (0.604)		-1.091** (0.540)	-1.152** (0.536)		-0.598 (0.441)	-0.624 (0.457)
CA Turnover		-0.752*** (0.202)	-0.775*** (0.210)		-0.550*** (0.212)	-0.571*** (0.211)		-0.508*** (0.150)	-0.515*** (0.146)
ROD		50.23*** (10.26)	52.99*** (11.18)		45.39*** (11.36)	45.05*** (11.85)		60.94*** (12.83)	61.21*** (13.26)
NI/TA		-10.87** (4,840)	-9.744** (4,841)		-13.72** (5,480)	-15.01** (5,873)		-1,194 (4,341)	-0.947 (4,408)
D/E		0.0408** (0.0162)	0.0436*** (0.0169)		0.0533*** (0.0145)	0.0533*** (0.0143)		0.0512*** (0.0132)	0.0528*** (0.0134)
SGR		-1.381* (0.756)	-1.696** (0.795)		0.173 (0.799)	0.264 (0.800)		0.0243 (0.755)	0.0234 (0.780)
Sales>25		0.541 (0.363)	0.629 (0.384)		0.664* (0.350)	0.661* (0.348)		0.851** (0.369)	0.822** (0.366)
Sector		-0.367 (0.310)	-0.499 (0.320)		-0.517* (0.302)	-0.533* (0.304)		-0.523* (0.296)	-0.501* (0.300)
Constant	-0.505*** (0.135)	1.518* (0.807)	1.792** (0.850)	-0.619*** (0.129)	0.00696 (0.937)	0.167 (0.933)	-0.630*** (0.130)	-0.911 (0.737)	-0.929 (0.735)
N. of observations	275	275	275	275	275	275	275	275	275
pseudo R-sq	0.056	0.260	0.303	0.014	0.233	0.238	0.013	0.190	0.197
log-lik ratio test			15,31***			1.68			2.32
1° type error cut-off 0,5	0.8367	0.3776	0.3367	0.9592	0.4184	0.4184	0.9694	0.449	0.4388
1° type error cut-off 0,4	0.6531	0.2959	0.251	0.8469	0.2755	0.2857	0.8265	0.3367	0.3265
accuracy ratio cut-off 0,5	0.6582	0.7818	0.8036	0.6509	0.7527	0.7564	6509	0.7455	0.7564
accuracy ratio cut-off 0,4	0.6182	0.7491	0.7709	0.6109	0.7455	0.7418	0.6182	0.7127	0.7345

Table 4: logistic regression results. The dependent variable has a value of 0 for sound firms and a value of 1 for firms in financial distress

Covariates	2008			2007			2006		
	1° spec.	2° spec.	3° spec.	1° spec.	2° spec.	3° spec.	1° spec.	2° spec.	3° spec.
Nagelkerke adj r ²	0.096	0.394	0.447	0.025	0.359	0.366	0.023	0.302	0.311
Pearson chi ²	268.37	256.52	260.08	274.87	256.5	251.73	275.68	267.5	268.01

The results of the table were obtained with logit regression. All z statistics are corrected to take into account the heteroskedasticity and the autocorrelation of the errors. The standard errors are reported in parentheses. *, ** and *** indicate levels of significance of 10 %, 5% and 1 %, respectively. The variable named "Sector" assigns the value 0 to industrial activity and the value of 1 to all other industries. The variable called "Sales>25" assigns the value of 0 to all firms with an annual turnover of less than or equal to 25 million euros. The first specification of the model includes only the variables determined by the presence of cash flows. The second specification represents the base model obtained using only the financial ratios, and the third specification considers the basic model in addition to the variables determined by the cash flow ratios. The log-likelihood ratio test is obtained from the following difference: (-2 log-likelihood of the base model) - (-2 log-likelihood of the full model). The first type error represents the percentage of firms in financial distress evaluated as sound firms from the model. The accuracy ratio is determined by the ratio between the firms properly classified and the total firms in the sample. The cut-off of 0.5 is assumed by default, whereas the cut-off of the 0.4 is determined by the ratio between the number of companies with financial difficulties of the sample and the total number of companies observed.

If only cash flow ratios are considered (first specification of the model), the results are disappointing. The only meaningful cash flow ratio is from 2008, and it is the ratio between operating cash flow and interest expenses. The first type error is extremely high, and all the statistical diagnostics, in line with Gentry (1985), confirm that cash flow ratios considered in isolation are not able to discriminate between sound and unsound firms. This is true for all the years prior to firm classification. Casey and Bartczak (1985) come to the same conclusion but with reference to a sample of sound and failed firms, in which failed firms are not just in financial distress like the samples used for this research.

In the second specification of the model, only the predictive ability of financial ratios is considered, without the contribution of cash flows ratios. Financial ratios bear out significance levels that vary across time. In 2008, all the financial ratios are statistically significant. In particular, the negative signs of the coefficients associated with 1) the ratio between current assets and current liabilities (CA/CL), 2) the ratio between sales and current assets (S/CA), 3) the net profitability of the total assets (NI/TA) and 4) the growth rate of sales (SGR) indicate that the greater these ratios, the more likely the allocation into the sound firms class. On the contrary, the positive signs of the coefficients related to the average cost of funds (ROD) and to leverage (D/E) indicate that as the average cost of funds and leverage increase, the probability that the company is assigned to the class of firms with distress increases. The behaviour of the above variables appears economically justifiable and correct. It is interesting to note that the above considerations also apply to 2007 except for the variable rate of turnover growth, which is significant only in the year immediately prior to the classification of firms. By contrast, the situation is radically different for 2006. Only the coefficients linked to current asset turnover (S/CA) and ROD and leverage (D/E) are still significant. These variables, in line with the literature (Von Stein and Ziegler, 1984; Unal, 1988), maintain high predictive power for 1 or 2 years prior to firm classification.

Regarding the coefficient related to the dichotomous variables of size and industry⁶, one observes a statistical significance for these coefficients for 2006 and 2007 but not for 2008, which implies that, on average, for the 2 or 3 years immediately preceding the firm classification, the size of a firm and the industry to which it belongs have high predictive power. Specifically, industrial firms seem to have a greater probability of being classified as sound firms. Firms with a turnover less than or equal to 25 million euros have a higher probability of being assigned to the sound class compared to the other firms. This behaviour could be attributed to the lack of financial planning linked to the growth typical for medium-sized firms. This behaviour may justify the counterintuitive signs assumed by the coefficients linked to the size variable.

After separately analysing the roles of cash flow and financial ratios, the third specification of the model shows the combination of both cash flow and financial ratios. As Table 4 shows, adding cash flow ratios to financial ratios increases the predictive capacity of the final model compared to the second specification, but only for 2008. For 2008, all the coefficients related to cash flow ratios are significant. In particular, the negative sign taken by these coefficients indicates that, on average, the greater the ratio between operating cash flows, interest expenses, net working capital and net financial position, the greater the likelihood that the company is ranked among sound firms. The log-likelihood ratio test (Cameron and Trivedi, 2010) is significant for the year 2008, which means that the statistical hypothesis that the coefficients of the variables related to the cash flow ratios equal to zero can be rejected.

In addition, an improvement can be observed for both the accuracy ratio and the first type error. Therefore, the use of cash flow ratios can actually provide additional information compared to using only financial ratios in terms of firm creditworthiness, which is in line with Charitou (2004) but in contrast with Gentry (1987). However, the improvement of creditworthiness, thanks to the introduction of information related to cash flow, only has a short-term effect. In fact, cash flow has forward predictive power only in the year immediately prior to the classification of firms. For 2006 and 2007, the introduction of cash flow ratios seems to be substantially irrelevant in predicting the status of firms. This is true even if a dynamic vision is considered. Table 5 can be analysed in this regard. For reasons of space, the table only shows the third specification, i.e., the full model. In particular, the second column reports the full model for 2008 to facilitate comparison. The third and fourth columns show the results obtained using the simple arithmetic mean of ratios as predictors computed for 2 and 3 years, respectively. Column 5 highlights the results obtained by adding the trend ratios calculated on 3 years of observations to the basic model for the year 2008. Each variable trend is represented by a dummy with a value of 1 in the case of an upward trend over three years and 0 in the case of downward movements.

By considering the mean values for cash flow ratios calculated over 2 years (third column) as covariates, only the ratio between operating cash flow and net working capital is significant, whereas all the financial ratios are significant except the turnover growth rate. By contrast, if the mean values were computed over 3 years (the fourth column), all financial ratios would show high significance and the cash flow ratios lose importance.

Table 5: logistic regression results. The dependent variable takes the value of 0 for sound firms and 1 for firms with financial distress

Covariates	2008	2 years	3 years	2008+ trend
OCF/IE	-0.0509** (0.0198)	0.00235 (0.0278)	-0.0326 (0.0257)	-0.0581** (0.0240)
OCF/NOWC	-0.219*** (0.0730)	-0.306*** (0.1190)	-0.0084 (0.0069)	-0.180** (0.0869)
OCF/NFP	-0.0263* (0.0148)	0.0102 (0.0318)	-0.00144 (0.0011)	-0.0331* (0.0177)
CA/CL	-2.455*** (0.6040)	-2.108*** (0.6910)	-1.548** (0.6340)	-2.743*** (0.6840)
CA Turnover	-0.775*** (0.2100)	-0.717*** (0.2060)	-0.638*** (0.1630)	-0.745*** (0.2010)
ROD	52.99*** (11.1800)	52.61*** (11.1700)	62.12*** (12.3900)	59.02*** (11.8100)
NI/TA	-9.744** (4.8410)	-13.53** (6.0240)	-14.89** (6.0790)	-10.13* (5.4060)
D/E	0.0436*** (0.0169)	0.0499*** (0.0182)	0.0520*** (0.0160)	0.0478*** (0.0167)
SGR	-1.696** (0.7950)	-1.155 (1.1360)	-1.232 (1.3610)	-0.224 (1.1750)
Sales>25	0.629 (0.3840)	0.544 (0.3670)	0.501 (0.3740)	0.992** (0.4010)
Sector	-0.499 (0.3200)	-0.467 (0.3150)	-0.357 (0.3100)	-0.624* (0.3400)
trend OCF/IE				0.557 (0.4230)
trend OCF/NOWC				-0.706 (0.4660)
trend OCF/NFP				0.524 (0.4510)
trend CA/CL				0.219 (0.3480)
trend CA Turnover				-0.724* (0.4110)
trend ROD				-0.285 (0.5340)
trend NI/TA				-0.481 (0.3660)
trend D/E				0.714* (0.4250)
Constant	1.792** (0.8500)	1.353 (1.0280)	0.268 (0.9540)	2.641** (1.0270)
N	275	275	275	275
pseudo R-sq	0.303	0.283	0.262	0.344
log-lik ratio test				14.82*
1° type error cut-off 0,5	0.3367	0.3776	0.3776	0.3163
1° type error cut-off 0,4	0.251	0.2515	0.2653	0.2143

Table 5: logistic regression results. The dependent variable takes the value of 0 for sound firms and 1 for firms with financial distress				
Covariates	2008	2 years	3 years	2008+ trend
accuracy ratio cut-off 0,5	0.8036	0.7673	0.7782	0.7964
accuracy ratio cut-off 0,4	0.7709	0.7673	0.7636	0.7927
Nagelkerke adj r ²	0.447	0.423	0.397	0.496
Pearson chi ²	260.08	243.03	247.13	264.79

The results of the table were obtained with logit regression. All z statistics are correct to take into account of the heteroscedasticity and the autocorrelation of the errors. The standard errors are reported in parentheses. *, **, ***, indicate levels of significance 10%, 5% and 1% respectively. The second column shows the results for the year 2008. The third and fourth column show the results obtained using as input of the regression the simple arithmetic mean of the covariates computed respectively on 2 and 3 years. The last column shows the model with the covariates for the year 2008 and in addition, for each covariate, its trend. The trend is represented by dummy variables that takes the value of 1 in the case of growing trend and 0 in the case of decreasing trend of the ratios. The log-likelihood ratio test, in the last column, is obtained from the following difference: (-2log-likelihood of the model 2008) - (-2 log-likelihood of the complete model of trend). The first type error represents the percentage of firms with financial distress evaluated as sound firms by the model. The accuracy ratio is determined by the ratio between the firms properly calculated and the total firms in the sample. The cut-off of 0.5 is assumed by default, while the cut-off of the 0.4 is determined to the nearest ten top the ratio between the number of companies in financial difficulties of the sample and the total number of companies observed.

Adding the variables represented by the trend of the financial and cash flow ratios to the model (last column of Table 5), the variables of the cash flow ratios remain significant but their trends do not. In contrast, only the variables associated with the trends of current asset turnover (S/CA) and leverage (D/E) are significant, which suggests that not only the levels but also the dynamics of these two variables affect the probability that a firm is ranked as sound. The addition of the trend to the model is significant, as demonstrated by the log-likelihood ratio test. With a cut-off of 0.4, the first type error is considerably reduced from 25.1 % of the model without the trend to 21.43 % of the model with the trend.

SUMMARY AND CONCLUSIONS

Most of the research related to business failure prediction uses financial ratios as independent variables and seem to neglect the informational role of cash flow, despite the fact that financial distress often occurs because of liquidity problems. In addition, the relatively small amount of research that highlights the role of cash flow ratios in improving the performance of such models yields different results. Moreover, only a few papers (Gentry et al., 1985; Gentry et al., 1987) are based on samples of sound firms and firms in financial distress that cannot be classified as bankrupt, whereas most research is based on samples represented by sound and failed firms. The purpose of this research is to test whether cash flow ratios can improve firm assessment in business failure prediction models.

Out of the seven cash flow ratios originally considered in the research, three ratios are selected using stepwise methods, which have operating cash flows for their numerators and the following balance sheet quantities for their denominators: interest expenses, net working capital and net financial position. Operating cash flow is used because only it ordinarily allows firms repay their debts. The results of the empirical analysis indicate that cash flow ratios, unlike financial ratios, do not have a discriminating capacity if used in isolation. Instead, they increase

the ability of the discriminant model when used in combination with financial ratios. The best performance of the model, however, seems limited to the year immediately preceding the classification of businesses in "financial distress". The cash flow ratios also maintain a discriminating capacity even when their trends are introduced.

However, caution is necessary when generalising the results. In particular, the empirical analysis has been applied to a sample made up of only small- and medium-sized businesses located in north-eastern Italy. The sample size has made it impossible to build a sub-sample on which to test the results. Moreover, in the analysis, non-financial variables have not been considered, but these variables could present an advantage in terms of improving the predictive capacity (Brunner et al., 2000).

ENDNOTES

- ¹ See Bank of Italy, Circular n. 263.
- ² The Central Credit Registry is an information system operated by the Bank of Italy that collects the data supplied by banks and financial companies on the credit they grant.
- ³ This accrual-based information includes 1) turnover, 2) earnings before interest and tax (EBIT), 3) interest expenses, 4) operating net working capital, 5) operating cash flow, 6) net financial position, 7) total cash flow, 8) asset with short maturity (less than 12 months), 9) inventory, 10) liability with short maturity (less than 12 months) 11) equity, 12) fixed assets, 13) new investment and 14) depreciations.
- ⁴ In the cluster analysis, the K-mean method is used by indicating the number of wanted clusters (i.e., 2). The cluster number was also supported by Pseudo-F index (Calinsky & Harabasz, 1974).
- ⁵ The F-test is used the context of variance analysis (ANOVA). The F Test is replaced by Welch statistics if the hypothesis of variance homogeneity between groups (Leven's test) is rejected. The Welch test provides robust results even in the presence of the heterogeneity of variance between the two groups.
- ⁶ The dummy variable "sales>25" takes the value of 0 for firms with sales greater than 25 million euros and the value of 1 for the other firms. Dummy variable "sector" takes the value of 0 for firms belonging to the industrial sector and 1 for the other firms.

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APPENDIX

Appendix 1: description of ratios used for cluster analysis	
Variables based on the Italian Credit Registry Record	Description of computation method for each ratio
Months in which exposure breaches the overdraft ceiling	Number of months within the analysed period 1/1/2009-28/2/2011
Months in which exposure for receivables financing breaches the overdraft ceiling	Number of months with exposure for receivables financing breaches the overdraft ceiling over receivables financing, within the analysed period 1/1/2009-28/2/2011
Months in which exposure exceeds the limit of long term financing	Number of months with exposure greater than the limit of long term financing over long term financing, within the analysed period 1/1/2009-28/2/2011
Loan amount outstanding over the loan amount granted by the Italian banking system	Arithmetic mean computed on month values of the ratio over the period of 1/1/2009-28/2/2011
Average score computed on Italian Credit Registry record	Arithmetic mean of the monthly score over the period of 1/1/2009-28/2/2011 The score is computed on data based on the Italian Credit Registry records. The score ranges from zero (no bad evidence) to 100 (presence of a high amount of bad evidence).
Variables based on the banks' internal record	
Number of months in which there are unpaid instalments on mortgages	Number of months in which there are unpaid instalments on mortgages over the period of 1/1/2009-28/2/2011
Number of unpaid checks	Number of unpaid checks over the period of 1/1/2009-28/2/2011
Number of days in which there is an exposure that breaches the overdraft ceiling/ days in the period 1/1/2009-28/2/2011	Number of days in which there is an exposure that breaches the overdraft ceiling over the days in the period 1/1/2009-28/2/2011
% of recall of invoices in the receivables financing	
% of receivables not paid	Arithmetic mean of the monthly values computed over the period 1/1/2009-28/2/2011
Average score computed on Italian Credit Registry record	Arithmetic mean of the monthly score, over the period 1/1/2009-28/2/2011 The score is computed on data based on the banks' internal record. The score ranges from zero (no bad evidence) to 100 (presence of heavy bad evidence).

Appendix 2: Financial and cash flow ratios used in the paper together with their censored share						
Management areas	ratios	Covariate description	Censored share	2008	2007	2006
LIQUIDITY	CA/CL	Current asset/current liability	5,6%	***	***	**
	Quick ratio	(current asset –inventory)/current liability	8,4%	***	***	**
	Cash/TA	Cash/total assets	8,7%			
	CA/TA	Current asset/total asset	8,3%			
	CA/Stock	(current asset –inventory)/inventory	6,9%	**		
	BC	Business cycle=net operating working capitale/daily sales	15,7%	***	**	
	DSS	Days sale for inventory = 365/inventory turnover	12,1%	**	**	**
	Nowc/S	Net operating working capital/sales	0,0%			
CAPITAL TURNOVER	Ta Trnover	Asset turnover = sales/total asset	0,6%	***	***	**
	CA Turnover	Current asset turnover =sales/current assets	0,0%	***	***	***
	Ebitda/TA	Earning before interest, taxes, depreciation and amortization/totale assets	1,8%	***	**	
	AP/S	Accounts Payable/sales	6,5%	***	***	***
	DEP/FA	Depreciation/fixed assets	1,5%	**	***	**
	OL	Operating leverage	4,5%			
PROFITABILITY	ROA	Ebit/total assets	0,0%	**	**	
	ROD	Return on debt = interest expenses/debt	0,0%	***	***	***
	ROE	Returno on equity = Net income/equity	2,5%	***	***	
	ROS	Return on sales = ebit/sales	0,0%			
	NI/TA	Net income/total assets	0,0%	***	***	**
	NI/S	Net income/sales	0,0%	***	***	**
	Ebit/E	Ebit/equità	0,8%	**	***	***
	NI/D	Net income/debt	0,7%	***	***	***
	EBT/TA	Earnings before taxex/total assets	1,8%			
	ARE/TA	Addition to retained earnings/total assets	4,7%			
FINANCIAL STRUCTURE	E/TA	Equity/total assets	2,5%	**	**	**
	S/D	Sales/debt	0,0%	***	***	***
	EBITDA/D	Ebitda/debt	0,0%	***	***	**
	E/D	Equity/debt	5,7%	***	***	***
	Lev	Financial leverage= totale assets/equity	6,8%	***	***	***
	D/E	Debt/equità	5,7%	***	***	***
	D/TA	Debt/total assets	4,1%	***	***	***
	LTD/D	Long term debt/debt	1,1%			
	EBIT/NI	Ebit/net income	5,2%	***	***	**

Appendix 2: Financial and cash flow ratios used in the paper together with their censored share						
Management areas	ratios	Covariate description	Censored share	2008	2007	2006
TIMES INTEREST EXPENSES	EBIT/IE	Times interest earned ratio = Ebit/interest expenses	0,0%	***	***	***
	IE/TA	Interest expenses/total assets	0,0%	***	***	***
	IE/S	Interest expenses/sales	0,7%	***	***	***
SIZE AND GROWTH	I/S	Investment/sales	0,7%		**	**
	EGR/TAGR	Equity growth rate/total asset growth rate	1,1%			
	EGR	Equity growth rate	1,8%	***		
	SGR	Sales growth rate	1,9%	***		
	TAGR	Total asset growth rate	1,5%		**	
	LTA	Natural Logarit of total assets	0,0%			
	LS	Natural Logarithm of sales	0,0%			
CASH- FLOWS PRODUCTION	OCF/D	operating cash –flow/debt	0,0%	**	**	
	OCF/LTD	Operating cash-flow/long term debt	0,0%			
	OCF/S	Operating cash-flow/sales	0,9%		**	**
	TCF/D	Total cash-flow/debt	0,0%	***	**	
	OCF/I	Operating cash-flow/Investment	9,5%	**		
	OCF/TA	Operating cash-flow/Total assets	3,9%	**	**	
	OCF/CL	Operating cash-flow/current liabilities	1,7%	***		
	OCF/NOWC	Operating cash-flow/net operating working capital	0,0%	**	**	
	OFC/NFP	Operating cash-flow/net financial position	0,0%	**	**	
	OCF/EBITDA	Operating cash-flow/EBITDA	4,2%			
	OCF/IE	Operating cash-flow/interest expenses	5,0%	***		**

The censored share represents the number of observations for each indicator, compared to the total number of observations, which were replaced with the fifth or the 95-th percentile of the distribution itself. *, **, *** , indicate the significance levels (10%, 5% and 1% respectively) of the rejection of the hypothesis of equality of mean carried out through the test-F Fisher on two groups of companies: sound firm and firm with financial distress.

AN EMPIRICAL ANALYSIS OF RATE OF RETURN MAXIMIZING PORTFOLIOS

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ABSTRACT

Although there is a common perception that mutual funds provide superior fiscal performance, research in the area is limited. To examine this relationship, the performance of 20 small-cap mutual funds was compared against a sample of 20 data points for the Dow Jones Industrial Average, using a quantitative methodology with a causal-comparative research design, to determine if mutual fund portfolios provide shareholders with superior expected returns for an acceptable level of risk. The results of the study demonstrate that the mean expected return of mutual funds outperform the Dow Jones Industrial Average, confirming the outcomes of past research. This suggests that shareholders and practitioners might improve their investment decisions by using Modern Portfolio Theory strategies.

INTRODUCTION

The financial marketplace in the United States underwent an economic downturn in 2007. Part of the issues driving this economic downturn was a lack of market regulations in the housing market. Financial institutions supported assets with risky mortgage transactions, and mortgage financing carried high deposits (Kling, 2010). Some financial institutions and individuals were taking extremely high financial risk to earn higher returns. The intent of this causal-comparative, quantitative research was to analyze if a mutual fund portfolio using the fundamental principles of Modern Portfolio Theory (MPT) provided shareholders with superior returns for an acceptable level of risk against the Dow Jones Industrial Average (DJ).

MPT is a widely-used theory of the pecuniary marketplace. Researchers have shown MPT to be valid if numerous sovereign shareholders as a whole aimed at the superlative probable returns for a suitable level of risk tolerance. Based on this theory, the value at which financial security operated ought to be the greatest potential approximation of the financial security's accurate worth assuming that all shareholders had access to similar broadly obtainable resources about savings choices (Markowitz, 2006).

However, choosing stocks and bonds to manage speculation portfolios is not enough for financial forecasters. Additional knowledge and skills are needed to assess portfolio managing procedures, diversifying approaches, and executive performance (Markowitz, 2006). Despite

this, MPT provides shareholders with a degree of freedom to diversify their portfolios to reduce risk and maximize predictable returns (Dhankar & Kumar, 2006).

As a result of the financial crisis of 2009, many individuals have changed their points of view. Diversification was the favored technique for portfolio selection (Evensky, 2009), but MPT is not linked to the practice of risk management. The MPT based on past statistics.

MODERN PORTFOLIO THEORY

Markowitz (1952) developed MPT, a widely-used theory of the pecuniary marketplace, asset modules, and unified approaches. The MPT focused on the hypothesis of efficient marketplace. The MPT was valid if numerous sovereign shareholders as a whole aimed at the superlative probable returns for a suitable level of risk tolerance. If all shareholders had access to similar broadly obtainable resources about savings choices, the value at which financial security operated ought to be the greatest potential approximation of the financial security's accurate worth (Markowitz, 2006).

Financial forecasters needed to acquire some knowledge and skills other than choosing stocks and bonds to manage speculation portfolios for their customers. Other disciplines extended to assess portfolio managing procedures, diversifying approaches, and executive performance (Markowitz, 2006). The MPT established shareholders' predilection between risk and predictable return correlation. The MPT provided shareholders with a degree of freedom to diversify their portfolios to reduce risk and maximize predictable returns (Dhankar & Kumar, 2006).

Portfolio hypothesis offered speculation executives the means to distribute resources between many choices to maximize shareholders' wealth. Limitations were the issues of Markowitz's (1952) mean-variance formula, which was the starting point of MPT. A speedy expansion of the simplification and changes began to eliminate the causal limitations. Markowitz's effort was particularly attractive to graduate scholars and business professionals who desired to conduct quantitative research (Fisher, 2008).

CRITICAL ASSESSMENT OF MODERN PORTFOLIO THEORY

The MPT and its mean-variance optimization (VMO) formulas of wealth distribution were successful hypotheses of universal stability. These hypotheses were unpredictable for the fiscal marketplace (Swisher & Kasten, 2005). Post-modern portfolio theory (PMPT) offered shareholders other alternative approaches for wealth distribution, which minimized a portfolio's predictable returns for an acceptable level of risk tolerance. The main improvement of PMPT was that it differentiated that normal variation was a deprived substitute for how investors valued risk. Risk termed as an affecting state. Investors experienced anxiety for pessimistic predictable return (Swisher & Kasten, 2005).

Economic forecasters questioned the correctness of portfolio forecast software that used MPT, which clustered the likelihood for the marketplace progresses of the normal distribution. This postulation guided the prospect and portfolios that dissatisfied shareholders. A more appropriate portfolio-producing apparatus recognized additional allocations for further surrounding within the marketplace activities. Economic forecasters and speculation analysts, and customers flung when the 2008 financial crisis caused enormous changes in the market (Tomasula, 2009).

Delineating an approach to acquire a steady and stable flow was essential for wealth distributions. Simultaneously, finance expectations' goals were donations and inheritance. Financial forecasters proposed that administration long-life risk entailed that shareholders decreased expenditure for deprived marketplace performance (Fullmer, 2007). The conservative method frequently was unsuccessful to term the speculation dilemma correctly. Efficiency used to entirely deal with long-life risk making sure that suitable and absolute procedures were functions of risk and risk dislike for this dilemma. The MPT was an insufficient structure of portfolio plan. A diverse epoch technique developed for the currency availability to administer the long-life risk of the portfolio. Long- life risk changed for speculation risk and dynamically controlled it for shareholders' portfolio instead of the expenditure plan. This method was mostly useful for shareholders who desired to maintain a consistent livelihood (Fullmer, 2007).

In 1959, Markowitz published his book titled *Portfolio Selection*, which set the groundwork for MPT. This effort highlighted the theories of Markowitz, Sharpe, and Miller and led to a Nobel Prize in 1990 due to his hypotheses for fiscal finances (Sumnicht, 2009). Efficient frontier noted to be one of the standards of MPT and to verify it; Markowitz (1959) made use of the mean-variance optimization (MVO) technique, which involved the calculation for predictable returns, normal deviation, and relationship. The MVO was not new within the business environment for portfolio plan (Sumnicht, 2009). The MPT had shortcomings for academic efforts of the actual living speculation administration. Markowitz (1959) stated that downside semi-variance could construct superior portfolio compared to normal divergence. Sumnicht (2009) claimed that both formulas MVO and MPT were similar, but he argued that MVO was not a useful formula to verify shareholders' best portfolio distribution within the current financial crisis. He concluded that MPT outdated (Sumnicht, 2009).

The financial crisis of 2009 caused many individuals to have different points of view, which appeared in popular mass communication outlets. The universal critic of MPT and its conclusion was that diversification was the favored technique for portfolio selection (Evensky, 2009). The MPT was not effective and it did not linked to the practice of risk management. The MPT based on past statistics. Markowitz's (1952) work was useful for assessing the effectiveness of this claim for MPT (Evensky, 2009).

Markowitz's (1952) MVO tended to choose wealth that provided the appealing superior returns and incorporated less risk. This approach overlooked wealth that produced negative returns when contributions quantified for errors. This approach always offered a flexible

resolution and tended to exploit errors for speculation activity. Indicators of risk showed that the estimating technique of post-modern portfolio formulas expanded a Sharpe ratio to 100% within all illustrations (Galoppo, 2010). Investment facts are normally risky. Markowitz's (1952) MVO shaped the modern economics, which helped managers to allocate assets. Rational shareholders made savings assessments primarily based on uncertainty capitals' probable returns, including risk. A portfolio is said to be mean-variance effectiveness if that portfolio provided the minimal risk for a certain level of portfolio probable returns. Markowitz's approach did not apply to the quadratic encoding formula because that approach was difficult to use. Markowitz's approach performed less in the application of the actual data; Markowitz's (1952) formula offered no statistical significance (Galoppo, 2010).

PERFORMANCE OF MUTUAL FUNDS

Bello (2009b) analyzed the performance of five categories of U.S. domestic equity mutual funds: aggressive growth, small company, growth, growth and income, and equity income 1 year after a downturn. Declines in 1990 and 2001 were the focal point of Bello's study. The declines noted by the National Bureau of Economic Research (NBER) differentiated for the downturn in stock mutual fund values. Every investment strategy that followed convention rules showed negative results. Bello (2009b) noted, "For example, the rule of thumb which dictates picking small capitalization common stocks in the ensuing 12 months after a recession produced good results after the recession of 1990, but produced disappointment results after the recession of 2001" (p. 6). The rate of return for common stocks and stock mutual funds drastically differentiated in both declines. Throughout the 1990s downturn, stock mutual funds produced superior performance for the post downturn epoch and confirmed previous studies about stock performance (Bello, 2009b).

In the United States, the dynamically controlled trade impartiality mutual funds provided a significant amount of funds to the financial market for resources while generating an enormous amount of executive charges. These types of finances often attracted numerous shareholders because these finances provided an expedient approach for the following: savings, combination profits, and convertible assets. An analysis of the relationship amid the performance and attributes for 1,779 households' dynamically controlled trade impartiality mutual funds for the varied expenditure ratio established. Universal mutual funds did not offer superior performance in comparison with its benchmark excluded costs (Haslem, Baker, & Smith, 2008).

In 1972, the U.S. Securities and Exchange Commission (SEC) implemented guidelines for mutual fund's performance payment measures. After several decades, however, the SEC's investigators for finance's performance payments concluded that the regulations overriding mutual fund support payment measures were not palpable for various compliments. Rule 205-1 for the Advisors Act stated that the support payment measures could be computed as follows: they associated with a solitary standard for the whole finance's performance; they made use of

the whole finance's performance. The support payment measures focused on the finance's performance computed for the rate of variation for the finance's overall wealth cost (Murphy & Bourgeois, 2006).

Shareholders encountered numerous obstacles to building a solid savings portfolio to maximize their wealth. Shareholders built and maintained assets by buying stocks from a variety of accessible mutual funds; numerous stockholders depended on these types of finances to generate comfortable withdrawal earnings. The savings portfolio's strategy became even more significant with the support of the government and the marketplace to take economic enterprise out of the state's control; businesses changed the annuity weight for a 401k plan. This plan usually controlled by the workforce (Kozup, Howlett, & Pagano, 2008).

The universal fiscal marketplace conferred other difficulties for freedom from regulation of lawful limitations. These lawful limitations predicted mutual fund asset management companies (AMCs) to modernize predicted modifications, making sure that they readjusted by applying the innovative marketplace stipulations. Development's choice savings opportunity was to attract various shareholders into well skilled practitioners' circles so that their investment could be reliable. The vital goal of AMCs was equilibrium of risk and return relationship (Walia & Kiran, 2010).

Shareholders sought facts about risk and predictable return relationship reliability to solve divergence issues and deal price facts for savings conclusions. Mutual fund's advertisement provided shareholders with essential facts to maximize their portfolios. However, mutual fund's advertisement granted no useful facts to shareholders to maximize their wealth. Mutual funds used the approaches that were capable of enhancing the probability that allowed their advertisement to be seen. Mutual funds made use of the approaches that were able to reduce the distribution for their advertisement (Huhmann & Bhattacharyya, 2005).

Shareholders depended on mutual fund's advertisement and unconfirmed predictable return to assess finance buying opportunities. Pecuniary analysts used a small pragmatic effort to examine mutual fund's conclusion procedure. The role of a variety of finance distinctiveness used by the economic analysts was vital in practice when proposing mutual funds and the significance of different knowledge resources. Fiscal analysts emphasized more on inclusive statistics resources, sovereign ranks and emphasized less on the finance publicity including accepted journalist's communications. When selecting between mutual funds, fiscal analysts focused on the performance compared to the additional finances with comparable techniques: finance goal, finance risk, finance executive seniority, and finance executive standing (Jones, Lesseig, & Smythe, 2005).

Scholz and Wilkens (2005) used Sharpe and Treynor ratios to acquire an understanding of portfolio performance. Investigations made to determine how finances selected and analyzed for shareholders' general portfolio. These postulations were essential to Scholz and Wilkens' study. The expected returns of all assets were superior compared to the risk-free rate; the

standard deviation of the expected returns of all assets and their betas were superior to zero. As a result, the shareholder could not short sell all the assets (Scholz & Wilkens, 2005).

The performance of mutual funds generated interests within the intellectual arena. Mutual funds granted no superior predictable returns against the marketplace for their finance executive as stated in Sharpe's disparity for proficient marketplace theory. This theory stated that financial securities' costs previously factored in the entire accessible facts if predictable return for active and passive portfolio were identical. Treynor ratio for portfolio performance used to compute the marketplace's risk and predictable returns (Chakraborty, Jain, & Kallianpur, 2008).

In 2009, shareholders' conclusions based on mutual funds diminished; shareholders had a tendency to emphasize historical performance and neglected prices that could affect investment optimistically or pessimistically when selecting portfolios (Pontari, Stanaland, & Smythe, 2009). The guidelines for finance publicity within the United States mandated that price fact be known while performance fact was also a known variable as set forth by the mutual fund marketplace's solitary-regulatory agency. Historical performance fact remained as the key pointer for finance impartiality; shareholders looked for positive track evidence before investing their assets within any chosen financial entities (Pontari et al., 2009).

Shareholders built effortless loaded portfolios for hedge funds if their performance distinctiveness governed the leading finances using different performance measures such as alpha, Sharpe ratio, and information ratio. The institutional shareholders chose their hedge funds and built their portfolios of finances to maximize their wealth. Researchers then provided shareholders with a means to evade paying for additional executive and performance payments, which in turn negatively burdened portfolios' performances. Shareholders contrasted performance with various savings potentials by making use of different performance procedures: Sharpe ratio, alpha, and information ratio when selecting their portfolios in order to maximize predictable returns (Gregoriou, Hübner, Papageorgiou, & Douglas Rouah, 2007).

The actual assets savings of mutual funds' expected returns normally existed for expected return of an effortless price loaded indicator. A price-loaded portfolio for entire mutual funds granted no superior expected returns for its standards on the overall payments. Great portions of these mutual funds dynamically controlled. The great portion was significant to assess the finances performance for extra passive standards (Hartzell, Mühlhofer, & Titman, 2010).

Traverse-sector supremacy for various different aspects formulas could be used to illustrate mutual fund's predictable return and analyze the outcomes by using these formulas to investigate mutual fund's performance. The expert funds executives were able to secure worth, magnitude, and impetus quality, which inferred for theoretical hedge portfolio that delineated these variables. The aspect substitute methodically favored performance approximations for mutual funds. The aspect substitute within the normal aspects methods focused on the theoretical stock portfolio, which excluded deal prices, deal impact, and dealing limitations (Huij & Verbeek, 2009).

The efficient marketplace theory stated that the savings executive was worthless; regardless, shareholders could enhance with a passive savings strategy by making use of the marketplace's indicator choice. The survival for a noteworthy mutual fund marketplace elaborated a faith opposing to this point of view. The expansion for several performance standards provided shareholders with a degree of freedom in order to evaluate several portfolios choices and instituted that variation could lessen methodical risk. Mutual funds provided shareholders with the necessary means to accomplish the potential outcomes (Prince & Bacon, 2009).

Sharpe and information ratios universally used to assess mutual fund performance. Sharpe and information ratios had a high probability of occurrence to produce irregular status if finance predictable return was pessimistic. Proficient ratio as the latest performance measure was the best way to deal with this issue. Proficient ratio generated the finance position, which was essentially inconsistent with the governance regulations for mean-variance examination (Wen-Kuei, Yin-Jen, & Tsung-Chuan, 2008).

Sharpe ratio globally recognized as the primary risk amended performance quantification method. Sharpe ratio computed the correlation amid risk mean-surplus predictable return and the normal divergence for expected return produced by using finance portfolio, which quantified. Hedge funds and additional choice savings produced expected return that contained a nonstandard allocation and these funds could not be sufficiently assessed by using Sharpe ratio. The investigation for hedge finance statistics, which contrasted Sharpe ratio for extra performance quantifiers, discovered practically similar position for several quantifiers (Eling, 2008).

Shareholders' skills and facts developed for the long-run and therefore shareholders happened to be well acquainted when they distributed their wealth diagonally about contrary technique characteristics. Cost and bulk finances lead the mutual funds marketplace. Expansion finances offered superior performance quantification compared to cost finances, which showed obvious inconsistencies in portfolio performance position for superior performance quantification including Sharpe indicator. The surplus performance quantifier for expansion finances could be a reward for the characteristic risk. The existence expansion finances were usually ineffective for risk and predictable return relationship measurement (Chow, Denning, & Zhaodan, 2008).

Mutual fund commerce provided investors with a degree of freedom in order to secure their reasonable ratio for the marketplace's predictable returns. Mutual fund marketplace did not dominate the financial industry. Lee (2009) argued that emphasis placed on stock alternatives, and he further argued that emphasis also placed on managers' salaries. Shareholders were not involved in corporation governance. Mutual fund commerce focused on revenues instead of considering shareholders as the driving force for the stability of the industry (Lee, 2009).

RATE OF RETURN

Markowitz (1952) stated that there were two key factors for portfolio choice: (a) expected (mean) return (E), and (b) variance of return (V) for the entire portfolio choice. These two factors were the theoretical basis of MPT. He proposed an axiom for how shareholders choose portfolios (Markowitz, 1999). Markowitz (1999) argued that the portfolio's expected return was the summation of the expected returns on each financial securities; he also claimed that the variance's return on the portfolio was a specific function of the variances, covariances, financial securities, and their sums within the portfolio.

Markowitz (1952) differentiated amid proficient and ineffective portfolios. He further illustrated the position of the proficient mean-variance mixture (Markowitz, 1999). The mean-variance including covariance of fiscal securities could be guesstimated by a mixture of numerical scrutiny. The mean-variance was not limited to the fiscal securities forecaster conclusion (Markowitz, 1999).

Burgess and Bey (1988) discussed the significance of Markowitz's (1952) portfolio analysis effort, but Markowitz's effort had its constraints for its application. The three main grounds for this constraint were as follows: (a) the formula entailed several contribution guesstimates, (b) the parabolic encoding resolution process entailed greatly processor room and era, and (c) the formula's difficulty and noninstinctive character was too complex for consumers. In order to solve this dilemma, Sharpe expanded a sole indicator formula that approximated the necessary discrepancy contribution model. Sharpe's main goal was to diminish the following: (a) quantity of contribution statistics, (b) era, and (c) price in order to acquire a resolution (Burgess & Bey, 1988).

Fama and McBeth (1973) examined risk and return correlation for the New York Stock Exchange's universal stock. The hypothetical foundation of risk and return correlation focused on the two-parameter portfolio formula and the formulas of the marketplace equilibrium developed from the two-parameter portfolio formula. Shareholders assessed investments for an acceptable level of risk tolerance without knowing the outlays associated with dealings and information. The principal marketplace presumed to be ideal. The most favorable portfolio for any shareholders said to be resourceful if there was not another portfolio that provided similar or superior predictable return for lesser dispersal of returns (Fama & McBeth, 1973).

Lashgari (2008) extended a quantifier for portfolio to follow inaccuracies within the marketplace. This quantifier served as the standard return, and the norm for evaluating performance outlays. The pointer for performance was hypothetically constant with the principles associated with MPT. If the contrasting standard related to the funds invoice's expected returns, the indicator then looked like the Sharpe ratio. The steadiness for this universal applied standing apparatus analyzed by making use of data gathering from Morningstar mutual funds. The supplementary profit, performance indicator, and skills used to provide useful

information about separations of assets and mechanisms of risk in the fiscal marketplaces (Lashgari, 2008).

Financial analysts used the universal markers of commerce and economic status to forecast mutual funds' expected returns for a specific timeframe. These markers considerably forecast mutual funds' expected returns from 1991-2006. The marker of economic status provided the best assumption for the future. The default-risk premium and term premium provided adequate returns yet they were not steady enough compared to markers of mutual funds' expected returns (Bello, 2009a).

The MPT used to decide the best possible distribution of assets. The MPT optimized the predictable return for advertising assets based on shareholders' degree of risk tolerance. The previous outcomes used for 137 advertising inquiries. Fask and Heim (2008) stated that Markowitz's (1952) mean-variance approach used to diversify and maximize advertising portfolio returns. Mean-variance provided the most favorable probable advertising portfolio return for a degree of risk tolerance (Fask & Heim, 2008).

The efficient market hypothesis (EMH) used and focused on the following: pragmatic conclusions in the 1960's throughout the 1990's titled Supporting Empirical Findings i.e., 1960's, Mixed Empirical Findings from the 1970's through the 1980's, and Challenging Empirical Findings i.e., 1990's. The dispute of the twenty-first century illustrated for practical proof and a conclusion obtained for the general appraisal applying the EMH (Yen & Lee, 2008). Fama (1965) concluded that the EMH achieved practical hold up by testing the theory for variation within value being autonomous. In the 1990's, several researchers questioned the validity of the EMH and aimed to substitute it by the performance economics technique (Yen & Lee, 2008). In the 1970's throughout the 1980's, different scholars offered their views about the EMH, which allowed the efficient market hypothesis to gain some supports; others were against the efficient market hypothesis (Yen & Lee, 2008).

The weak structure of the wealth marketplace's effectiveness hypothesis applied that no probable laws existed of time sequence for costs and deals securities for a controlled marketplace. The weak structure analyzed using the EMH as a basis to analyze daily final values. The relationship of single securities values to deal securities investigated in a controlled marketplace. This relationship confirmed the prior results of the investigations for the stock marketplace indicators within the U. S. and additional countries' stock trade (Jarrett & Kyper, 2006).

Baba and Goko (2009) examined the aspects and manipulated the endurance likelihood of hedge funds gathered from the Lipper TASS folder. Specific attention situated on the following: non-normality of expected returns and resources below managing, short-term assets outflows, and liquidity limits linked with hedge funds' abolition strategy. Hedge funds expected returns were extremely unstable for their common acuity about their weighty employ to influence (Baba & Goko, 2009). Baba and Goko (2009) claimed that the Cox proportional hazards model and the panel lagit model could be used to guesstimate outcomes. They argued that both models showed

assets, which had a significant high insolvency probability between other assets based on assets with low asymmetry in expected return, assets with instant wealth outflows, and assets experiencing a short redemption notification time and high redemption occurrence (Baba & Goko, 2009).

Twelve months forward estimates analyzed for dynamically controlled equity mutual funds. This technique expanded different features of the estimate formula. This technique estimated the fund supervisor's financial approach. This technique also predicted probable returns for correlated equity resources. The outcomes indicated that the estimate formula significantly modified the estimate authority. The estimated formula inferred historical expected returns of the potential. Specifically, several formulas diminished the complete inaccuracy by an amount of 30% in contrast with the inexperienced formula (Stotz, 2009).

Risk and shareholders' outlook compared for cross-sectional expected returns within the Tunisian stock marketplace. Abdelhedi, Abbas, and Boujelbene (2009) stated that Fama and French (1993) used to investigate the descriptive influence. Carhart (1977) related to risk features for the cross-section of the stock probable returns (Abdelhedi et al., 2009). The outcomes indicated that there was sufficient proof of invasive marketplace and dimension for portfolio expected returns (Abdelhedi et al., 2009).

Opdyke (2007) used Sharpe ratio in order to produce confidence intervals for restrictive theory, and theory of usually distributed expected returns. An easily applied method provided for an infinite distribution. This easy applied method was suitable for the following: fixed and process returns. Opdyke (2007) argued that Sharpe ratio was superior to zero if the performance of the financial securities provided greater expected returns for a certain level of risk. Thus, the Sharpe ratio of one asset was greater compared to another asset.

Ibbotson (2010) placed emphasis on asset allocation strategy when selecting portfolios to gain superior expected returns. Long-term asset allocation strategy combine discussed and incorporated these variables: time, securities selection, and charges. Hood and Beebower (1986) concluded that the strategy combine clarified 93.6% standard of finance's expected returns dissimilarity with time (Ibbotson, 2010). Ibbotson and Kaplan (2000) and Hensel, Ezra, and Ilkiw (1991) found that a majority of the difference in finance's expected returns generated from marketplace development and these finances varied by asset allocation (Ibbotson, 2010).

Leonard (2009) analyzed the unanticipated equity recession in October and November of 2008. The following parameters investigated: large capitalization stocks, large capitalization value stocks, micro capitalization stocks, and small capitalization value stocks with a timeframe ranging from 12, 36, and 60 months instantly following the foremost bear marketplace. The outcomes indicated that risk payments were beyond standard phases for an excessively tolerant marketplace. The outcomes also indicated that the benefit's category of risk payments for micro capitalization stocks and small capitalization value stocks surpassed their normal tolerant marketplace probable returns on a scale superior to speculation (Leonard, 2009).

Best, Hodges, and Yoder (2007) used the Sharpe ratio in order to assess portfolio performance. Expected returns gained by shareholders linked to portfolio performance for a degree of risk acceptance. The outcomes showed that Sharpe ratios calculated for diminutive-period returns did not need to be used to determine long-term funds distribution's assessments. The comparative Sharpe ratio position was within range between the stock marketplace and connection portfolios, which diversified for investment-time. These portfolios differentiated for associated expected returns and autonomous expected returns (Best et al., 2007).

The expected return of attribution granted a device, which allowed investment executives to quantify portfolio performance in order to maximize their shareholders' wealth. A degree of risk tolerance was taken under consideration. There was noteworthy proof that benefits for expected returns focused on other relevant drivers rather than a solitary risk feature in which the Fama-French model could be used for clarification (Johnson & Nesbitt, 2009). Johnson and Nesbitt (2009) stated that the expected returns linked to several assets for a given level of risk tolerance were cost effective, and shareholders could easily obtain them.

Andrei, Stefanescu, and Oancea (2010) supported the quantitative research methodology that applied in this research study. Andrei et al. (2010) applied quantitative research methodology in order to assess the relaxed financial system in Romania; they aimed to assess the bulk of an unknown financial system on the grounds of mathematical and statistical formula. Andrei et al. (2010) used Hodrick-Prescott filter to measure the following parameters: money outside the depository system of econometric model, the official economy, and hidden economy transactions. McElroy (2008) claimed that economists commonly used the Hodrick-Prescott (HP) filter to guesstimate the behavior of prices in a financial market and phases using period sequences data.

RESEARCH QUESTION AND HYPOTHESES

In this study, the main research question was: Does a mutual fund portfolio provide a superior return than the DJ? The following hypotheses, developed from the main research question.

H1₀: During the 2005 to 2010 timeframe, there is no significant difference between the mean average return for a mutual fund portfolio and the DJ.

H1_a: During the 2005 to 2010 timeframe, there is a significant difference between the mean average return for a mutual fund portfolio and the DJ.

H2₀: During the 2005 to 2010 timeframe, there is no significant difference between the mean Sharpe ratio for a mutual fund portfolio and the DJ.

H2_a: During the 2005 to 2010 timeframe, there is a significant difference between the mean Sharpe ratio for a mutual fund portfolio and the DJ.

H3₀: During the 2005 to 2010 timeframe, there is no significant difference between the mean average risk for a mutual fund portfolio and the DJ.

H3_a: During the 2005 to 2010 timeframe, there is a significant difference between the mean average risk for a mutual fund portfolio and the DJ.

SAMPLE

The Yahoo! Finance databases were used to obtain secondary data for the period of 2005 to 2010 for analysis. When collecting the data, 61 small-cap mutual funds were identified, from which a nonrandom sample of 20 small-cap mutual funds were selected for this study. The sample of 20 small-cap mutual funds were tested against the performance of a sample of 20 data points starting and ending from December 31, 2005 through December 31, 2010 for the DJ.

PRESENTATION OF THE FINDINGS

The main research question was: Does a mutual fund portfolio provide a superior return than the DJ? Descriptive statistics are provided in Table 1 and Table 2 for the mutual funds data and the DJ, respectively. The outcomes of the one-sample *t*-tests used to test the hypotheses are shown in Table 3 and Table 4.

Small-cap mutual funds provided statistic means from \$28.81 to \$26.45 (see Table 1), while the DJ provided statistics means from \$13.76 to \$11.33 (see Table 2). By observation, the mutual fund portfolio outperformed the DJ as indicated in Table 1 and Table 2. The small-cap mutual fund portfolio provided an expected return of \$33.28 for an acceptable level of risk of \$35.32, while the DJ provided an expected return of \$13.35 for an acceptable level of risk of \$16.12.

Table 1								
DESCRIPTIVE STATISTICS FOR MUTUAL FUNDS PORTFOLIO								
Variables	N statistic	Range statistic	Minimum statistic	Maximum statistic	Mean statistic	Std. error	SD statistic	Variance statistic
ER	20	12.4	20.88	33.28	27.3	0.77	3.44	11.83
Beta	20	13.27	22.05	35.32	28.81	0.78	3.5	12.27
Variance	20	13.05	20.23	33.28	26.45	0.78	3.5	12.23
SD	20	13.11	21.64	34.75	27.79	0.78	3.47	12.06

Note. ER = Expected returns, SD = Standard deviation, Sharpe ratio = 0

The outcomes of the one-sample *t*-test indicated that the test statistics were significant $t(19) = 35.49$, $0 < 0.05$, which indicated that there was evidence to reject the null hypothesis $H1_0$. This outcome backed the alternative hypothesis $H1_a$, which indicated that during the 2005 to 2010 timeframe, there is a significant difference between the mean average return for a mutual fund portfolio and the DJ. Conversely, the one-sample *t*-test was significant $t(19) = 0$, $0 < 0.05$. There was evidence to reject the null hypothesis $H2_0$. This outcome backed the alternative hypothesis $H2_a$, which indicated that during the 2005 to 2010 timeframe, there is a significant difference between the mean Sharpe ratio for a mutual fund portfolio and the DJ. There was

significance if a p value was less than alpha (0.05). Furthermore, the one-sample t -test was significant $t(19) = 36.77, 0 < 0.05$. There was evidence to reject the null hypothesis H_{30} . This outcome backed the alternative hypothesis H_{3a} , which indicated that during the 2005 to 2010 timeframe, there is a significant difference between the mean average risk for a mutual fund portfolio and the DJ.

Variables	N statistic	Range statistic	Minimum statistic	Maximum statistic	Mean statistic	Std. error	SD statistic	Variance statistic
SR	20	7.38	9.09	16.47	12.12	0.39	1.76	3.09
TR	20	6.62	10.98	17.6	13.76	0.4	1.77	3.14
JM	20	5.02	8.33	13.35	11.33	0.35	1.55	2.42
RRR	20	6.9	9.22	16.12	12.41	0.39	1.73	3.01

Note. SR = Sharpe ratio, TR = Treynor ratio, JM = Jensen measure, RRR = Risk-reward ratio

The results demonstrate that a mutual fund portfolio provided a superior performance over what was yielded by the DJ. This outcome is consistent with the results of past studies related the performance of mutual funds and the DJ. As displayed in Table 3 and Table 4, there was evidence to reject all null hypotheses because all p values were less than alpha (0.05). As displayed in Table 1 and Table 2, the mutual fund portfolio constructed with the fundamental principles of MPT overall outperformed the DJ in comparison with a mean expected return = \$27.30, maximum = \$33.28, minimum = \$20.88, range = \$12.40, and a Sharpe ratio = \$0, a mean beta (risk) = \$28.81, maximum = \$35.32, minimum = \$22.05, and range = \$13.27 (see Table 1), while the performance of the DJ had a mean Sharpe ratio = \$12.12, maximum = \$16.47, minimum = \$9.09, and range = \$7.38, a mean Treynor ratio = \$13.76, maximum = \$17.60, minimum = \$10.98, and range = \$6.62, a mean Jensen measure (expected return) = \$11.33, maximum = \$13.35, minimum = \$8.33, and range = \$5.02, a mean risk-reward-ratio (risk) = \$12.41, maximum = \$16.12, minimum = \$9.22, and range = \$6.90 (see Table 2). This means that MPT is focused on the basic effectiveness of markets; past financial markets' performance can increase the performance of mutual funds even in the presence of an economic recession (Markowitz, 2006). As a result, the performance of a mutual fund portfolio relied on markets' performance, diversification, risk, and expected return.

The MPT backs that shareholders can maximize expected returns with an acceptable level of risk through diversification. To earn superior expected returns, shareholders are subject to a higher level of risk to achieve their financial goals (Markowitz, 2006). Markowitz (1952) stated that shareholders anticipate to be rewarded for taking high levels of risk when selecting their portfolio ensure that efficient portfolios can be located.

					95% CI	
	t	Df	Sig. (2-tailed)	Mean Difference	Lower	Upper
ER	35.5	19	0	27.3	25.69	28.91
Beta	36.8	19	0	28.81	27.17	30.45
Variance	33.8	19	0	26.45	24.81	28.08
SD	35.8	19	0	27.79	26.16	29.41

Note. ER = Expected returns, SD = Standard deviation, CI = Confidence Interval

					95% CI	
	t	Df	Sig. (2-tailed)	Mean Difference	Lower	Upper
SR	30.83	19	0	12.12	11.3	12.94
TR	34.72	19	0	13.76	12.93	14.59
JM	32.58	19	0	11.33	10.6	12.05
RRR	32.01	19	0	12.41	11.59	13.22

Note. SR = Sharpe ratio, TR = Treynor ratio, JM = Jensen measure, RRR = Risk-reward ratio

RECOMMENDATIONS FOR ACTION

The MPT remains a key technique to enhance portfolio's performance despite the condition of the economic crisis. Shareholders, investment institutions, and individuals ought to focus on applying the concepts of MPT when selecting their portfolios and incorporating these concepts to help achieve effective business practice. The shareholders' financial needs should be recognized by business practitioners to ensure that the risk level and return associated with an investment is understood and agreed upon. The shareholders' feedback across the board should also be taken into consideration as part of effective business practice and procedures when constructing portfolios (Berete, 2011).

Academics should pay particular attention to the outcomes of this study because it indicates important financial skills that should be taught to students. Practitioners should also pay note because they can use the outcomes of this study to improve business efficiency. Jointly over time, the administered of portfolios' financial transactions can be improved to achieve superior expected returns for a chosen level of risk tolerance (Kono, 2008).

RECOMMENDATIONS FOR FURTHER STUDY

This study is included among several studies with an emphasis on the mutual fund industry and the DJ through an economic downturn. The intent of this study was to compare the performance of a mutual fund portfolio using the fundamental principles of MPT against the DJ. In future studies, other statistical software and methods could be utilized to further explore the relationship of performance between mutual fund portfolios and the DJ. A larger scale analysis particularly could be beneficial. Additionally other factors that may affect the performance of the United States and global financial markets through an economic recession should be examined. This type of analysis would enhance the literature and increase the understanding of shareholders on the mutual fund industry and the DJ. The research was conducted in association with Walden University under Institutional Review Board (IRB) approval number: 11-07-11-0169107

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MARKET BREAKDOWN OF THE DECLINING MARGINAL REACTION OF ADR ISSUERS

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ABSTRACT

Previous research has found that non-US firms that initiate an American Depository Receipt (ADR) program experience a reduction in their cost of capital and that such reduction in the cost of capital for a firm is less than the cost of capital reduction experienced by previous ADR-issuing firms from the same country. While previous research report findings for this decreasing cost of capital effect for all ADR issuers as a group, this study reports significant results within individual countries.

INTRODUCTION

The purpose of this study is to determine if firms with an American Depository Receipt (ADR) program experience smaller abnormal returns at the time of issuing an ADR than previous firms in the same market during the previous firms' ADR's issuance. This study is similar to Blaylock and Duett (2004) who find a decreasing cost of capital effect for individual ADR issuers. However, whereas Blaylock and Duett report significant findings for ADR issuers as a group, this study reports significant results within individual countries.

An ADR is a negotiable security representing a particular number of shares of a foreign company's publicly traded equity or debt, although most ADR programs are associated with equity (BNY MELLON 2012). ADRs offer benefits to both investors and issuing companies. For investors, ADRs provide an easier method of international diversification than buying the foreign security directly. ADRs can be exchanged for the underlying securities (Sundaram and Logue 1996; BNY MELLON 2012), but unlike trading in the underlying securities, transfer and settlement practices for ADRs follow more familiar U.S. law (Sundaram and Logue 1996). Depending on the level of the ADR program, information is more readily accessible due to SEC disclosure (Sundaram and Logue 1996). Also, investing in the underlying security itself may entail custodial safekeeping charges which are eliminated when investing in ADRs (BNY MELLON 2012). Foreign exchange complications are lessened since ADRs are quoted in U.S. dollars and dividend and interest payments are in U.S. dollars. Moreover, foreign currencies are converted by the depository bank at wholesale prices (Sundaram and Logue 1996; BNY MELLON 2012). More importantly, due to investment barriers and limited investment vehicles, ADRs are a viable means to invest in specific international markets which otherwise may not be accessible. For foreign firms, ADRs provide a means to access the more liquid U.S. equity

markets at a possible cheaper cost of capital, expand their name recognition (Foerster and Karolyi 1993, 1999; Jiang 1998; BNY MELLON 2012), enlarge their investor base (Jiang 1998; Foerster and Karolyi 1999; BNY MELLON 2012), and make acquisitions (Jiang 1998; BNY MELLON 2012).

Five basic types of ADRs exist: unsponsored ADRs, three levels of sponsored ADRs, and one type of sponsored privately-placed ADR. Unsponsored ADRs occur when a depository issues ADRs without a formal agreement with the underlying company. Unsponsored ADRs are rarely created at present. Level I ADRs trade in the U.S. over-the-counter (OTC) market and are not required to meet full Securities and Exchange Commission (SEC) disclosure or comply with U.S. Generally Accepted Accounting Principles (GAAP). For this reason, Level I ADRs are the largest and fastest growing type of ADR (Miller 1999). Level II and Level III ADRs are listed on major exchanges such as NYSE, AMEX, and NASDAQ. Both types must comply with GAAP but each require different levels of SEC disclosure. Since Level III ADRs are used to raise new capital on U.S. exchanges, they incur full SEC disclosure. Rule 144a ADRs are sponsored ADRs used to raise new capital through private placement. As a privately-placed security, they avoid SEC disclosure.

Investors desire international diversification due to the possible low correlations among international equity markets which, of course, would reduce the variance of the investor's portfolio achieving a better risk-return trade-off (Speidell and Sappenfield 1992). However, barriers to investment exist causing segmented markets and higher risk premiums (Foerster and Karolyi 1993). American Depositary Receipts bypass these barriers integrating markets and reducing the cost of capital for the issuing firm. Bekaert and Harvey (2000) find that ADRs from emerging markets gradually reduce each market's aggregate cost of capital as the segmented markets become more integrated with the world market. This would suggest, at the firm level, a general pattern of a declining marginal cost of capital effect for every additional firm issuing ADRs from the same market. In other words, the reduction in the cost of capital of the firm initiating the second ADR program should be less than the reduction in the cost of capital of the firm initiating the first ADR program. Also, as more ADRs are issued in the market, existing ADRs should experience a continued reduction in the cost of capital albeit at a decreasing rate. This study attempts to analyze the cost of capital effects for the marginal ADR-issuing firm within each country.

REVIEW OF THE LITERATURE

Chang, Eun, and Kolodny (1995) assert that diversification gains as measured by index returns are often not achievable since actual investment in the market may be hindered either directly or indirectly. To reap the benefits of diversification, investors would need a means to access the international markets. Achievable investments given by Bekaert and Urias (1999) that circumvent these barriers are closed-end funds, American Depositary Receipts, and open-end

funds. They find that these investment types are found to provide significant diversification benefits in the 1993-1996 test period.

Barriers to international investment would at least partially segment international equity markets and produce a higher risk premium on shares traded on the restricted markets (Errunza and Losq 1985; Foerster and Karolyi 1993). Market segmentation is the condition of heterogeneous pricing of assets with the same risk level. Since barriers to international investment tend to segment capital markets and, accordingly, increase risk premiums, removing these barriers would open the segmented markets to a greater level of foreign investor activity. This process of removing barriers is coined in much of the literature as stock market liberalization. Liberalizations would integrate segmented markets and should reduce the cost of capital. The drop in the cost of capital after a liberalization may imply that the market was segmented prior to the issue. Evidence provided by Miller (1999), Foerster and Karolyi (1999), Bekaert and Harvey (2000), and Henry (2000) show that liberalizations reduce or bypass investment barriers resulting in a reduction in the cost of capital for the liberalizing market or for the cross-listing (liberalizing) firm. The reduction in the cost of capital is used as evidence that the market was segmented prior to the liberalization.

Bekaert and Urias (1999 p.92) state, "The returns investors can expect to earn in emerging markets are likely to fall as integration proceeds. Specifically, the integration process may lead to one-time discrete price hikes that bring about lower expected returns going forward" (see also Bekaert and Harvey 2000). Bekaert (1995) finds that markets with a greater number of country funds and ADRs have a lower average cost of capital. Bekaert and Harvey (2000) find that market liberalizations subsequent to the initial liberalization reduce the cost of capital for the issuing emerging market at a decreasing rate.

Following this reasoning, once ADRs are issued, a liberalizing action, the market of the issuing firm can be perceived to be more integrated with the world market, and, as a result, both the market and the issuing firm experience a reduction in the cost of capital. However, a question arises as to how each additional ADR, as well as any other additional liberalization, affects the integration process. As Henry (2000) notes, if complete integration is achieved with the initial liberalization, then subsequent liberalizations would have a minimal if no effect on the cost of capital. This would be the case because either the market became fully integrated with the first liberalization or future liberalizations were anticipated so that the cost of capital was adjusted at the initial liberalization. However, integration may be a gradual process so that each additional liberalization after the first continues to integrate the liberalizing market with the world market. If this is the case, each additional liberalization would cause the market to experience a reduction in the cost of capital at a decreasing rate until the market is fully integrated.

ADR issuance results in a reduction in the cost of capital for the issuing firm (Miller 1999). The cost of capital effect is interpreted as a breaching of segmented markets. Market liberalizations, including ADR programs, may also reduce the cost of capital for the liberalizing market as a whole for the same reason (Bekaert and Harvey 2000; Henry 2000). Liberalizations

subsequent to the first, as indicated by Bekaert and Harvey (2000), continue to integrate segmented markets which lead to a further reduction in the cost of capital for the market. Applying this to ADRs, firms that issue ADRs should experience a cost of capital reduction, along with an aggregate cost of capital reduction in the liberalizing market. The gradual nature of integration and the resulting cost of capital changes imply that the cost of capital effect from every subsequent ADR diminishes. This is seen in Bekaert and Harvey (2000): every additional ADR reduces the aggregate cost of capital for the market at a decreasing rate. Yet, what is the effect on the cost of capital for the marginal ADR-issuing firm itself? Blaylock and Duett (2004) find that the cost of capital does decrease for the marginal firm during the listing of its ADR but not during the announcement of its ADR. They report their findings for all the analyzed ADR issuers as a group. This study attempts to analyze the decreasing marginal cost of capital effect by country. Specifically, the purpose of this study is to determine if firms with an ADR program experience smaller abnormal returns at the time of issuing an ADR than previous firms in the same market during the previous firms' ADR's issuance and to report such abnormal returns by country. The terms "issuance" and "initiated" as used here and throughout the study refer to either the listing of an ADR program or the initial announcement of an ADR program.

DATA AND METHODOLOGY

The sampling procedure follows that of Blaylock and Duett (2004). Thus, daily returns of each of the first 10 ADRs originating from the 20 emerging markets in Bekaert and Harvey (2000) (which is inclusive of the list of emerging markets in Henry) are needed as well as market indices from those markets. As indicated below, a country must have at least two ADR programs to be included in the sample. This is because at least two ADRs are needed to form a pattern of marginal abnormal returns, which is the focus of this study.

The sample of firms was obtained from a directory of ADRs provided by Citibank. This directory is cross-checked with directories from Bank of New York, NYSE, and NASDAQ. Due to the lack of verifiable dating information for privately placed (144A) ADRs and their small abnormal return effects as reported by Miller (1999), privately placed ADRs are not used in the study. Therefore, this study focuses on "non-144A" ADRs for each country.

This study calls for both a date when an impending ADR issue is first announced and a date when the ADR lists on the exchange and actually begins trading. Announcement dates are obtained from a search of press releases from Lexis/Nexis. In cases where dates cannot be found in Lexis/Nexis, the date of the first SEC filing for the impending ADR program is used. This agrees with Hertz et al. (2000) who identify a filing effect that is related to the announcement effect.

Listing dates are obtained from NASDAQ, NYSE, and AMEX for those ADRs that are listed on those exchanges. For the remaining ADRs, closing dates as given by the Citibank directory are used. Citibank reports that the closing dates reported are usually within three days

of the listing date. However, the first of the month is reported in cases when the month of the closing can be determined but the actual day cannot be determined. In instances where an announcement date can be found after the directory closing date, the announcement date is used as the listing date.

The daily returns of the underlying stock traded on the foreign market and the daily returns of the foreign market indices are obtained from Datastream International and from the foreign stock market itself in cases when data is not available from Datastream. All returns used are of the foreign security for which the ADR is issued, not the returns of the ADR traded in the U.S. For a country to be included in the final sample, listing dates, announcement dates, and return data of the underlying companies must be available for at least two ADR issues. A listing date and return data must also be available for the first company to list an ADR in a country. An announcement date and return data must also be available for the first company to announce an ADR in a country. In determining the final sample of the first ten ADRs for each country, the ADRs are sorted by listing date. Announcement dates were then determined, as available, for the first twenty ADRs. The ADRs were then formed by country into two lists, one being sorted by announcement dates and the other being sorted by listing dates. Each list is truncated to the first ten ADRs. In some cases, announcement dates cannot be found; however, such ADRs should not be deleted since a time-order sequence of the first ten ADRs is required. In such cases, the listing date is used as the announcement date for sorting purposes only.

ADRs are not deleted from the country lists due to return data unavailability, *per se*. However, as stated previously, some countries are deleted due to (1) the lack of a sufficient number of ADR programs with return data (at least two per country), listing dates, and announcement dates, and (2) data unavailability or dating unavailability for the first ADR.

The final sample results in nine countries with 51 ADRs available with listing dates and 45 ADRs available with announcement dates. An important reminder is that the ADR sequence is not the same for the list sorted by announcement dates and the list sorted by listing dates. This means that the first ADR to list in a country may not be the first ADR to announce an ADR program.

Schipper and Thompson (1983), Binder (1985a; 1985b; 1998), Foerster and Karolyi (1999), Henry (2000), and Blaylock and Duett (2004) parameterize the abnormal returns through the use of dummy variables in a multivariate regression model (MVRM) as an alternative procedure to the standard residual analysis approach in event studies. Each use some variation of the market model to include an event-day dummy variable of the form

$$R_{it} = \alpha_i + \beta_i R_{mt} + \gamma_i \delta_{it} + \varepsilon_{it}$$

where δ_{it} equals one during the event period and zero otherwise for security i . Thus, γ_i measures the average abnormal return on security i due to the event.

The most important usefulness of this method is its ability to incorporate more than one event, especially when they are clustered (Thompson 1985; MacKinlay 1997). Specifically, (Thompson 1985 p. 159) states that the multiple regression format is useful in cases of multiple events, and that, “multiple regression automatically controls for any multicollinearity caused by the occasional sharing of common announcement periods. It offers an alternative to discarding the common periods.” The multiple events in the present case are the multiple ADR listings. Furthermore, the listings, from the same country as well as from those in other countries, occur very close in event and calendar time so that event windows overlap. Using the dummy variable format simultaneously controls for concurrent event periods such as the case of the listing window of one ADR occurring during the announcement window of the subsequent ADR. It also accounts for exogenous shifts in the equation parameters during the event period (Henry 2000). A benefit of MVRM stated by Binder (1985b; 1998) is that the abnormal returns are allowed to differ across firms.

Control variables used in Henry (2000) include an index on emerging market funds, the S&P 500, and Morgan Stanley’s Europe, Asia, and Far East (EAFE) stock market index, and dummy variables measuring macroeconomic stabilization, trade opening, privatization, and exchange controls. Control variables used by Bekaert and Harvey (2000) include measures of asset concentration, stock market development/integration, microstructure effects, and microeconomic influences and political risk. However, both of these studies focus on aggregate cost of capital changes for the market as a whole while this study focuses on cost of capital changes for individual firms. As such, many of the control variables in Bekaert and Harvey (2000) and Henry (2000) may be unnecessary. Also, some control variables needed here may be unnecessary for their studies.

Obvious controls for this study used in Henry include the effect of market returns on individual asset returns. This is the fundamental formulation of the market model. Foerster and Karolyi (1999) use local market index excess returns and global market index excess returns. This is consistent with the assertion of Jiang (1998) that asset returns within segmented markets are explained by both world economic factors and country specific economic factors. She finds that both the U.S. and the home market explain ADR returns. The S&P 500 index and the respective home market index are used in this study’s IAPM to control for systematic market fluctuations. A U.S. index is used vice a world index since this study is concerned with firms cross-listing in the U.S. market. Note that Bekaert and Harvey (2000) assess the impact of not only ADRs on the aggregate cost of capital for the market but also the impact of country fund introductions and, along with Henry (2000), official market liberalizations. Market liberalizations and country fund introductions may also impact the returns of existing ADRs. However, since these events affect the market overall, the index of home market returns should capture the effects of these events. Therefore, other liberalizing events are not included in the model.

A general pattern of large abnormal returns should be followed by smaller abnormal returns. A method is needed, therefore, to ascertain any pattern in the abnormal returns experienced by each ADR issuing firm. The following model uses a dummy variable that indicates in a panel regression the order of the ADR issuer:

$$R_{it} = \alpha_i + \gamma^{\text{ORDER}} \text{ORDER}_{it} + \beta_i^a R_M^a + \beta_i^{\text{US}} R_M^{\text{US}} + \varepsilon_i$$

where R_{it} is the daily returns for firm i at time t . R_M^a and R_M^{US} are the daily returns for the local market index for the A^{th} market and the daily returns for the US S&P index, respectively. ORDER is a dummy variable that equals 1 for each R_{1t} (daily return for the first ADR issuer at time t), 2 for each R_{2t} , etc., up to R_{10t} . Therefore, the range of ORDER is 1 - 10. Thus, γ^{ORDER} measures the marginal change in average daily abnormal returns from the previous ADR listing or announcement. The variable, γ^{ORDER} , is expected to be significantly negative (the marginal effect is smaller than the previous effect).

Bekaert and Harvey (2000) use the variable λ within the parameter Y as a measure of the rate of change in the marginal abnormal returns for the market due to ADR issuance as seen in the equation

$$Y^x = (1 - \lambda^x)/(1 - \lambda)$$

where x is the number of ADRs existing. The effect of Y is the actual change in marginal returns while λ measures the rate of that change. Bekaert and Harvey restrict λ to 0.90 for all of their estimations. This means they fix the marginal change to be 90% of the previous marginal change. Given the first ADR issuance, $Y = 1$. Given the second ADR issuance, $Y = 1.9$. If the market experiences abnormal returns of 10% due to the first ADR issuance, then it would experience 9% ($10\% * 0.9$) due to the second ADR issuance for a total marginal change for issuing two ADRs of 19% which is 1.9 times the original change. In reality, the rate of change in the marginal returns from one ADR to the next could vary, but they restrict λ to equal 0.9. Likewise, although the marginal effect may change or vary over time, the methodology in this study fixes that change to one simple interpretable measure. That measure is γ^{ORDER} . While Bekaert and Harvey assume each marginal change will be 90% of the previous change, the model in this study fixes each marginal change to be equal, or, 100% of the previous change. The model is estimated by two panel regressions (1) across all ADRs and all countries and (2) by country across all ADRs.

EMPIRICAL RESULTS AND ANALYSIS

The results of are presented in Table 1. Table 1 shows that the marginal average abnormal daily returns for each marginal firm to list an ADR decrease by 8 basis points (p-value

of <0.0001) from the abnormal returns of the previous firm to list an ADR. The abnormal return for each additional ADR is 8 basis points per day less than the previous issuer's abnormal returns.

Table 1		
The coefficient γ_i^{ORDER} from the model $R_{it} = \alpha_i + \gamma_i^{\text{ORDER}}\text{ORDER}_{it} + \beta_i^a R_{M^a} + \beta_i^{\text{US}} R_{M^{\text{US}}} + \varepsilon_{it}$ is reported. The independent variable R_{it} is the daily returns for firm i at time t and ORDER is a dummy variable that equals 1 for each R_{1t} (daily return for the first ADR issuer at time t), 2 for each R_{2t} , etc., up to R_{10t} . Thus, γ_i^{ORDER} measures the marginal change in average daily abnormal returns from the previous ADR listing or announcement.		
	List	Announcement
All ADRs	-0.00081	-0.00046
	-0.0001***	-0.0245**
Chile	-0.00021	-0.00016
	-0.4041	-0.5408
Colombia	-0.00022	-0.000057
	-0.6087	-0.9034
Greece	-0.00595	-0.00429
	-0.0004***	-0.0170**
India	-0.00050	-0.00015
	-0.0426**	-0.6239
Korea	-0.00053	-0.00053
	-0.1048	-0.1189
Portugal	-0.00032	-0.00025
	-0.1500	-0.2671
Taiwan	-0.00062	-0.00018
	-0.2157	-0.6682
Turkey	-0.00004	-0.00016
	-0.9553	-0.8469
Venezuela	-0.00018	-0.000086
	-0.4249	-0.7844
Note: p-values are located underneath the coefficients with *, **, *** indicating significance at the 10%, 5%, and 1% levels, respectively.		

This result is similar to what is found in Bekaert and Harvey (2000). They find that the coefficient for Y , their measure for marginal change, is -0.097%. Aggregate market dividend yields fall by 9.7 basis points when the first ADR is introduced. Since Bekaert and Harvey fix the rate of change in marginal returns to be 0.9, the aggregate market dividend yield would fall by an additional 8.73 basis points (90% of the original 9.7 basis points) when the second ADR is introduced. Thus, aggregate dividend yields fall by a total of 18.43 basis points after a total of two ADRs are introduced (9.7 + 8.73, or when two ADRs are issued $Y = 1.9$. $9.7 \times 1.9 = 18.43$). A

total of ten ADRs would make $Y = 6.51$ and reduce aggregate dividend yields by 63 basis points (6.51×9.7). Given 63 basis points for ten ADRs makes the average decline in dividend yields to be 6.3. This number from Bekaert and Harvey's model for aggregate dividend yields is comparable to the 8 basis point decline in the issuing firms' marginal abnormal returns. Estimating by country reveals that all countries except Colombia experience the same marginal reduction in the abnormal returns. The marginal changes for Greece and India are significant at the 1% and 5% levels, respectively.

The average abnormal daily returns fall by 5 basis points (p-value of 0.0245) for each marginal ADR announcement. Estimating by country reveals that six of the nine countries experience decreasing marginal abnormal returns, but only one of those marginal effects, for Greece, are significant with a decrease in marginal returns of 43 basis points and a p-value of 0.0170.

SUMMARY AND CONCLUSIONS

This study uses the cross-section and time series of returns from 51 ADR-issuing stocks from 9 emerging markets to determine if the reduction in the firm's cost of capital upon the issuance of an ADR decreases for the marginal ADR issuer. Results are reported by country and show that the cost of capital effect does decrease for the marginal firm during the announcement and listing of their ADR. Whereas previous studies such as Bekaert and Harvey (2000) and Henry (2000) have concentrated on a declining marginal impact of liberalizations on the aggregate market, this study analyzes the declining marginal impact for individual ADR issuers. Whereas Blaylock and Duett (2004) report results for the first 10 ADR issuers per country as a group this study reports results for each individual country. Also, for the first 10 ADR issuers as a group, Blaylock and Duett (2004) find that the cost of capital effect decreases for the marginal firm during the listing of their ADR but not during the announcement of their ADR. However, this study finds significant declining marginal reactions for both ADR listings and announcements for ADR issuers across all 9 markets. Unique to this study is the discovery of significant marginal reactions for country-specific issuers.

The rate of decrease in the cost of capital for existing ADRs would have important implications for investors, foreign firms, and foreign regulatory powers. The number of ADRs outstanding in the country or region and the rate of change in the cost of capital would affect investors' expected returns on ADR investments, the firm's decision to issue ADRs and at what time, and the government's decision for increasing liberalization efforts.

This study shows that the marginal reaction for each ADR issuer falls with each subsequent ADR issue. The change in the cost of capital the issuer experiences is less than that which was experienced for the previous ADR issuer. This is true for issuers that experience either positive or negative abnormal returns around issuance. The implication is that firms in liberalizing markets should not hesitate to issue ADRs. If positive returns are expected, the

impact may decrease if the firm allows other firms to issue an ADR before them. If negative returns are expected, those returns may be more negative if the firm allows other firms to issue an ADR before them.

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ADOPTION OF INTERNATIONAL FINANCIAL REPORTING STANDARDS IMPROVES ACCESS TO EQUITY CAPITAL IN AUSTRALIA

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ABSTRACT

The International Financial Reporting Standards (IFRS) have been globally accepted by more than 100 countries as of 2012 to reduce the global diversity in accounting standards that makes comparison of financial results from companies in other countries problematic when evaluating investment opportunities in equity capital for growth and expansion. The IFRS were adopted in Australia in 2005. The purpose of the current study was to investigate the effects of the IFRS adoption on cross-listing of Australian firms and trading volume for the cross-listed Australian companies between 2002 and 2008. The sample of companies included in this study were all Australian companies listed on the Australian Securities Exchange (ASX) as of January 1, 2002, which were still listed on the ASX as of December 31, 2008. The test results based on the Australian cross-listed companies attest that the adoption of IFRS improves access to equity capital thus contributing to the literature on agency theory.

INTRODUCTION

The objective of this study was to examine whether the adoption of international financial reporting standards (IFRS) by Australia improved access to equity capital. Use of globally diverse accounting systems makes it difficult and costly for investors to assess foreign investment opportunities in equity capital because of difficulty in comparing financial results from different companies in different countries (White, 2007). Because of diversity in national accounting systems, companies are required to reconcile financial results to the host country accounting standards to facilitate financial information comparability (Johnson, 2009). Access to equity capital in different capital markets is affected by these diverse accounting standards which makes it difficult to assess various investment alternatives.

Because of the global nature of today's capital markets and the significance of financial information to facilitate assessment of investment opportunities, it is vital to establish uniform financial reporting regulation (Bova & Pereira, 2010). Prior researchers (e.g., Armstrong et al., 2007; Johnson, 2009; Li, 2009; White, 2007; Zhou et al., 2009) found that adopting IFRS improved financial reporting transparency and comparability, reduces cost of equity capital, and minimizes earnings management. Although IFRS is being used or required by more than 100

countries to ensure financial information comparability from participating companies for the ease of cross-listing (Gallery et al., 2008), the effects of IFRS adoption in Australia have not been fully explored in terms of improvement of access to equity capital.

Differences in accounting standards in the global business environment have rendered the comparisons of financial results from companies in different countries difficult. The establishment of the IFRS was aimed at resolving this problem. In 2005, Australia adopted the IFRS. However, the effect of the IFRS adoption has not yet been evaluated in terms of access to equity capital. The main objective of this study was to examine the unknown effect of adopting the IFRS in 2005 on cross-listing of Australian firms and trading volumes for cross-listed Australian companies between 2002 and 2008. To do this, a quantitative research method was employed. The remainder of the paper is organized as follows: the literature review is presented in the next section. Then, the research method is discussed. Finally, the results are presented and discussed. This study was conducted as part of a doctoral dissertation program requirement for the first author.

LITERATURE REVIEW

Agency Theory, and Accounting Standards

An agency relationship may be narrowly defined as a contract where one or more people (principal) engage the other (agent) to take actions on behalf of the principal, which involves the delegation of a decision making authority to the agent and those actions would bind the principal (Jensen & Smith, 2000). Current mainstream accounting research uses economic models of agency theory (Bricker & Chandar, 1998) which represents the operating company (firm), manager (agent), and the investor (principal). The separation of the risk-bearing functions of ownership and the control function of management create conditions where professional managers could take actions to the detriment of the owner for their personal gain (Bricker & Chandar, 1998). Today's investment companies play an important role in the management of capital as individual investors increasingly employ professional equity capital managers and professional accountants to manage their economic resources, and also provide financial reports (Bricker & Chandar, 1998).

The securities market crash of the 1930s triggered regulation by the New York Stock Exchange (NYSE) in conjunction with the American Institute of Accountants which began to promulgate accounting standards for companies listed on the NYSE (Bricker & Chandar, 1998). The Securities Acts of 1933 and 1934 established legal responsibilities in connection with agency relationship between shareholders and managers (Berle & Means as cited in Bricker & Chandar, 1998) requiring full disclosures of financial information. In order to access public securities markets, the 1933 and 1934 acts required company managers to provide accounting

reports containing information about the financial conditions and reports of operations for the company (Bricker & Chandar, 1998).

The stewardship concept of agency theory requires availability of accounting reports as a means of monitoring the relationship between principals and agents to ensure that the agents exercise due diligence in decision making about the financial affairs of the firm (Yamey as cited in Bricker & Chandar, 1998). The financial information as provided by firm managers to the shareholders is expected to be reliable. Reliability is an essential characteristic for accounting information to be useful for decision making, which is a representation of unbiased and free-from-error financial results as provided by management (Maines & Wahlen, 2006).

Brief IFRS background

Former chairman of the United States Federal Reserve board and chairman of the IASC foundation board of trustees, Volker related in a statement before capital markets subcommittee in 2001: in a rapidly globalizing world, it only makes sense that the same economic transactions are accounted for in the same manner across various jurisdictions (Alfredson et al., 2005, pp. 4–5). Because of the financial information comparability difficulty associated with global accounting standards diversity, the harmonization process began more than 3 decades ago to establish one set of International Accounting Standards (IAS) with global acceptance (Al-Shiab, 2008; Doupnik & Perera, 2007).

Researchers on agency theory found that more corporate transparency and better governance increases firm value by improving decisions by managers or reducing the amount the managers would appropriate from the firm (Horton & Serafeim, 2009). IFRS adoption increases transparency which is consistent with the agency theory regarding improved transparency and disclosures that have a positive effect on firm value (Horton & Serafeim, 2009). The consistency in financial reporting resulting from the use of IFRS enables investors to globally compare investment alternatives improving capital markets' competitiveness (Covrig et al., 2007).

The two main sets of financial reporting systems which are considered globally highly reliable by investors, scholars, and practitioners are the U.S. GAAP and IFRS with U.S. GAAP being most widely used in global capital markets (Akisik & Pfeiffer, 2009). Many emerging economies are now voluntarily adopting either U.S. GAAP or IFRS to make their capital markets more attractive to foreign investors (Bhattacharya as cited in Akisik & Pfeiffer, 2009).

International flows of capital primarily result from foreign investments (Akisik & Pfeiffer, 2009). Prior study by Akisik and Pfeiffer (2009) on globalization, U.S. foreign investments, and accounting standards showed that a higher quality of financial reporting environment is associated with higher international capital flows. Although foreign capital investments benefit host countries, they are also beneficial to investors by providing expanded opportunities for financial returns, scale economies, and diversification (Akisik & Pfeiffer, 2009).

Cross-Border Investing

The diversity in accounting standards across borders is often cited as a significant factor which affects the information processing costs of U.S. investors who wish to globally diversify their investment portfolio (Khurana & Michas, 2011). In places such as the European Union (EU) which mandatorily adopted IFRS in 2005 have a common set of accounting standards and this provides financial information comparability benefits to financial statement users who wish to compare investment alternatives among different firms from other jurisdictions (Hail et al., 2010a).

The development of high-quality, global accounting standards has been supported by the FASB in the United States because of the demand for globally comparable financial information which capital providers find useful in making investment decisions in the global capital markets (FAF as cited in Khurana & Michas, 2011). Prior research by Barth et al. (as cited in Khurana & Michas, 2011) showed evidence that firms which use IFRS for financial reporting have greater accounting and value–relevance comparability with U.S. firms than when non-U.S. domestic accounting standards are applied. Other recent studies using different research designs and data sources (DeFond et al., 2011; Florou & Pope as cited in Khurana & Michas, 2011; Yu, 2010, as cited in Khurana & Michas, 2011) found that cross-border investments increase in the year of IFRS adoption. This implies that IFRS adoption in a country would substantially reduce information processing costs which would improve access to equity capital investments by investors in the United States and elsewhere.

A global economic environment with uniformity in procedures for financial reporting would benefit investors, lenders, accountants, and others interested in evaluating investment opportunities in various countries (Gaspar et al. as cited in Smith, 2008). Agency problems and information asymmetry associated with diversity in accounting standards decrease subsequent to IFRS adoption because corporate insiders face greater risk of legal suits by minority shareholders (Hope et al., 2006). Adopting IFRS provides uniformity in accounting standards which facilitate comparability of financial results among different companies operating in multiple countries (Smith, 2008).

The simultaneous adoption of IFRS by all firms in a country that has a strong enforcement will improve the capital markets and attract more foreign investments because of the perceived transparency, reliability, and comparability of the financial reporting (Barth et al., 2005; Hope et al., 2006). Results from the study by Tarca (2004) shows that competitive market forces can promote use of IFRS because management in most firms believe that use of those standards improve communication with financial information users (Hope et al., 2006). A country's accessibility of its capital markets by foreign investors benefits the country by attracting foreign capital through available opportunities for portfolio diversification (Hope et al., 2006; Pine, 2010).

Cost of Equity Capital

In today's global economy, many firms strive to have their equity securities listed on multiple stock exchanges for exposure to new markets, to obtain foreign debt and equity capital for growth, technological advancement, and reduction of possible political costs (Al-Shiab, 2008). Analyzing foreign financial statements to assess investment opportunities is difficult for investors when there are no common accounting principles being followed by all reporting firms. The diversity in financial reporting which affects presentation, disclosure, and measurement of financial results impacts capital markets participants when making investments decisions (Al-Shiab, 2008; Kristandl & Bontis, 2007).

The adoption of IFRS is an important step towards the achievement of a country's equity trading and it provides a basis for understanding the economic consequences which have implications for financial reporting and capital markets integration (Li, 2009). The use of IFRS requires higher financial disclosures than most local GAAP and the increased financial reporting disclosures reduce the cost of equity capital (Li, 2009; Kristandl & Bontis, 2007). Armstrong et al. (2008) argued that global use of one set of uniform accounting standards such as IFRS improves financial information comparability among firms which not only results in reduction of cost of equity capital, but also improves access to equity capital. Adopting IFRS improves accessibility of capital markets by investors for portfolio diversification (Hope et al., 2006; Pine, 2010).

Hypotheses

Given the preceding discussion on the effect of IFRS adoption on equity capital in Australia, it is expected that more investors will be expected to invest following the 2005 IFRS implementation which would also result in increased trading volumes. This expectation is feasible if the IFRS adoption results in improved comparability of financial results, reduced cost of capital, reduced information asymmetry, and improved financial informative disclosures. To evaluate whether the IFRS adoption improved access to equity capital in Australia, the following two alternative hypotheses were evaluated:

H1_a There is a difference in the proportion of ASX-traded companies that were cross-listed on a foreign exchange before (2002 to 2004) and after (2006 to 2008) the implementation of the IFRS in 2005.

H2_a There is a difference in the trading volume of ASX-traded companies that were cross-listed on a foreign exchange versus those that not cross-listed on a foreign exchange before (2002 to 2004) and after (2006 to 2008) the implementation of the IFRS in 2005.

RESEARCH METHODOLOGY

A quantitative research methodology was used to determine the effect of the adoption of IFRS in 2005 on cross-listing of Australian firms and trading volume for cross-listed Australian companies between 2002 and 2008. The first research question involved a comparison of financial data between the pre-IFRS (2002–2004) and post-IFRS (2006–2008) periods with 2005 as the event year. Thus, the independent variable for this research question was time—the pre-IFRS period was compared to the post-IFRS period. The second research question involved a comparison of financial data between companies based on cross-listing status. These independent variables could not be manipulated by the researcher making the ex post facto research design appropriate (Black, 1999).

Sample Selection

The unit of analysis for this study consisted of the individual companies. The population of interest in the study consisted of Australian companies listed on the ASX. The sample of companies included in this study was all the Australian companies listed on the ASX as of January 1, 2002, which were still listed on the ASX as of December 31, 2008.

In order to determine the number of companies required for the study, a power analysis was conducted using the G*Power computer program (Faul, Erdfelder, Buchner, & Lang, 2009). The two statistical tests used in this study were the McNemar test to compare dependent proportions and a one-way ANOVA. For McNemar's test, assuming an odds ratio of 1.50, two-tailed test, desired power of .80, and alpha level of .05, a total of 664 companies were required. For the one-way ANOVA, assuming a medium effect size of $f = .25$, two-tailed test, desired power of .80, and an alpha level of .05, a total of 159 companies would be required. According to ASX (2012), there are currently over 2,000 companies listed on the ASX, indicating that the required sample sizes of 664 and 159 would be obtained.

The sample sizes of 664 and 159 were merely those required to achieve adequate statistical power but not the actual sample size used (the actual sample size used was 1,172 companies). The ASX (2012) website provides access to the data on all of the companies listed on the Australian exchange including whether or not they were cross-listed on a foreign exchange and if so, during which years this was the case. As noted above, the study included, for both research questions, all companies listed on the ASX as of January 1, 2002, which were still listed on the ASX as of December 31, 2008.

Data Collection, Processing, and Analysis

The data used in this study were accessed from the ASX (2012) and Global Financial Data Corporation (2012) databases. The ASX database is the official securities exchange in

Australia. The average daily trading volume on the ASX exceeds 5 billion Australian dollars (ASX, 2012). The ASX provides current and historical data on companies traded on the exchange.

The ASX was used as the reference universe to select the sample of Australian companies that reported financial information under domestic GAAP and traded on the domestic exchange only, prior to the mandatory adoption of IFRS in 2005. The sample selection was made from the ASX publicly traded companies that used local GAAP in 2002–2004 to report their financial results for the year ended December 31 (pre-IFRS period) and only used IFRS in 2005 (event year) and 2006–2008 (post-IFRS period). Precautions were taken to ensure inclusion of historical constituents in the index as they appeared during the study period. The inherent limitations of secondary data such as use of outdated data and lack of control over the data accuracy by the researcher were assessed (Zikmund, 2003).

Two-tailed tests and an alpha level of .05 were used for all inferential tests. The first research question of this study was: What is the difference, if any, in the proportion of ASX-traded companies that are cross-listed on a foreign exchange before and after the implementation of the IFRS? In order to answer this question, the proportion of ASX-traded companies that were cross-listed at any point during the 3 years prior to the implementation of IFRS in 2005 (i.e., 2002–2004) were compared to the proportion of ASX-traded companies that were cross-listed at any point during the 3 years after the implementation of the IFRS (i.e., 2006–2008). To answer this research question, McNemar's test was used to test the null hypothesis that there is no difference in the proportion of companies cross-listed prior to IFRS and after IFRS. The McNemar test is a nonparametric test that does not involve assumptions of normality, linearity, homoscedasticity, or other common parametric statistical assumptions. The only assumption of the McNemar test is that the data consist of dichotomies that are matched, and this is the case in the proposed study. Specifically, the data were dichotomies indicating whether or not the company was cross-listed or not, and the data from the pre-IFRS period were matched to the data from the post-IFRS period because the same companies were compared at the two time points.

The second research question was: What is the difference, if any, in the trading volume ASX-traded companies that were cross-listed on a foreign exchange versus those that were not cross-listed on a foreign exchange before and after the implementation of the IFRS? The dependent variable was the average daily trading volume. The independent variable was cross-listing group, with three groups compared: (a) Those that were not cross-listed at any point between 2002 and 2008; (b) Those that were cross-listed at any point between 2002 and 2004 (prior to 2005 IFRS implementation); and (c) Those that were not cross-listed between 2002 and 2004 (prior to 2005 IFRS implementation), but were cross-listed at any point between 2006 and 2008 (after the 2005 IFRS implementation).

A one-way ANOVA was performed comparing these three groups on their average daily trading volume. If the ANOVA is statistically significant, follow up tests were performed using Tukey's honestly significant difference tests. The use of the ANOVA required the assumptions

of normality for the dependent variable and equality of variances on the dependent variable across the three groups. Normality for the dependent variable was tested by computing the Kolmogorov-Smirnov test of normality. The equality of variance was tested using Levene's test. If it was determined that either of these assumptions were not met then a Kruskal-Wallis test was substituted in place of the ANOVA.

Methodological Assumptions, and Limitations

The current study was based on one primary assumption. It was assumed that the archival data used for the study from the ASX (2012) and Global Financial Data Corporation (2012) databases are reliable and of a quality that is sufficient for scientific research. The ASX database is the official securities exchange in Australia and there was no reason to doubt the veracity of the data. The primary limitation of this study was that the ex post facto research design does not allow for firm causal conclusions to be drawn as would be the case in an experimental study (Black, 1999). Specifically, it was difficult to isolate the direct impact of IFRS adoption from other general trends towards globalization of capital markets. However, these variables (i.e., general trends) were constants for all companies and therefore were used as control variables in this study. That is, all companies had the same values for global economic indicators at the pre-IFRS and post-IFRS period making them unusable as control variables.

A second limitation was that other variables that could influence the dependent variables such as type of company, size of company, or industry classification were not examined in this study. These variables were not included in this study because the focus was on an examination of the pre-IFRS implementation period and the post-IFRS implementation period, not on whether or not company size or the other variables affect the pre- to post-IFRS differences.

RESULTS AND DISCUSSION

In this section, the findings from the study are discussed. Specifically the descriptive statistical analyses conducted are presented followed by the results from the inferential analyses performed. Finally, the findings are evaluated in the context of past research in this area.

Descriptive Analysis

Initially, descriptive statistical analyses were performed. The three variables in this study were time period, cross-listing status, and average daily trading volume. In concordance with the inferential analyses presented in the subsequent parts of this section, descriptive statistics consisted of an examination of the number (i.e., the frequency) of companies in each category (i.e., cross-listed or not cross-listed) within each time period (pre-IFRS and post-IFRS). In addition to the frequencies, percentages within each category were computed. Table 1 shows cross-listing status as a function of time period. Before the implementation of the IFRS, 594 of

the 1,174 companies were cross-listed (50.6%) and after the implementation of the IFRS, 316 companies were added (i.e., there were 910 [77.5%] companies cross-listed).

Cross-Listing Status	Pre-IFRS (2002 to 2004)		Post-IFRS (2006 to 2008)	
	<i>n</i>	%	<i>n</i>	%
Not Cross-Listed	580	49.4	264	22.5
Cross-Listed	594	50.6	910	77.5
Total	1,174	100.0	1,174	100.0

Note. The difference between the percentage of companies that were cross-listed in the pre-IFRS period and the post-IFRS period was statistically significant using the McNemar test, $\chi^2(1) = 314.00, p < .001$.

Table 2 shows average daily trading volume as a function of cross-listing status for both the pre-IFRS average trading volumes and the post-IFRS trading volumes. The average daily trading volume was computed as the total trading volume for the year divided by the number of trading days in the year.

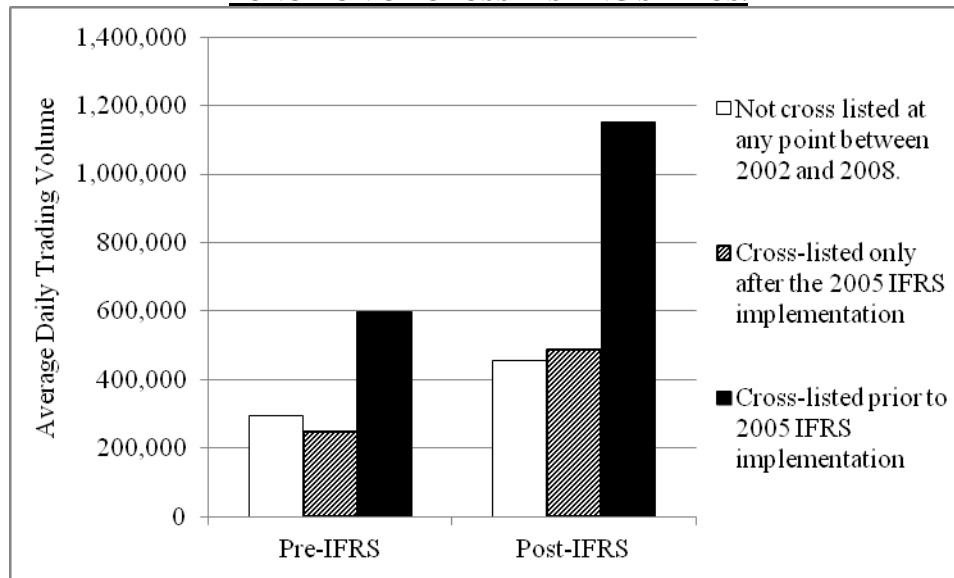
Group	Pre-IFRS Implementation			Post-IFRS Implementation		
	<i>n</i>	<i>M</i>	<i>SD</i>	<i>N</i>	<i>M</i>	<i>SD</i>
Not cross-listed at any point between 2002 and 2008.	264	295,345	769,715	262	454,188	1,222,472
Cross-listed only after the 2005 IFRS implementation	171	249,542	981,147	316	487,938	2,068,844
Cross-listed prior to 2005 IFRS implementation	594	596,326	1,619,731	594	1,152,132	2,978,842
Total Sample	1,029	461,478	1,359,857	1,172	817,024	2,468,536

Results from this analysis indicated that there were differences in the trading volume of ASX-traded companies that were cross-listed on a foreign exchange versus those that were not cross-listed on a foreign exchange before (2002 to 2004) and after (2006 to 2008) the implementation of the IFRS in 2005. Those who were cross-listed even before the IFRS implementation had higher average trading volumes than the other two groups at both time points. In the pre-IFRS period, companies that would eventually become cross-listed had lower average trading volumes than companies that would not, whereas in the post-IFRS period, companies that had become cross-listed had higher average trading volumes than those that were not cross-listed.

Figure 1 contains a bar chart of the average trading volume data. As the figure shows, the trading volumes for the post-IFRS period were higher than for the pre-IFRS period. In

addition, trading volumes for companies that were cross-listed prior to the 2005 IFRS implementation tended to have the highest trading volumes both before and after the IFRS implementation.

Figure 1
AVERAGE DAILY TRADING VOLUME BEFORE AND AFTER IFRS IMPLEMENTATION AS A FUNCTION OF CROSS-LISTING STATUS.



Prior to the IFRS implementation, companies that were not cross-listed tended to have slightly higher trading volumes than those who would eventually become cross-listed, but this latter group had higher trading volumes in the post-IFRS implementation period. This is consistent with the hypothesis that cross-listing resulted in increased higher trading volumes. These differences are explored in more detail in the next two sections.

Inferential Analysis

In order to test determine if the proportion of ASX-traded companies that were cross-listed at any point during the 3 years prior to the implementation of IFRS in 2005 (i.e., 2002–2004) differed from the proportion of ASX-traded companies that were cross-listed at any point during the 3 years after the implementation of the IFRS (i.e., 2006–2008), McNemar's test was used (Adedokun & Burgess, 2012). The result from this test was statistically significant, $\chi^2(1) = 314.00$, $p < .001$. I concluded that there was a difference in the proportion of ASX-traded companies that were cross-listed on a foreign exchange before (2002 to 2004) and after (2006 to 2008) the implementation of the IFRS in 2005, with a higher proportion of companies being cross-listed after the IFRS implementation.

The next null hypothesis was that the average trading volume for the following three groups did not differ: (a) Not cross-listed at any point between 2002 and 2008; (b) Cross-listed only after the 2005 IFRS implementation; and (c) Cross-listed prior to 2005 IFRS implementation. Normality for the dependent variable (average daily trading volume) was tested by computing the Kolmogorov-Smirnov test of normality (Simard & L'Ecuyer, 2011). Kolmogorov-Smirnov test of normality is most appropriately used when a researcher wishes to know if the scores on a continuous variable are normally distributed. Normality is an assumption of the proposed ANOVA and therefore the Kolmogorov-Smirnov test was used to test this assumption (Simard & L'Ecuyer, 2011). The result was statistically significant for both pre-IFRS trading volumes ($p < .001$) and for post-IFRS trading volumes ($p < .001$) indicating that the score distributions were not normal.

The second assumption of the planned ANOVA was the equality of variance assumption (Gastwirth, Gel, & Miao, 2009). The assumption of equality of variances means that the variance in scores (i.e., the squared standard deviation) is the same for the subgroups being compared (Brown & Forsythe, 1974; Gastwirth et al., 2009). This assumption was tested using Levene's test which is used to test the statistical significance of the difference in variances on a continuous variable across groups (Bowerman & O'Connell, 2003; Brown & Forsythe, 1974; Gastwirth et al., 2009). The variances of average daily trading volumes for the three groups were not equivalent for the pre-IFRS volumes, $F(2, 1026) = 11.48, p < .001$, or for the post-IFRS volumes, $F(2, 1169) = 19.43, p < .001$.

Based on the nonnormality of the average daily trading volume and the lack of equal variances across groups, two Kruskal-Wallis tests (Howell, 2010) were performed in place of the planned ANOVA analysis. The Kruskal-Wallis test does not compare the means for the various groups (as the ANOVA would have) but rather is used to determine if the data for the groups were drawn from the same distribution. Therefore, it is based on a test of whether there is a difference in the distributions from which the samples were drawn (Howell, 2010). The Kruskal-Wallis test is the nonparametric alternative to ANOVA and is used when the assumptions of ANOVA (i.e., normality and equality of variances) are not met (Howell, 2010). Like the ANOVA, the Kruskal-Wallis can be used to compare more than two groups.

The first Kruskal-Wallis test was performed to compare the average daily trading volumes between 2002 and 2004 (pre-IFRS implementation) between the three groups of companies. The results were statistically significant, $\chi^2(2, N = 1,079) = 84.44, p < .001$. Because the Kruskal-Wallis test was statistically significant, follow up Mann-Whitney tests were performed to compare each pair of groups. Mann-Whitney tests are similar to Kruskal-Wallis tests but only two groups are compared. The statistically significant Kruskal-Wallis test only allows for the conclusion that not all three groups are the same, but it does not tell us which pairs of groups differ. This is the purpose of the Mann-Whitney test (Howell, 2010). Results from the Mann-Whitney tests indicated that those companies that were not cross-listed at any point between 2002 and 2008 had higher average trading volumes in the pre-IFRS period than those

who were cross-listed only after the 2005 IFRS implementation, $z = -2.04$, $p = .042$. Those that were not cross-listed at any point between 2002 and 2008 also had lower trading volumes in the pre-IFRS period than those that were cross-listed prior to 2005 IFRS implementation, $z = -8.09$, $p < .001$. Finally, those that were cross-listed only after the 2005 IFRS implementation had lower trading volumes in the pre-IFRS period than those who were cross-listed prior to the 2005 IFRS implementation, $z = -6.20$, $p < .001$.

The second Kruskal-Wallis test was performed on average daily trading volumes between 2006 and 2008 (post-IFRS implementation). The result from this test was also statistically significant, $\chi^2(2, N = 1,172) = 117.82$, $p < .001$. Those who were not cross-listed at any point between 2002 and 2008 had lower average trading volumes in the post-IFRS period than those who were cross-listed only after the 2005 IFRS implementation, $z = -5.87$, $p < .001$, a reversal of the results from the pre-IFRS period. Those that were not cross-listed at any point between 2002 and 2008 had lower average trading volumes than those who were cross-listed prior to 2005 IFRS implementation, $z = -10.16$, $p < .001$. In addition, those that were cross-listed only after the 2005 IFRS implementation had lower average trading volumes than those who were cross-listed prior to the 2005 IFRS implementation, $z = -5.81$, $p < .001$.

Based on these analyses, the results support the alternative hypotheses. First, it was concluded that there were differences in the trading volume of ASX-traded companies that were cross-listed on a foreign exchange versus those that were not cross-listed on a foreign exchange before (2002 to 2004) and after (2006 to 2008) the implementation of the IFRS in 2005 with a higher proportion of companies being cross-listed after the IFRS implementation. Second, all pairs of groups differed from each other both prior to and after the IFRS implementation in 2005. Those that were cross-listed even before the IFRS implementation had higher average trading volumes than the other two groups at both time points. In the pre-IFRS period, companies that would eventually become cross-listed had lower average trading volumes than companies that would not, whereas in the post-IFRS period, companies that had become cross-listed had higher average trading volumes than those who had not. Finally, the average trading volume for all groups increased from the pre-IFRS period to the post-IFRS period, with a smaller increase for companies that were not cross-listed at any point between 2002 and 2008 than for the other two groups.

CONCLUSION

The purpose of the study was to determine the effect of the adoption of IFRS in 2005 (event year) on cross-listing of Australian firms and trading volumes for the cross-listed Australian companies on access to equity capital. Results indicated that there was a difference in the proportion of ASX-traded companies that were cross-listed on a foreign exchange before (2002 to 2004) and after (2006 to 2008) the implementation of the IFRS in 2005, with a higher proportion of companies being cross-listed after the IFRS implementation. Results also

indicated that there were differences in the trading volume of ASX-traded companies that were cross-listed on a foreign exchange versus those that were not cross-listed on a foreign exchange before (2002 to 2004) and after (2006 to 2008) the implementation of the IFRS in 2005.

Companies that were cross-listed even before the IFRS implementation had higher average trading volumes than the other two groups at both time points. In the pre-IFRS period, companies that would eventually become cross-listed had lower average trading volumes than companies that would not, whereas in the post-IFRS period, companies that had become cross-listed had higher average trading volumes than those who had not. In addition, the results from the supplemental analyses indicated that the average trading volume for all three groups increased from the pre-IFRS period to the post-IFRS period, with a smaller increase for companies that were not cross listed at any point between 2002 and 2008 than for the other two groups.

Based on agency theory, it was predicted in this study that after the implementation of IFRS standards for ASX-traded companies in 2005, shareholders and potential shareholders should have been more willing to buy, sell, and trade stock in these companies and this increased demand should have been reflected in an increase in the percentage of companies being cross-listed on a foreign exchange after the implementation of the IFRS standards. Consequently, trading volumes should have increased. The results from this study were consistent with these predictions from agency theory: the percentage of ASX-traded companies that were cross-listed on some foreign exchange increased from 50.6% in the pre-IFRS period to 77.5% in the post-IFRS period, and the average trading volumes increased from the pre-IFRS period to the post-IFRS period.

The results from this study adds to the literature on agency theory indicating that the results could be successfully applied to the topic of the implementation of IFRS standards on cross-listing and trading volumes on a national level (i.e. the impact of IFRS adoption affects management of all ASX listed firms not an individual firm because of the decisions they made to establish globally acceptable accounting standards). Equity markets regulators from various countries may find the results from this study useful, especially if future research with companies in other countries finds similar results. Adopting IFRS facilitates equity trading on multiple exchanges when the host countries use similar accounting standards because of financial results comparability, based on the view that uniformity in financial reporting resulting from IFRS adoption enables investors to globally compare investment alternatives and improves capital markets' competitiveness.

The findings from this study were only applied to Australian companies, and it cannot be assumed that the results based on the sample of Australian companies would apply to companies in other countries that have, or will in the future, adopt the IFRS standards. Further research may be needed to extend the study to companies in other countries, preferably using different time periods to find whether or not results from this study are replicable. There is potential for future research opportunities as the United States proceeds towards adoption of the IFRS.

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IPO FIRM CHARACTERISTICS PRE- AND POST-FINANCIAL CRISIS

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ABSTRACT

The global financial crisis of 2008-2009 precipitated one of the longest IPO “droughts” in history; from September 2008 until May 2009 only eight new issues came to market in the United States. While the phenomenon of hot- and cold- IPO market cycles has been widely documented, there has been a prevailing sentiment in the financial press that “this time is different.” Numerous IPO market professionals have expressed the opinion that regulatory changes, in combination with changes in investor sentiment, have changed the dynamic of the IPO marketplace. According to that viewpoint, new issues brought to market in the post-crisis period have been subjected to more intense scrutiny from investors and regulators, and that navigating the IPO process has, in various ways, become more challenging. By comparing various financial characteristics of firms going public before and after the peak of the financial crisis, we seek to determine whether the supposed changes have in fact altered the standards used by underwriters in bringing firms to market.

INTRODUCTION AND MOTIVATION

It is widely accepted that the level of initial public offering activity varies dramatically across time periods. At certain times, it seems, market conditions are perceived as being more conducive to the issuance of new securities, and firms tend to time their IPOs to coincide with these periods. Researchers refer to this phenomenon as the existence of “hot” and “cold” IPO markets, and numerous studies have defined, documented, and sought to explain their existence. (For example, see Ibbotson and Jaffe 1975, Ritter 1984, and Loughran, Ritter, and Rydqvist 1994.) In short, hot IPO market periods are associated with stock market peaks, and offerings made during such periods are characterized by greater underpricing and more frequent oversubscription. Naturally, the converse is true during cold periods.

It is not surprising, then, that the global financial crisis of 2008-2009 and the accompanying stock market decline would correspond with a cold period in the IPO marketplace, and as this paper will document, that is in fact the case. In January 2008, the U.S. IPO market entered a cold spell that would not break until late 2009. During the “coldest” months from mid-August 2008 through March 2009, only two new issues came to market in the U.S., a slump in offerings that is unprecedented in recent history.

The IPO market has regained some of its momentum in the months and years subsequent to the 2008-2009 drought, and in fact several hot-market periods have occurred since then. However, there has been some sentiment expressed in the business press that the financial crisis and the accompanying changes in regulation and investor attitudes have in some way altered the nature of the IPO market. For example:

“In the current landscape, aspiring IPO companies need to plan for the possibility of an extended IPO process with an uncertain outcome. This means, for example, being prepared for the challenges of living with a lengthy period of management distraction and quiet period restrictions, and having enough available cash to fund operations in the meantime.” - D. Westenberg, *IPO Vital Signs* (2010a)

“In recent years, disclosure, corporate governance and control requirements have mushroomed, market expectations for IPO companies have increased, and directors of public companies have become subject to greater personal risk.” - D. Westenberg, *Boardmember.com* (2010b)

According to this view, there has been an increase in the level of scrutiny of new issues by both investors and regulators, and consequently the IPO process has become more difficult for issuers. Alternatively, though, other pundits have characterized the post-crisis IPO market as nothing short of frenzied, with pent-up demand for IPO shares fueling ever-larger deals (Slater 2010).

In this study, we seek to investigate whether the post-crisis period is associated with a detectable change in the characteristics of firms that successfully navigate the IPO process. Prior work in this particular area of research is sparse; Fauzi, Wellalage, and Locke (2012) perform an event-study analysis of the short-term stock market returns to a sample of 23 New Zealand IPOs occurring from 2006 to 2010. That study tests the hypothesis that market performance of IPO stocks was affected by the global financial crisis, and present evidence that in fact the short-term return to IPO stocks was less favorable in 2008 and 2009 relative to other years.

Perhaps the prior work most similar to the present study is that of Helwege and Liang (2004), who investigate differences between firms entering “hot” and “cold” IPO markets. While they observe a number of differences between hot- and cold- market IPO firms in terms of operating measures and financial performance, their ultimate conclusion is that hot markets are driven by investor sentiment, rather than the pace of technological innovation. As a side note the Helwege and Liang find that earnings are typically lower for hot issues but will likely provide an improved future outlook as suggested by Wagner (2006). In conducting the present analysis, we drew much inspiration from the work of Helwege and Liang, and their specific findings will be cited often in the work that follows.

We begin by documenting the patterns of IPO activity in the post-crisis period, identifying hot- and cold- market periods. Then, in comparing pre-crisis and post-crisis IPOs, we focus on patterns of industry concentration, and accounting-based measures of operating

characteristics and financial performance. We reserve the issue of IPO underpricing and market performance for future study.

DATA AND METHODOLOGY

In constructing a sample of IPO firms for this study, we were mindful of several requirements. First, for reasons of data availability and reliability, the sample should consist of firms making initial offerings of common stock for primary trading on one of the major U.S. exchanges. Second, we chose to exclude IPOs of financial services firms (SIC 60-64 and 67), and “nonclassifiable establishments” (SIC 99). By employing these filters, we eliminate the vast majority of pass-through entities such as unit trusts, closed-end funds, acquisition companies and holding companies. Third, we exclude ADRs, the initial offering of which may not correspond with the issuance of new equity shares.

Identifying the firms to be included in the sample proved to be somewhat challenging, and ultimately resulted in a compilation of information from multiple sources. There exists a publicly available (by request) database of US IPOs spanning the period 1996-2010 (Kenney and Patton, 2013). According to its maintainers, this database consists of information carefully gathered from S-1 registration statements, and is purported to be a comprehensive listing of *de novo* initial public offerings in the U.S. during the specified period. However, we concluded that this resource alone would not be sufficient for the project at hand, for at least two reasons: (1) the Patton database identifies IPOs only by year, without providing specific pricing dates (necessary for identifying hot and cold market periods), and (2) it extends only through December 2010, barely reaching into the post-crisis period. Because the central theme of this study is to examine differences between firms going public in the pre- and post- financial crisis periods, we felt it necessary to include as many post-crisis transactions as possible.

In order to augment the Kenney and Patton database, we turned to the Standard & Poor’s COMPUSTAT database, which includes the date of a firm’s IPO as one of its data items. We began by searching COMPUSTAT for a list of firms with reported IPO dates between January 1, 2001 and December 31, 2012, which resulted in an initial list of 2199 firms. After excluding financial firms and ADRs, the list had narrowed to 1323 firms. However, a quick comparison of this list with the Kenney and Patton database revealed important differences; numerous domestic, nonfinancial IPOs reported in the database did not have dates available in COMPUSTAT, resulting in their exclusion from the sample.

In an effort to construct as comprehensive a list of IPOs as possible, we merged the two datasets by hand. Entries which appeared in the database but not in the COMPUSTAT list were entered into the sample, with IPO dates retrieved from internet sources (primarily IPOscoop.com). This expanded the initial list to 2313 firms. After dropping financial firms and ADRs, there were 1497 firms remaining in the sample.

Because the Kenney and Patton database only extends through 2010, we were unable to use it to validate the COMPUSTAT output for 2011 and 2012; however, we do not believe that this presents an issue, because the discrepancies between the two lists existed primarily in the early years of the study period (2001-2004). No additions to the COMPUSTAT list were required for the years 2008-2010. Apparently COMPUSTAT's data gathering practices became more rigorous in recent years, and we presume that this rigor persists to the present time. As a validity check, we compared the generated list of IPOs in 2011 and 2012 with information available online (again, IPOscoop.com), and found no omissions after applying the filters described previously.

This set of firms was further limited to exclude those without CRSP data available (another 195 firms, mostly penny stocks), and those for which the beginning of CRSP pricing data did not coincide within five days of the reported IPO date (114 firms, including many spinoffs and reverse LBO transactions). Another 33 firms were excluded for lack of COMPUSTAT data availability. In the end, we are confident that the resulting sample of 1121 IPOs is, to the extent possible, representative of the marketplace for nonfinancial IPOs in the United States from 2001 through 2012.

THE POST-CRISIS IPO MARKET

We first examine the state of the market for initial public offerings in the period since the 2008-2009 downturn. For the purposes of the present study, we include in the post-crisis partition all IPOs brought to market in calendar years 2009 and later; although this may not correspond with the end of the crisis, the resumption of IPO activity in February and March of 2009 was widely regarded as a turning point. Dividing the data in this way results in a pre-crisis sample of 815 firms, and a post-crisis sample of 306. Simple back-of-the-envelope calculations reveal the average number of transactions per year to be 101.75 pre-crisis, and 102.33 post-crisis; in terms of deal volume, we find no reason to believe that the number of firms coming to market has changed in the post-crisis period.

Researchers have used a variety of techniques to distinguish between hot and cold IPO markets, based on either the degree of underpricing (Ritter 1984), or, more commonly, the volume of activity. We adopt the latter approach, using a variation of the technique described by Helwege and Liang (2004). For each month of the study period (1/1/2001 to 12/31/2012) we calculate a three-month centered moving average of the number of transactions in the sample. The monthly observations are then ranked, and the months ranked in the top one-third are considered to be "hot" months, and those in the bottom third are considered cold. Figure 1 presents a bar graph displaying the number of IPOs per calendar month over the entire study period, overlaid with shaded areas representing hot and cold market periods. The cold period surrounding the financial crisis spans 19 months, extending from January 2008 through August 2009. As is evident from the graph, this is the longest IPO slump in recent history. There does

appear to be more variability in the market; whereas pre-crisis hot and cold periods often spanned 12 months or more, in the three years post-crisis there have been 4 hot periods and 3 cold, none of them lasting more than three months.

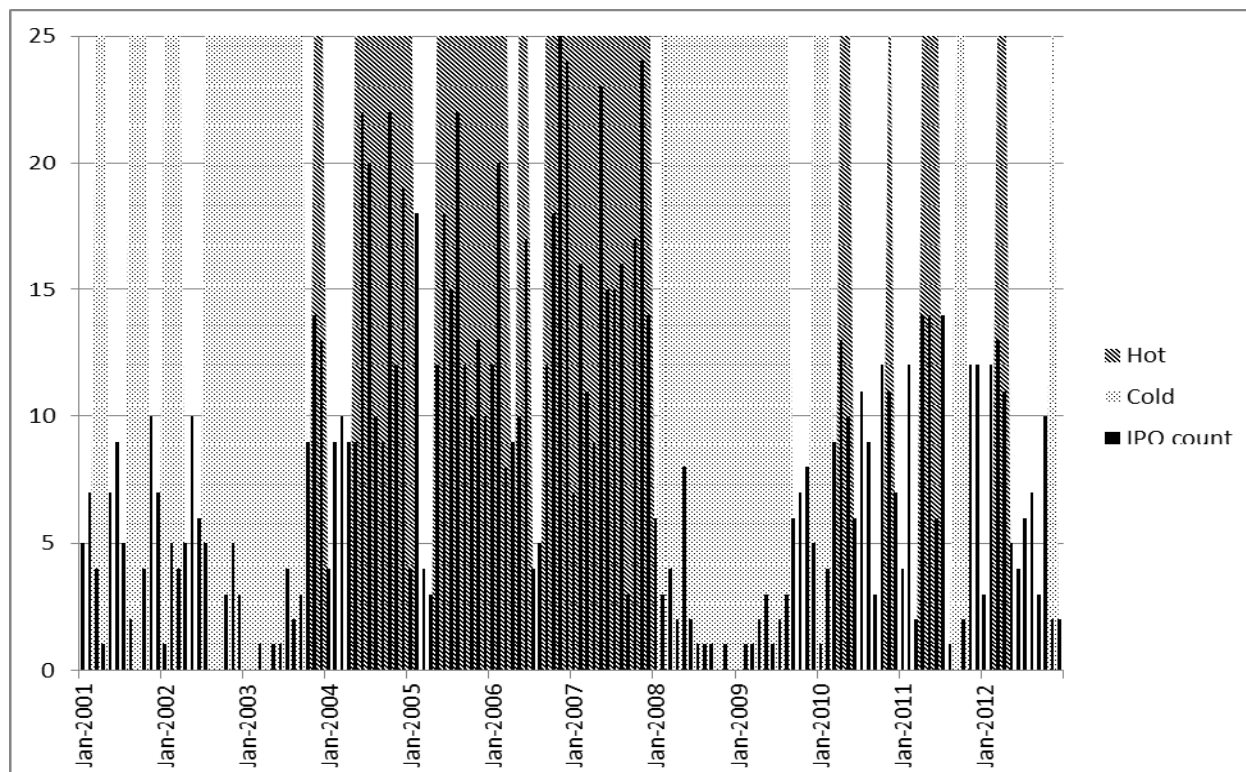


Figure 1 - IPO market activity 2001-2012

DISTRIBUTION OF IPO FIRMS ACROSS INDUSTRIES

Although the specifics change over time, it has been widely observed that IPOs tend to be clustered in relatively few industries. Helwege and Liang (2004) report that the top 11 industries (identified by 2-digit SIC) represented account for approximately 75% of the IPOs in their sample. Furthermore, they find that this level of concentration persists in both hot and cold market periods, though the particular industries vary somewhat.

Has the pattern of IPO industry concentration changed in the post-crisis period? To find out, we conduct an analysis similar to that of Helwege and Liang. We identify the 2-digit primary SIC for each firm in the pre- and post-crisis partitions, and compute the frequency of occurrence of each SIC code. A summary of the results is presented in Table 1. Qualitatively, the results are similar to those reported by Helwege and Liang: the top 11 industries account for 74.4% of IPOs in the pre-crisis period, and 75.2% post-crisis. The top five industries represented are the same in both periods. Although a chi-square test strongly rejects the

hypothesis that the two samples of SIC codes are drawn from the same distribution, it does not appear that any major shift in the overall level of IPO industry concentration has occurred since 2009.

2-digit SIC	Total (2001 - 2012)		Pre-crisis (2001-2008)		Post-crisis (2009-2012)		% change
	# of IPOs	% of total	# of IPOs	% of total	# of IPOs	% of total	
73	211	18.8	131	16.1	80	26.1	10.1
28	159	14.2	123	15.1	36	11.8	-3.3
36	93	8.3	62	7.6	31	10.1	2.5
38	87	7.8	73	9.0	14	4.6	-4.4
13	73	6.5	49	6.0	24	7.8	1.8
35	47	4.2	38	4.7	9	2.9	-1.7
48	44	3.9	37	4.5	7	2.3	-2.3
44	37	3.3	30	3.7	7	2.3	-1.4
59	30	2.7	26	3.2	4	1.3	-1.9
49	26	2.3	19	2.3	7	2.3	0.0
80	22	2.0	18	2.2	4	1.3	-0.9
58	21	1.9	16	2.0	5	1.6	-0.3
87	19	1.7	15	1.8	4	1.3	-0.5
50	18	1.6	11	1.3	7	2.3	0.9
51	18	1.6	13	1.6	5	1.6	0.0
37	15	1.3	12	1.5	3	1.0	-0.5
29	14	1.2	6	0.7	8	2.6	1.9
56	12	1.1	6	0.7	6	2.0	1.2
33	11	1.0	9	1.1	2	0.7	-0.5
45	11	1.0	10	1.2	1	0.3	-0.9
65	11	1.0	10	1.2	1	0.3	-0.9
54	6	0.5	0	0.0	6	2.0	2.0
Other	136	1.2	101	1.2	35	1.1	

Absence of changes in the overall level of industry concentration does not preclude the possibility that the post-crisis environment will be more or less favorable for particular industries. In considering changes in the pattern of clustering, we note that the largest changes in industry concentration occurred in the categories of computer software (SIC 73), advanced medical equipment (SIC 38) and chemicals and allied products (SIC 28). The percentage of IPOs from these industries changed by +10.1%, -4.4%, and -3.3% respectively. These changes are in line with the variability noted by Helwege and Liang, who observed that, for example, the prevalence of SIC 73 IPOs varied from zero to 50% across various portions of their study period.

Ultimately, Helwege and Liang conclude that (1) throughout their study period, IPOs are highly clustered in a relative handful of industries, and (2) firms in certain industries are more likely to go public in cold markets than are other firms. They note that the pace of technological advancement is not correlated with the IPO market climate, and posit that firms whose values are largely based on technological innovation are more likely to find it necessary to enter the IPO market in the face of adverse market conditions. If we accept this explanation of their findings, our observation that SIC 73 has increased in prevalence would be consistent with the hypothesis that the IPO process has become more challenging to navigate.

IPO FIRM CHARACTERISTICS POST-CRISIS

We now turn to the question of IPO firms' operating characteristics. If the IPO process has become more challenging in the post-crisis period, does that translate to differences in the quality of firms that go public? Have underwriting standards changed in the face of greater scrutiny from investors and regulators? To find out, we conduct simple univariate tests for pre/post crisis differences in a number of measures of operating characteristics. The variables to be studied include Annual Sales, Book value of assets, and Book value of equity (measures of size), the Debt-to-Assets ratio (leverage), Net Profit Margin (profitability), and Total Asset Turnover (efficiency). (Initial results for the NPM variable were highly skewed by a group of firms with zero reported sales in the IPO year. The results presented for this variable exclude all firms with less than \$1 million in annual sales.)

In addition, we consider the levels of capital expenditure and research & development expenditure (in relation to assets). All variables are taken from COMPUSTAT, for the fiscal year corresponding with the IPO. Table 2 presents the results.

The results of the univariate tests are somewhat surprising. Aside from the size-related variables, none of the measures of operating characteristics exhibited statistically significant differences in the post-crisis period. While this may initially appear to be at odds with the finding of Helwege and Liang that differences exist between hot- and cold- market IPO firms, it is consistent with the notion that the post-crisis period has not been a single, protracted cold or hot period, but rather has been characterized as both at various times. It may be the case that the hot/cold differences observed by Helwege and Liang persist in the post-crisis marketplace; we leave that question open for further research.

Some of the size variables did exhibit moderately significant increases in the post-crisis period. Average total sales, in particular, increased from \$565.9 million in the pre-crisis period to \$1428.7 million post crisis. The difference is statistically significant with a p-value of 0.022. To determine whether this finding was indicative of a trend or simply the result of data outliers, we computed the average sales volume for IPO firms in each year of the study period (along with total assets and shareholders' equity). A graph of the yearly averages is shown as Figure 2. It does appear that the greater-than-past-average sales levels for IPO firms have persisted in 2011

and 2012. This would be consistent with the popular notion that in the post-crisis period, smaller firms with less-well-established records of revenue generation are finding it harder to navigate the IPO process.

Variable	<u>Pre-crisis</u>		<u>Post-crisis</u>		<i>p-value</i>
	<i>n</i>	<i>mean</i>	<i>n</i>	<i>mean</i>	
Sales	811	565.9	305	1428.7	0.022
Total Assets	813	786.1	306	1147.4	0.052
Total Equity	813	314.7	306	425.9	0.256
Debt/Assets	808	0.1692	303	0.1772	0.614
Net Income/Sales	746	-0.7642	287	-0.6551	0.755
Sales/Assets	811	0.8336	305	0.8355	0.973
R&D Expense / Assets	485	0.1425	195	0.1208	0.147
CAPX /Assets	810	0.0827	294	0.091	0.462
PP&E / Assets	813	0.2418	306	0.2526	0.567

CONCLUSION

We investigate the nature of the market for initial public offerings in the U.S. over the period 2001-2012, and compare its characteristics before and after the financial crisis of 2008-2009. Our findings can be summarized as follows: (1) the IPO market has returned, more or less, to its pre-crisis deal volume, as measured by the number of transactions per year (although perhaps not to the level of the 2004-2007 bull market). (2) The IPO market still exhibits hot- and cold periods, but those periods appear to be of shorter duration than they were in the prior decade. (3) Firms choosing to go public continue to be highly clustered in a relative handful of industries, and the extent of that clustering has not changed in the post-crisis period. And (4), firms going public in the post-crisis period are significantly larger in terms of sales volume than their pre-crisis counterparts, but we did not detect any other significant differences in operating characteristics or performance.

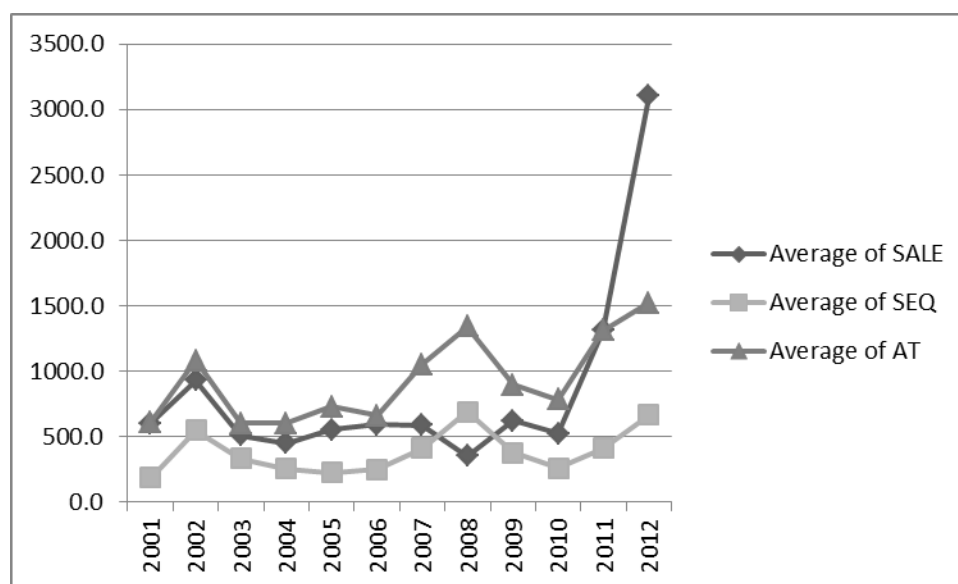


Figure 2 - IPO Firm size measures 2001-2012

It is possible that further analysis will shed more light on the present dynamics of the IPO market. In particular, it would be useful to examine performance characteristics in relation to industry averages, in order to control for the industry rotation that is observed among IPO firms. Also, by partitioning the dataset according to the hot/cold status of the IPO market, it will be possible to determine whether the differences observed by Helwege and Liang persist in the post-crisis environment. Finally, the issue of IPO underpricing and financial market performance in the post-crisis period remains a promising area, which we leave for future research.

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ACCOUNTING TECHNIQUES FOR LOYALTY PROGRAMS AND PROMOTIONAL ALLOWANCES IN THE GAMING INDUSTRY

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ABSTRACT

The gaming industry in the United States may continue to grow as states search for alternative sources of revenue during tough economic times. This growth may be accompanied by an increased emphasis among standard-setters on decreasing the diversity in accounting techniques for loyalty programs and promotional allowances that has traditionally existed in the gaming industry. Differences in accounting treatment for the relatively large dollar amounts associated with these topics can translate to significant differences in financial statement balances, including effects on net income. Using a sample of U.S. gaming firms, I provide empirical examples of this diversity in accounting procedures for promotional allowances, loyalty points, and calculations of breakage.

INTRODUCTION

Despite the fact that various forms of gambling are illegal in many U.S. states, the U.S. commercial gaming industry still generates significant economic activity. According to the American Gaming Association, the “voice of the commercial casino industry” (AGA Annual Report, 2011), 2011 saw industry revenues reach \$35.6 billion with casinos employing 339,000 people who received \$12.9 billion in wages (AGA 2012). The president of the AGA recently stated, “Today, there are 566 commercial casinos in 22 states that generated \$49.5 billion in consumer spending and 400,000 direct jobs in 2010” (Fahrenkopf 2012). He concluded that with indirect effects considered, “This economic activity supported by the commercial casino industry was roughly equivalent to 1 percent of the \$14.5 trillion U.S. gross domestic product in 2010.”

Though the industry is already economically robust, challenging economic conditions currently facing many municipalities may promote long-term growth in the gaming industry. As States look for alternative sources of revenue, some have decided to consider the increased legalization, and subsequent taxation, of casino gambling within their borders. Such decisions can carry huge economic consequences, as evidenced by the recent ballot referendum on increased gambling legalization in Maryland. In the most expensive political fight in the state’s history, spending by rival casino companies reached \$95 million - more than was spent in the four previous gubernatorial races combined (Dresser 2012).

As the tax revenue generated by the gaming industry may increase, so, too may the attention paid to the accounting techniques used by casino companies for transactions and activities unique to the gaming industry. In this paper, we focus on the accounting treatment given to loyalty programs and promotional allowance - two elements for which some accounting guidance has been given but diversity in practice remains. We analyze the financial statements of a sample of companies comprising the U.S. gaming industry to provide a description of the accounting procedures currently used in practice. The *Gaming Audit & Accounting Guide* (Rampulla 2012) states the specific techniques employed and their effect on reported financial performance. These procedures are important considering these costs are significant for firms in the gaming industry.

In the next section, we provide background information on allowable accounting procedures for loyalty programs and promotional allowances. We then analyze the accounting techniques currently used by the gaming industry. We conclude with a discussion that includes suggestions for future research.

BACKGROUND

Promotional Allowances and Loyalty Programs

Promotional allowances are defined within the gaming industry as discretionary complimentary awards (“comps”) based on the customer level of play. These commonly take the form of free or reduced-price travel, lodging, food, and/or casino play. When awarding comps, management may award a favored player an immediate benefit or one that may be redeemed later.

Loyalty programs enable customers to earn rewards through their patronage of the gaming company. In a typical loyalty program, “points” are accumulated by a participating customer who can trade points for various goods and services depending on the level of points accumulated through actions by the player, such as the amount bet at a slot machine in a specified time period. In contrast to the discretionary nature of some promotional allowances, loyalty program rewards represent a contractual obligation by the casino to the customer based upon the customer’s past actions. These are similar in nature to the liabilities incurred by a company based upon the purchase of its gift cards.

Allowable Accounting Techniques

While the administration of promotional allowances and loyalty programs may be relatively straightforward, the concepts involved in accounting for them can be more complex, leading to a diversity of techniques in practice as shown by the *Gaming Audit & Accounting Guide* (Rampulla 2012). First, with respect to revenue recognition, the gross amount wagered is

not the gross revenue of the casino. Instead, for casino revenues, the settled accounting standard is: “Revenue recognized and reported by a casino is generally defined as the win from gaming activities, that is, the difference between gaming wins and losses, not the total amount wagered.” ASC 924-605-25 (FASB 2012).

FASB ASC 924-605-45-1 states that “promotional allowances (complimentaries or comps) represent goods and services, which would be accounted for as revenue, if sold, that a casino gives to customers as an inducement to gamble at that establishment.” The *Gaming Audit & Accounting Guide* (Rampulla 2012) states that firms have flexibility in deciding whether to consider promotional allowances and loyalty rewards when computing gross revenue. Because these rewards are not being sold, gross revenue and expenses would both be overstated if firms simply added in the retail value of the rewards to gross revenue and added the costs of the rewards to expenses, as they would do during normal revenue recognition procedures. Thus, firms may choose not to include the retail value of these rewards in gross revenue. Alternatively, the retail value of the rewards may be included in gross revenues and immediately offset with a deduction for promotional allowances/loyalty rewards to arrive at net revenue. Therefore, net revenue should not be affected by the accounting choice of the firm; however, gross revenues would vary by the possibly large amount representing the retail value of the promotional allowances or loyalty points. Some reward points will expire unused, an issue we address later in my discussion of breakage.

The determination of the appropriate retail value of rewards given through promotional allowances/loyalty programs can be relatively subjective, in part because of the often seasonal nature of the casino industry. Room rates at a resort casino can fluctuate widely based on supply and demand. Therefore, discretion is required in estimating the retail value of a “comped” room that can be redeemed at various times throughout the year.

The estimated value of the goods and services that companies award through promotional allowances and loyalty programs also affects the recognition of expenses and liabilities. Discretionary awards redeemed at the time of issuance should immediately be recognized as expense for the amount of the cost to the firm in delivering it. This describes the nature of promotional allowances (free meal or room, etc.) that are redeemed immediately upon issuance. However, other promotional allowances and loyalty rewards may give the customer the right to future redemption of goods and services. Similar to the accounting for gift cards among retailers or frequent flier rewards among airlines, gaming companies should record a liability to recognize their obligation associated with the future redemption. The amount of this liability could vary based upon the overall demand for the good or service company-wide. For example, the cost to the gaming firm of giving a free room to a customer in the future would simply be its marginal cost if the room would have otherwise gone unoccupied. However, the true cost of the free room would also include the amount of lost revenue if the company could have otherwise rented the room to a paying customer. Therefore, when estimating the value of the liability, companies

should consider numerous factors including the expected timing of the redemption and its effect on a company's other customers.

There is no settled standard on reporting for loyalty programs and promotional allowances. Existing accounting literature provides limited discussion of the topics. The *Gaming Audit & Accounting Guide* (Rampulla 2012) references two models of revenue recognition-- immediate and deferred:

Under an immediate revenue/cost accrual model, costs are typically measured using an incremental cost model. The incremental cost for points that can be redeemed for cash is the full cash value. The gaming entity will have to use judgment to determine the incremental cost to be assigned to other incentives earned. In connection with such programs, gaming entities accrue a liability as points are earned under such programs, based on the relative value of each point earned. Under a deferred revenue model, a portion of the revenue from the original transaction is attributed to the incentive based on a relative fair value allocation, and the deferred portion of the revenue is recognized when the incentive is redeemed.

Example 1: Immediate Cost Model vs. Deferred Revenue Model

Differences between the two models will normally create timing differences in both expense and revenue recognition. Thus, a company's net income can also vary based upon whether it uses the immediate cost or deferred revenue model. To illustrate these differences, I use the following simplified, hypothetical example:

	Company A	Company B
Model Used	Immediate Cost	Deferred Revenue
Gaming Revenue (Period 1 - Award Period)	\$500	\$500
Gaming Revenue (Period 2- Redemption Period)	\$500	\$500
Fair Value of Free Meal Awarded in Period 1	\$100	\$100
Cost of Providing Free Meal	\$50	\$50
Loyalty Program Liability (created in Period 1, eliminated in Period 2)	\$50	\$100
Recognized Revenue, Period 1	\$500	\$400 (\$500 - \$100)
Recognized Expenses, Period 1	\$50	\$0
Net Income (Period 1: Award Period)	\$450 (\$500 - \$50)	\$400 (\$500 - \$100)
Recognized Revenue, Period 2	\$500	\$600 (\$500 + \$100)
Recognized Expenses, Period 2	\$0	\$50
Net Income (Period 2: Redemption Period)	\$500	\$550
Cumulative Net Income	\$950 (\$450 + \$500)	\$950 (\$400 + \$550)

*Example ignores taxes, breakage, and other expenses not under consideration

In this example, Company A, using the immediate cost model, would recognize the full \$500 in gaming revenue in Period 1, the period of the loyalty reward. However, it would also immediately recognize an expense and liability in the period of the award for \$50, its incremental cost in providing the award (free meal). Ignoring other expenses and taxes, Company A's net income for Period 1 would be \$450. In Period 2, the period when the award is redeemed, Company A would debit its loyalty program liability and credit its food inventory for \$50. Its net income for Period 2 would be \$500, producing a cumulative net income for the two periods of \$950.

Alternatively, Company B, using the deferred revenue model, would recognize revenue in Period 1 of \$400, which is equal to the \$500 in gaming revenue minus the \$100 fair value of the award. It would also recognize a deferred revenue liability for \$100. Net income for Period 1 would be \$400. In Period 2, when the award is redeemed, Company B would recognize the additional revenue of \$100 (eliminating the liability) as well as the \$50 expense representing the cost of providing the award. Net income for Period 2 would be \$550, producing a cumulative net income for the two periods of \$950, equal to that of Company A.

As illustrated in this example, companies using the deferred revenue model will normally report lower net income in the award period, and higher net income in the redemption period, compared to those firms using the immediate cost model. Therefore, inter-firm comparisons of financial performance should take the choice of accounting model into consideration. However, as I discuss later in this paper, there are numerous instances in which a sample firm does not explicitly state which model it uses. In addition, even when the choice of model is disclosed, sample firms typically do not disclose the information necessary to reconcile their financial statements with firms using the alternative method (e.g. estimates of the fair value of loyalty awards). Because the dollar amounts associated with loyalty programs and promotional allowances are relatively large in the gaming industry, reported financial performance may vary significantly based upon model choice.

Breakage

In addition to recording liabilities for future reward redemptions, gaming companies also record liabilities associated with redeemable gaming chips outstanding in customers' possession, referred to as chip/token "float" in the *Gaming Audit & Accounting Guide* (Rampulla 2012). Casinos do not expect that all loyalty points or outstanding gaming chips will eventually be redeemed. For example, customers may misplace gaming chips or keep some as souvenirs. Firms typically estimate the dollar amounts of points and gaming chips that will never be redeemed. Firms then decrease the existing liabilities and increase gaming revenue for the dollar amount of the expected non-redemption of loyalty points and gaming chips, an amount referred to as "breakage." Note that even though estimated breakage has a direct effect on gaming

revenues, and, therefore, net income, no firms in my sample either describe the formula they use to estimate breakage or disclose the estimated dollar amount of breakage.

The accounting for promotional allowances and loyalty programs presents numerous sources of potential variety in the techniques applied and account balances reported in financial statements and footnotes. In the next section, we analyze the financial statements of a sample of firms comprising the U.S. gaming industry in an effort to determine the techniques currently employed in practice.

DATA ANALYSIS

Sample Selection

	Ticker symbol	Gross Revenue	Promotional Allowances	Net Income
Firm		2011	2011	2011
Ameristar Casinos Inc.	ASCA	\$1,248,616	\$279,077	\$6,794
Boyd Gaming Corporation	BYD	2,756,177	419,939	(7,999)
Caesars Entertainment Corporation	CZR	10,098	1,264	(688)
Canterbury Park Holding Corporation	CPHC	40,787	201	398
Century Casinos, Inc.	CNTY	79,049	8,183	3,021
Churchill Downs Inc.	CHDN	696,854	21,500	64,355
Dover Downs Gaming & Entertainment	DDE	239,942	20,375	5,359
Empire Resorts Inc.	NYNY	73,022	2,826	(24)
Full House Resorts Inc.	FLL	105,461	9,800	12,590
Global Casinos Inc.	GBCS	5,694	178	(1,379)
Isle of Capri Casinos, Inc.	ISLE	1,211,534	206,539	4,540
Las Vegas Sands Corp.	LVS	9,862,334	451,589	1,269,508
MGM Resorts International	MGM	8,532,735	683,423	3,234,944
Monarch Casino & Resort Inc.	MCRI	169,765	29,133	5,676
MTR Gaming Group, Inc.	MNTG	439,181	11,095	(50,365)
Nevada Gold & Casinos Inc.	UWN	46,474	3,938	(487)
Penn National Gaming Inc.	PENN	2,884,073	141,816	242,351
Pinnacle Entertainment Inc.	PNK	1,141,198	105,600	(2,539)
Trans World Corporation	TWOC	38,167	6244	2,963
Wynn Resorts, Ltd.	WYNN	5,625,103	355,310	825,113

I select casino Form 10-K reports to study disclosure of accounting choices in loyalty programs, promotional allowances, and estimates of breakage. To arrive at my sample, I start with all firms in the Resorts & Casinos and Gaming sectors according to the Hoover's, Inc. industry classification. To remain in my sample, a firm must satisfy the following criteria: 1) file a 10-K with the SEC for fiscal year 2011; 2) derive revenue from casino operations. (Some firms in the industry are equipment manufacturers, hotel operators, or video game creators); 3) disclose the existence of promotional allowances and loyalty programs. My final sample consists of 20 publicly-traded firms. A complete list of my sample can be found in Table 1.

Description of Company Disclosures

All 20 companies made disclosures regarding revenue recognition; examples are in Table 2.

Table 2: Examples of disclosure of revenue recognition in casino companies, FYE 2011

Wynn Resorts Ltd.

The Company recognizes revenues at the time persuasive evidence of an arrangement exists, the service is provided or the retail goods are sold, prices are fixed or determinable and collection is reasonably assured.

Casino revenues are measured by the aggregate net difference between gaming wins and losses, with liabilities recognized for funds deposited by customers before gaming play occurs and for chips in the customers' possession. Cash discounts, other cash incentives related to casino play and commissions rebated through junkets to customers are recorded as a reduction to casino revenue. Hotel, food and beverage, entertainment and other operating revenues are recognized when services are performed.....

MGM Resorts International

Revenue recognition and promotional allowances. Casino revenue is the aggregate net difference between gaming wins and losses, with liabilities recognized for funds deposited by customers before gaming play occurs ("casino front money") and for chips in the customers' possession ("outstanding chip liability"). Hotel, food and beverage, entertainment and other operating revenues are recognized as services are performed. Advance deposits on rooms and advance ticket sales are recorded as accrued liabilities until services are provided to the customer.

Ameristar Casinos Inc.

Casino revenues consist of the net win from gaming activities, which is the difference between amounts wagered and amounts paid to winning patrons. Additionally, the Company recognizes revenue upon the occupancy of its hotel rooms, upon the delivery of food, beverage and other services and upon performance for entertainment revenue. The retail value of hotel

accommodations, food and beverage items and entertainment provided to guests without charge is included in gross revenues and then deducted as promotional allowances to arrive at net revenues. Promotional allowances consist of the retail value of complimentary food and beverage, rooms, entertainment, progress towards earning points for cash-based loyalty programs and targeted direct mail coin coupons.

Monarch Casino and Resort Inc.

Casino revenues represent the net win from gaming activity, which is the difference between wins and losses. Additionally, net win is reduced by a provision for anticipated payouts on slot participation fees progressive jackpots and any pre-arranged marker discounts. Progressive jackpot provision estimates are determined based on the award amount and the statistical probability of a player receiving that award. The frequency of future progressive jackpot awards could vary from the statistical probability used in determining the estimate.

Table 3: Examples of disclosure of loyalty programs combined with promotional allowances, FYE 2011

Boyd Gaming Inc.

The retail value of accommodations, food and beverage, and other services furnished to guests without charge is included in gross revenues and then deducted as promotional allowances. Promotional allowances also include incentives such as cash, goods and services (such as complimentary rooms and food and beverages) earned in our slot bonus point program. We reward customers, through the use of bonus programs, with points based on amounts wagered or won that can be redeemed for a specified period of time, principally for cash, and to a lesser extent for goods or services, depending upon the property. We record the estimated retail value of these goods and services as revenue and then deduct them as promotional allowances. The amounts included in promotional allowances for the years ended December 31, 2011, 2010 and 2009 are as follows:

	Year Ended December 31,		
	2011	2010	2009
	<i>(In thousands)</i>		
Rooms	\$ 130,168	\$ 109,268	— \$ 50,885
Food and beverage	175,391	159,229	— 112,368
Other	114,380	85,328	— 19,927
Total promotional allowances	\$ 419,939	\$ 353,825	\$ 183,180

The estimated costs of providing such promotional allowances for the years ended December 31, 2011, 2010 and 2009 are as follows:

	Year Ended December 31,		
	2011	2010	2009
	<i>(In thousands)</i>		
Rooms	\$ 58,821	\$ 53,928	\$ 29,766
Food and beverage	158,881	159,617	114,711
Other	18,092	16,884	6,031
Total cost of promotional allowances	\$ 235,795	\$ 230,429	\$ 150,508

Monarch Casino and Resort Inc.

The Company's frequent player program, Club Paradise, allows members, through the frequency of their play at the Company's casino, to earn and accumulate points which may be redeemed for a variety of goods and services at the Atlantis. Points may be applied toward room stays at the hotel, food and beverage consumption at the food outlets, gift shop items as well as goods and services at the spa and beauty salon. Points earned may also be applied toward off-property events such as concerts, shows and sporting events. Points may not be redeemed for cash.

In October 2009, the Company launched a new program under the Club Paradise program called "EZ Comp(SM)". Among other things, the technology allows Atlantis patrons to see their redeemable Complimentary point balances. Prior to the launch of the EZ Comp(SM) program, the Company recognized expense at the time Complimentary points were redeemed and the redemption value was at the Company's discretion. Under the new program, the Company recognizes Complimentaries expense at the time points are earned, which occurs commensurate with casino patron play. The redemption value is now known to the patron. This change in the Company's program resulted in a one-time, non-cash charge in 2009 of approximately \$1.4 million to recognize the liability for redeemable Complimentary point balances on the date the EZ Comp(SM) program was launched.

The retail value of hotel, food and beverage services provided to customers without charge is included in gross revenue and deducted as promotional allowances. The estimated departmental costs of providing such promotional allowances are included in casino costs and expenses as follows:

Years ended December 31,		
2011	2010	2009

Food and beverage	\$16,244,303	\$15,878,288	\$13,844,611
Hotel	2,328,566	2,276,414	3,023,164
Other	1,696,485	1,505,020	641,404
	<u>\$20,269,354</u>	<u>\$19,659,722</u>	<u>\$17,509,179</u>

Nevada Gold & Casinos (UWN)

We record revenues from casino operations, management fees, and interest on notes receivable on the accrual basis as earned. The dates on which payments are collected may vary depending upon the term of the contracts or note receivable agreements. Interest income related to notes receivable is recorded when earned and its collectability is reasonably certain.

The retail value of food and beverage and other services furnished to guests without charge is included in gross revenue and deducted as promotional allowances. Net revenues do not include the retail amount of food, beverage and other items provided gratuitously to customers. We record the redemption of coupons and points for cash as a reduction of revenue. These amounts are included in promotional allowances in the accompanying consolidated statements of operations. The estimated cost of providing such complimentary services that is included in casino expense in the accompanying consolidated statements of operations was as follows:

	Fiscal Year Ended	
	April 30, 2012	April 30, 2011
Food and beverage	\$ 4,801,738	\$ 3,754,336
Other	115,968	29,261
Total cost of complimentary services	<u>\$ 4,917,706</u>	<u>\$ 3,783,597</u>

Table 4: Examples of disclosures of loyalty programs only, FYE 2011

Nevada Gold & Casinos

In October 2009, the Company launched a new program under the Club Paradise program called “EZ Comp(SM)”. Among other things, the technology allows Atlantis patrons to see their redeemable Complimentary point balances. Prior to the launch of the EZ Comp(SM) program, the Company recognized expense at the time Complimentary points were redeemed and the redemption value was at the Company’s discretion. Under the new program, the Company recognizes Complimentaries expense at the time points are earned, which occurs commensurate with casino patron play. The redemption value is now known to the patron. This change in the Company’s program resulted in a one-time, non-cash charge in 2009 of approximately \$1.4 million to recognize the liability for redeemable Complimentary point balances on the date the EZ Comp(SM) program was launched.

Caesar's Entertainment

Our customer loyalty program, Total Rewards, offers incentives to customers who gamble at certain of our casinos throughout the United States. Under the program, customers are able to accumulate, or bank, reward credits over time that they may redeem at their discretion under the terms of the program. The reward credit balance will be forfeited if the customer does not earn a reward credit over the prior six-month period. As a result of the ability of the customer to bank the reward credits, we accrue the expense of reward credits, after consideration of estimated forfeitures (referred to as "breakage"), as they are earned. The value of the cost to provide reward credits is expensed as the reward credits are earned and is included in direct casino expense in our Consolidated Statements of Operations. To arrive at the estimated cost associated with reward credits, estimates and assumptions are made regarding incremental marginal costs of the benefits, breakage rates, and the mix of goods and services for which reward credits will be redeemed. We use historical data to assist in the determination of estimated accruals. Such amounts are included within accrued expenses in the Consolidated Balance Sheets presented herein.

In addition to reward credits, customers at certain of our properties can earn points based on play that are redeemable in the form of credits playable at the gaming machine. We accrue the cost of redeemable points, after consideration of estimated breakage, as they are earned. The cost is recorded as contra-revenue and included in casino promotional allowances in our Consolidated Statements of Operations.

Penn National Gaming Inc.

Revenues are recognized net of certain sales incentives in accordance with ASC 605-50, "Revenue Recognition—Customer Payments and Incentives" ("ASC 605-50"). The Company records sales incentives and points earned in point-loyalty programs as a reduction of revenue.

Full House Resorts Inc.

The player loyalty program represents the value of repeat business associated with Rising Star's loyalty program. The value of \$1.7 million of the Rising Star player loyalty program was determined using a multi-period excess earning method of the income approach, which examines the economic returns contributed by the identified tangible and intangible assets of a company, and then isolates the excess return, which is attributable to the asset being valued, based on cash flows attributable to the player loyalty program. The valuation analysis for the active rated player was based on projected revenues and attrition rates. Rising Star maintains historical information for the proportion of revenues attributable to the rated players for gross gaming revenue.

Table 5: Examples of disclosures of promotional allowances

Wynn Resorts Ltd.

The retail value of accommodations, food and beverage, and other services furnished to guests without charge is included in gross revenues. Such amounts are then deducted as promotional allowances. The estimated cost of providing such promotional allowances is primarily included in casino expenses as follows (amounts in thousands):

	Years Ended December 31,		
	2011	2010	2009
Rooms	\$ 52,019	\$ 52,017	\$ 53,325
Food and beverage	104,413	94,220	86,798
Entertainment, retail and other	17,017	21,091	12,787
	\$173,449	\$167,328	\$152,910

Pinnacle Entertainment Inc.

The retail value of food and beverage, lodging and other services furnished to guests on a complimentary basis is included in gross revenues and then deducted as promotional allowances. The estimated cost of providing such promotional allowances is primarily included in casino expenses. Complimentary revenues that have been excluded from the accompanying Consolidated Statements of Operations for the years ended December 31, 2011, 2010 and 2009, and the cost to provide such benefits were as follows:

	For the year ended December 31,		
	2011	2010	2009
	(in millions)		
Complimentary revenues	\$ 105.6	\$ 101.2	\$ 96.4
Promotional allowance costs	\$ 70.0	\$ 68.0	\$ 68.5

Isle of Capri Casinos, Inc.

The retail value of rooms, food and beverage and other services furnished to guests without charge or at a discount is included in gross revenues and then deducted as promotional allowances to arrive at net revenues included in the accompanying consolidated statements of operations. We also record the redemption of coupons and points for cash as promotional allowances. The estimated cost of providing such complimentary services from continuing operations are included in casino expense in the accompanying consolidated statements of operations as follows:

	Fiscal Year Ended		
	April 29, 2012	April 24, 2011	April 25, 2010
Rooms	\$ 8,603	\$ 8,043	\$ 7,642

Food and beverage	60,252	52,905	50,875
Other	987	991	676
Total cost of complimentary services	<u>\$ 69,842</u>	<u>\$ 61,939</u>	<u>\$ 59,193</u>

	Yes	No or uncertain
Loyalty program rewards are combined with promotional allowances	8	12
Comps and/or loyalty program rewards included in gross revenue and then subtracted as promotional allowances	17	3
Deferred Revenue model is used (= yes) or Immediate recognition or cannot be determined (=no)	10	10
Formula for estimated breakage disclosed	0	20
Dollar amount of estimated breakage recognized or disclosed	0	20

As shown in Table 6 (above), 17 out of 20 firms include promotional allowances in gross revenues and then subtract them out in arriving at net revenue. While this would not affect net income, it would affect any ratio using gross revenue. An example of disclosures of revenue recognition can be found in Table 2. Examples of disclosure of promotional allowances are found in Table 5.

As shown in Table 6 (above), 8 out of 20 firms in my sample combine loyalty program rewards with complimentaries to arrive at what they refer to as “promotional allowances,” so that the footnotes do not allow a clear delineation between the two. Examples of such disclosures can be found in Table 3.

As shown in Table 6 (above), 10 firms use a deferred revenue model to account for loyalty program rewards whereas 10 firms use either an immediate revenue/cost model. The remaining 10 do not explicitly disclose which model they use. Examples of disclosures of loyalty programs can be found in Table 4.

Most companies in my sample indicate, at least indirectly, that they consider breakage in their estimates of the liabilities for loyalty point rewards and outstanding gaming chips. However, as described in Table 6, zero companies in my sample either disclose the specific parameters included in their formula for estimated breakage or include the dollar amount of estimated breakage.

DISCUSSION

The purpose of this paper is to highlight the potential variation in financial performance reported by gaming companies based solely upon the choice of permissible accounting methods

used for loyalty programs and promotional allowances. I do not wish to imply that any company within my sample has violated any financial reporting rules. Instead, I simply point out that current accounting standards allow for sufficient discretion in method and level of disclosure so as to make comparability across companies difficult. The variety of these techniques that companies currently may choose to use in accounting for promotional allowances, loyalty points, and breakage can result in significant effects on financial statement balances, including that of net income. As more municipalities consider legalized gambling as an additional source of revenue, the gaming industry in the United States will likely continue to experience economic growth. This growth may be accompanied by an increased emphasis among standard-setters on decreasing the diversity in accounting techniques that has traditionally existed in the gaming industry.

I believe there are numerous opportunities for future research. First, I have not considered any international aspects of casino accounting. While International Financial Reporting Standards are largely silent on casino accounting, the IASB (2007) has issued an interpretation on loyalty programs. Further research may examine how differences in accounting procedures in other countries affect the financial reporting of foreign and multi-national gaming firms. In addition, future research may examine the market reaction to specific accounting choices made by gaming firms. However, such analysis may prove challenging given the relatively small number of firms within the industry and/or the relative infrequency of changes in accounting method. Researchers may consider the motivations and opportunities for earnings management within the gaming industry in light of the large variation in tax rates on gaming revenue across the industry. The potential for growth in the gaming industry can make such topics increasingly important to both investors and regulators alike.

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THE IMPACT OF ORGANIZATIONAL CITIZENSHIP BEHAVIOR ON SYNERGY CREATION IN MERGERS AND ACQUISITIONS, ACCORDING TO LEVELS OF OCB AND TYPES OF M&A

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ABSTRACT

This study examines how organizational citizenship behavior (OCB) impacts synergy creation in mergers and acquisitions (M&A). In this study, eight dimensions of OCBs are classified into two types: individual-level OCB, which targets individual benefits, and group-level OCB, which targets overall organizational benefits. The study demonstrates that group-level OCB more significantly influences synergy creation in the execution of M&A than individual-level OCB does. Furthermore, it suggests that the significance of the moderating effects of OCBs differ according to OCB level as well as M&A type. Finally, using the proposed conceptual model, this study presents a simple case study along with some theoretical and managerial implications; and provides recommendations for future research.

Keywords: Individual-level OCB, group-level OCB, horizontal, vertical, and conglomerate M&A, synergy creation in M&A, generic value creation model

INTRODUCTION

The findings of several studies suggest that synergy value creation through merger and acquisition (M&A) activity is very difficult. Haleblan et al. (2009) argued that "acquisitions did not enhance acquiring-firm value, as measured by either short-term or long-term performance measures; acquisitions were often found to erode acquiring firm value and produce highly volatile market returns" (Haleblan, Devers, McNamara, Carpenter, & Davison, 2009: 470). Shanley (1994) points out that the occurrence of employee resistance, such as high-level conflict, turnover, and non-compliance; acts as a critical failure factor in M&As. Schoenburg (2003) argues that culture clashes between the acquiring firm and the acquired firm can be a primary source of employee resistance. In fact, according to the Economist Intelligence Unit's 2006 report, approximately 67% of executives indicate that cultural integration is the most significant

success factor in M&A. Given the practical importance of human resource problems that occur in the culture-integration phase of the M&A process, it is surprising that the impact of employee organizational citizenship behaviors (OCBs) on M&A performance has rarely been studied. Thus, the purpose of this study is to investigate the relationship between OCB, M&A, and synergy creation in M&A. In particular, it examines the following research questions:

- Q1 How can the dimensions of OCB be classified by level of OCB (individual versus group level)?*
- Q2 Is individual-level OCB or group-level OCB more significant to synergy creation in M&A?*
- Q3 How is the moderating effect of OCB on M&A execution represented differently according M&A types, such as horizontal, vertical, and conglomerate?*

In this study, eight dimensions of OCBs are classified into two types: individual-level OCB, which targets individual benefits, and group-level OCB, which targets overall organizational benefits. The study demonstrates that group-level OCB more significantly influences synergy creation in the execution of M&A than individual-level OCB does. Furthermore, it suggests that the significance of the moderating effects of OCBs differ according to OCB level as well as M&A type. Finally, this study presents a simple case study along with some theoretical and managerial implications; and provides recommendations for future research.

LITERATURE REVIEW

Organizational Citizenship Behavior (OCB)

Dennis Organ (1988) defines OCB as “individual behavior that is discretionary, not directly or explicitly recognized by the formal reward system, and that in the aggregate promotes the effective functioning of the organization” (p.4). OCB is broadly considered to develop as a result of two motivational bases: job attitude and disposition (Organ, 1990; Organ & Ryan, 1995). Organ & Ryan (1995) demonstrate that OCB stems from an individual's authentic desire to help an organization or the other people at work, based on personal disposition, or as a means of reciprocating for organizational actions, as is described in social exchange theory. On the other hand, Bolino (1999) suggests that a motivational force behind citizenship behaviors is the impression-management motive, in which citizenship behaviors result from an individual's desire to look like a good citizen. It is now widely accepted that employee OCB considerably influences employee performance (MacKenzie, Podsakoff, & Fetter, 1991; Motowidlo & Van Scotter, 1994; Van Scotter & Motowidlo, 1996).

Dimensions of OCB Initially, Smith, Organ, and Near (1983) proposed two dimensions of OCB: altruism and general compliance. In 1988, Organ replaced the dimension of general

compliance with four other dimensions, leading to a conceptual model of OCB involving five dimensions. *Altruism* involves discretionary behaviors directed at helping other employees at work. *Courtesy* refers to discretionary behaviors that aim to prevent work-related conflicts with others (Law et al., 2005). *Sportsmanship* is defined as employees' willingness to tolerate less preferable job circumstances without complaint. *Civic virtue* is used to describe employees' deep concern, active interest, and participation in organizational practices (Law et al., 2005; Podsakoff et al., 1990). Examples of civic virtue can be seen in the daily practices of employees, such as attending meetings, responding to mail, and keeping up with what is going on with the organization in general. Finally, *conscientiousness* represents discretionary extra-role behaviors that exceed the minimum requirements of a task, job, and work ethics (MacKenzie et al., 1993).

This study adds three more dimensions to five dimensions of OCB offered by Organ in 1988: *self-development*, *organizational loyalty*, and *organizational obedience*. George and Brief (1992) describe *self-development* as an essential dimension of citizenship behavior, which includes all of the steps that workers take to voluntarily improve their knowledge, skills, and abilities (Podsakoff et al., 2000). According to George and Brief (1992: 155), self-development includes "seeking out and taking advantage of advanced training courses, keeping abreast of the latest developments in one's field and area." Podsakoff et al. (2000: 517) state that "*organizational loyalty* consists of loyal boosterism and organizational loyalty (Graham, 1989, 1991), spreading goodwill and protecting the organization (George & Brief, 1992; George & Jones, 1997), and the endorsing, supporting, and defending of organizational objectives (Borman & Motowidlo, 1993, 1997)." Graham (1991) defines organizational loyalty as the identification with and allegiance to organizational leaders and the organization as a whole, transcending the parochial interests of individuals, work groups, and departments. Organizational loyalty includes such representative behaviors as defending an organization against threats, contributing to its good reputation, and cooperating with others to serve its overall interests (Graham, 1991: 255). Podsakoff et al. (2000: 517) describe organizational compliance, which involves "capturing a person's internalization and acceptance of the organization's rules, regulations, and procedures, which results in a scrupulous adherence to them, even when no one observes or monitors compliance." This dimension was called *organizational obedience* by Graham (1991) and was defined as an orientation toward organizational structure, job descriptions, and personnel policies that recognizes and accepts the necessity and desirability of a rational structure of rules and regulations. Graham also defines organizational obedience as a respect for rules and instructions, punctuality in attendance and task completion, and stewardship of organizational resources (Graham, 1991: 255).

Mergers and Acquisitions (M&A)

M&A is a term that describes the acquiring of a company or merging of companies. Mergers and acquisitions each have distinguishing features with regard to their purposes and the processes involved. A merger occurs when two or more companies become one company,

legally as well as practically, through integration. Jang et al. (2004) demonstrate that a merger is one of the strongest forms of integration, because it generally results in the complete unification of two companies' missions, strategies, and operation systems through combination. An acquisition occurs when an acquiring company achieves the right to manage an acquired company by obtaining the acquired company's assets or stocks. In this case, "the acquiring and acquired companies remain two independent companies from a legal point of view even after the acquisition, although the acquiring company has control over the acquired company" (Jang et al., 2004: 7). This study mainly focuses on mergers, and so primarily uses the term M&A to denote mergers, rather than acquisitions.

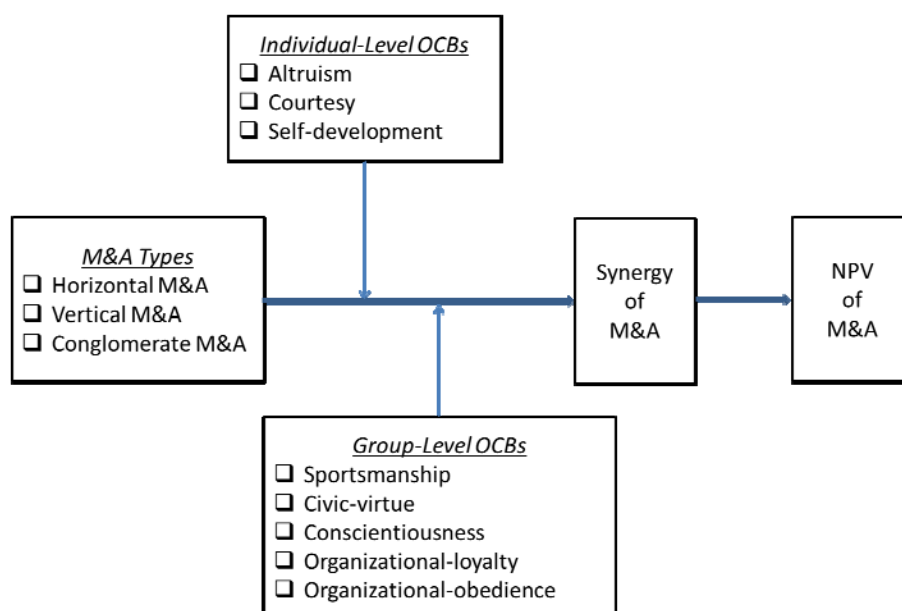
In general, mergers are classified as one of three types: horizontal, vertical, or conglomerate. A horizontal merger is when a company merges with industry competitors in order to gain the competitive advantages that come with a larger scale and scope (Hill & Jones, 2004). As such, horizontal mergers typically occur between two companies in similar business sectors. An example of a horizontal merger would be an automobile company buying a competing automobile company. A horizontal merger creates synergy by "managing rivalry within an industry, reducing the risk of price warfare, lowering costs, and increasing a company's bargaining power over suppliers and buyers" (Hill & Jones, 2004: 301). Hill & Jones (2004: 306) state that "vertical integration means that a company is expanding its operations either *backward* into an industry that produces inputs for the company's products or *forward* into an industry that uses or distributes the company's products." An example of *backward* integration would be if an automobile company satisfied its own steel demands by establishing a company-owned steel producer, while an automobile company that sells its cars through company-owned retail outlets is an example of *forward* integration. Vertical integration is usually driven by a desire to strengthen the competitive position or cost of a company's original business (Chandler, 1962; Pfeffer & Salancik, 1978; Harrigan, 1985; Hill & Jones, 2004). The third type, conglomerate mergers, involves two extraneous companies. An example of a conglomerate merger would be if an automobile company bought a hotel chain. The most important purpose of a conglomerate merger is typically the diversification of capital investment (Levy & Sarnat, 1970). In addition, with regard to the relationship between a firm's unrelated diversification (i.e., conglomerate mergers) and firm performance, the study of Palich, Cardinal, & Miller (2000) suggests that moderate levels of diversification contribute to higher levels of firm performance than either single or unrelated diversification (i.e., the curvilinear relationship). However, Cho (2013) argues that, in a rapidly changing market environment, a firm's unrelated diversification (e.g., conglomerate mergers, occurring between two extraneous firms with heterogeneous business sectors) can be more positively related to a firm's overall business performance than a firm's related diversification (e.g., horizontal mergers, occurring between two firms with homogeneous business sectors) through a firm's optimized dynamic capabilities. In the same vein, Ng (2007) suggests that, in incomplete markets, a firm's unrelated diversification

can be beneficial because the firm's diversification degree is positively associated with its strength of dynamic capabilities.

THEORETICAL FRAMEWORK AND PROPOSITION DEVELOPMENT

Figure 1 illustrates the theoretical framework of this study. This model demonstrates that OCBs play a moderating role in the relationship between M&A and synergy effects. It also indicates that the impact of OCB as a moderator on the M&A implementation could be differentiated by M&A types (horizontal, vertical, or conglomerate) as well as OCB levels (individual-level or group-level).

Figure 1
A Theoretical Framework



Individual-Level and Group-Level OCB

Most OCB research has focused on the effects of OCB at the individual level (e.g. Podsakoff et al., 2000), although some studies have focused on its effects at the group level (e.g. George & Bettenhausen, 1990; Koys, 2001; Chen et al., 2005). Group-level OCB can be defined as the behavior of an entire work group, rather than of individuals (Chen, Lam, Naumann, & Schaubroeck, 2005). Group-level OCB is also described with regard to group-level “OCB norms” (Ehrhart & Naumann, 2004). Williams and Anderson (1991) classify OCB as having two different forms: (a) organizational citizenship behavior – individuals (OCBI), which is behavior aimed at other individuals in the workplace, immediately benefitting specific individuals (e.g. helping others who have been absent, taking a personal interest in other employees), and (b) organizational citizenship behavior – organizational (OCBO), which is behavior that is directed

at the organization as a whole, generally benefitting it (e.g. giving advance notice when one is unable to come to work, adhering to informal rules devised to maintain order).

This study employs Williams and Anderson's (1991) classification scheme. It regards altruism, courtesy, and self-development as dimensions of individual-level OCB, as these are discretionary behaviors that directly target individual benefit rather than organizational benefit. On the other hand, sportsmanship, civic virtue, conscientiousness, organizational loyalty, and organizational obedience are regarded as dimensions of group-level OCB, as these are discretionary behaviors targeted toward organizational rather than individual benefit. The study suggests the following propositions 1 and 2:

- P1 Altruism, courtesy, and self-development are more likely to be classified as dimensions of individual-level OCB, because they are discretionary behaviors directly targeted at individual benefit rather than organizational benefit.*
- P2 Sportsmanship, civic virtue, conscientiousness, organizational loyalty, and organizational obedience are more likely to be classified as dimensions of group-level OCB, because they are discretionary behaviors targeted at individual benefit rather than organizational benefit.*

OCB and Synergy Creation in M&A

"The desire to acquire is truly a very natural and common thing; and whenever a man who is capable of doing it makes the attempt, he will generally be praised, or at least not blamed; error and blame arise when a man lacks the necessary ability and still wants to make the attempt at all costs."

- Niccolò Machiavelli (1469-1527), *The Prince*, Chapter III

Sirower (1997) defines synergy as "the increase in performance of the combined firm over what the two firms are already expected or required to accomplish as independent firms." In management terms, synergy means competing better than expected, and also implies gains in competitive advantage over and above what companies already need to survive in their competitive markets (Sirower, 1997: 20). Sirower (1997) points out that acquirers have two essential things to consider in making an acquisition: the first is the economics of the acquisition premium and the second is the probability of achieving synergy in a competitive industry. These are also the things that the stock market considers when acquisitions are announced (Sirower, p.45). Hence, markets will forecast the expected net present value (NPV) of the decision, where $NPV = Synergy - Premium$. It is important to recognize that while premiums are paid up front, synergies do not occur immediately. There are three potential outcomes for an acquisition:

- (i) $Synergy \geq Premium$. This combination results in discounted positive synergies that are equal to or greater than the premium paid for the acquisition, meaning that the discounted benefits are equal to or greater than the premium required to play the game.
- (ii) $0 \leq Synergy \leq Premium$. This combination results in discounted synergies that are positive, but whose amount is less than the premium paid.

(iii) Synergy < 0 . This combination results in diseconomies (i.e. negative synergies) in addition to a total loss of the premium paid.

(Sirower, 1997: 45-46)

Altruism refers to discretionary behaviors directed at helping other employees at work. Courtesy refers to discretionary behaviors that aim to prevent work-related conflicts with others (Law et al., 2005). It can thus be assumed that high-level individual OCBs could reduce conflicts among employees that may occur in the M&A integration process, and help to boost cooperation among employees. Given this, this study suggests the following proposition 3:

P3 High individual-level OCBs, such as altruism and courtesy, will positively moderate the relationship between M&A execution and synergy creation.

M&As, particularly mergers, typically require the complete unification of two companies' group-level missions, strategies, and operational systems. Group-level OCBs such as sportsmanship, civic virtue, conscientiousness, organizational obedience, and self-development are discretionary behaviors that are directed at an organization as a whole and benefit it in general. As such, it can be rationally anticipated that during the process of a merger, group-level OCBs will have a more significant impact on M&A execution than individual-level OCBs. For example, sportsmanship is defined as employee willingness to tolerate less preferable circumstances on the job without complaint. Given this, it can be expected that high levels of sportsmanship would lessen conflicts between labor and management that may arise in the process of M&A. Graham (1991) defines organizational obedience as an orientation toward organizational structure, job descriptions, and personnel policies that recognizes and accepts the necessity and desirability of a rational structure of rules and regulations. It can be reasonably assumed that high-level organizational obedience will positively impact employees' acceptance of a new organization's rules, regulations, and objectives in the process of M&A implementation. Accordingly, it can be expected that high-level group OCBs will have a positive impact on the relationship between M&A execution and the creation of synergy. Based on these arguments, this study suggests the following propositions 4 and 5:

P4 High group-level OCBs such as sportsmanship, civic-virtue, conscientiousness, organizational-obedience, and self-development will positively moderate the relationship between M&A execution and synergy creation.

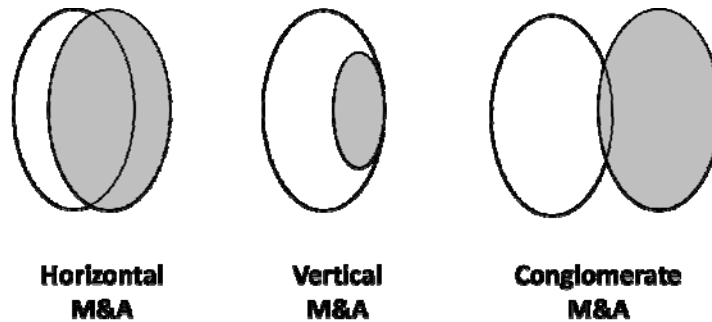
P5 In M&A execution, group-level OCBs will more significantly influence synergy creation than individual-level OCBs.

OCB and M&A Types

Figure 2 shows the different magnitude of crossing-over processes, according to M&A type. Horizontal M&A occurs between companies in similar business sectors, and leads to the

greatest amount of crossing-over between acquired and acquiring company. Hence, it can be expected that the most significant conflicts between companies will occur in processes of horizontal integration.

Figure 2
Magnitude of Crossing-Over by M&A Types



Vertical M&A is conducted in order to expand a firm's operation either backward or forward into an industry, and typically involves the buying of a supplier. In this case, there is less crossing-over than in horizontal M&A, and thus fewer significant conflicts can be expected. A conglomerate M&A represents an integration between extraneous companies, with the central purpose of diversifying capital investment (Levy & Sarnat, 1970). This involves the smallest amount of crossing-over of the three types of M&As and thus is least likely to lead to significant conflicts between the involved companies. Based on these arguments, this study suggests the following proposition 6. Furthermore, after integrating all propositions discussed in this study, Table 1 represents how the significance of moderating effects of OCBs differs, according to OCB-level and M&A type:

P6 The significance of moderating effects will vary according to M&A type, in the following order: horizontal M&A (biggest impact), vertical M&A (medium impact), and conglomerate M&A (lowest impact).

Type of M&A	Level of OCB			
	Individual		Group	
	Low	High	Low	High
Horizontal	(-) (-)	(+) (+)	(-) (-) (-)	(+) (+) (+)
Vertical	(-)	(+)	(-) (-)	(+) (+)
Conglomerate	rare	rare	rare	rare

Note: Cell entries express the relative synergy effects of M&A, indicating "worst" (-)(-)(-), "worse" (-)(-), "bad" (-), "good" (+), "better" (+)(+), and "best" (+)(+)(+).

DISCUSSION

Case Study with the Developed Propositions

A brief case study was conducted with the aforementioned developed propositions, in order to explore them in a more practical manner. First, OCBs were categorized into four dimensions, according to their level and magnitude, as represented in Table 2. Next, all of possible OCB combinations between two M&A parties were described, as can be seen in Table 3.

Table 2 OCB Classification by Level and Magnitude			
OCB Classification		Level of OCB	
		Individual	Group
Magnitude of OCB	Low	LI	LG
	High	HI	HG

Table 3 All Possible OCB Combinations between Two M&A Parties					
OCB Combination		Company A			
		LI	LG	HI	HG
Company B	LI	LI-LI	LI-LG	LI-HI	LI-HG
	LG	LG-LI	LG-LG	LG-HI	LG-HG
	HI	HI-LI	HI-LG	HI-HI	HI-HG
	HG	HG-LI	HG-LG	HG-HI	HG-HG

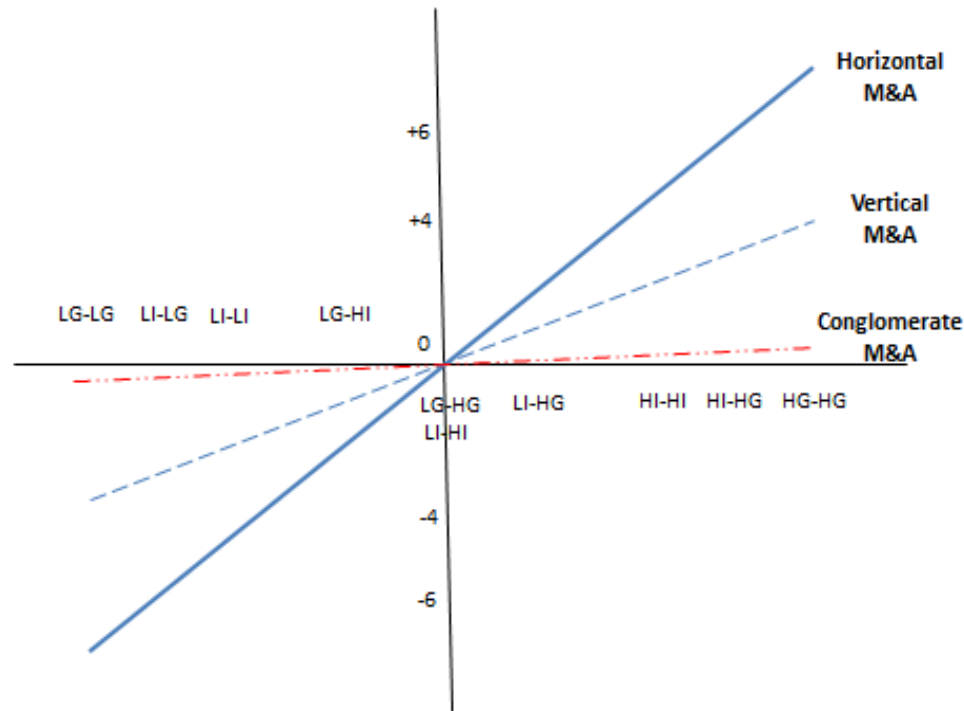
Following this, Table 1 was revised mathematically, indicating "-3" with (-)(-)(-), "-2" with (-)(-), "-1" with (-), "0" with rare, "+1" with (+), "+2" with (+)(+), and "+3" with (+)(+)(+), as shown in Table 4. Finally, the expected synergy creation amounts in M&A execution were calculated by applying Tables 2, 3, and 4, as represented in Table 5. The results were plotted on a graph, shown as Figure 3.

Type of M&A	Level of OCB			
	Individual		Group	
	Low	High	Low	High
Horizontal	-2	+2	-3	+3
Vertical	-1	+1	-2	+2
Conglomerate	0	0	0	0

OCB Combination	Type of M&A		
	Horizontal	Vertical	Conglomerate
LG-LG	$-3 + -3 = -6$	$-2 + -2 = -4$	$0 + 0 = 0$
LI-LG	$-2 + -3 = -5$	$-1 + -2 = -3$	$0 + 0 = 0$
LI-LI	$-2 + -2 = -4$	$-1 + -1 = -2$	$0 + 0 = 0$
LG-HI	$-3 + 2 = -1$	$-2 + 1 = -1$	$0 + 0 = 0$
LI-HI	$-2 + 2 = 0$	$-1 + 1 = 0$	$0 + 0 = 0$
LG-HG	$-3 + 3 = 0$	$-2 + 2 = 0$	$0 + 0 = 0$
LI-HG	$-2 + 3 = 1$	$-1 + 2 = 1$	$0 + 0 = 0$
HI-HI	$2 + 2 = 4$	$1 + 1 = 2$	$0 + 0 = 0$
HI-HG	$2 + 3 = 5$	$1 + 2 = 3$	$0 + 0 = 0$
HG-HG	$3 + 3 = 6$	$2 + 2 = 4$	$0 + 0 = 0$

The results of this case study indicate that the HG-HG combination offers the best integration in terms of creating synergy in both horizontal and vertical M&A, while the LG-LG combination offers the worst. Furthermore, they indicate the preference order of OCB combinations in M&A execution, which is: LG-LG (the worst combination for synergy creation), LI-LG, LI-LI, LG-HI, LI-HI, LG-HG, LI-HG, HI-HI, HI-HG, and HG-HG (the best combination for synergy creation).

Figure 3
Results of Case Study: Expected Synergy Creation by OCB Level and M&A Type



CONCLUSION

Theoretical and Managerial Implications

It is typically accepted that there are three primary determinants of M&A performance: (i) value creation potential, (ii) integration form, and (iii) employment resistance (Larsson & Finkelstein, 1999; Schoenberg, 2003). Value creation potential is generally determined by two distinct perspectives: the 'strategic fit' model and the 'generic mechanisms' model. The 'strategic fit' model postulates that "the more closely-related two merging businesses are, in terms of their products, markets, and technologies; the greater the potential to create value by exploiting synergies, based on economies of scale, scope, and increased market power" (Schoenberg, 2003: 104). This argument is partly supported by the findings of this study. As shown by the results of the case study (see Figure 3 & Table 5), the significance of synergy creation through M&A execution is largely affected by the type of M&A. This study shows that the horizontal integration type, occurring between two similar businesses, has the strongest potential to achieve synergy creation; while conglomerate-integration M&As, taking place between two extraneous companies, have the weakest potential for synergy creation.

However, the results of this study also indicate that the greatest synergy creation of horizontal-integration M&As can only be realized when both the acquired firm and the acquiring firm have high-level OCBs (e.g., the M&A cases of HG-HG, HI-HG, and HI-HI). In fact, it was found that when both bidding firms and target firms have low-level OCBs, horizontal M&As may be exposed to a greater risk of value destruction (e.g., the M&A cases of LG-LG, LI-LG, and LI-LI) than vertical and conglomerate M&As. As such, these arguments can be further defended by advocates of the 'generic mechanisms' perspective. While the 'strategic fit' model considers the similarities between bidding firms and target firms as the most important determinant of value creation within M&As, the 'generic mechanisms' model states that "the ultimate driver of value creation within acquisitions is the ability to leverage the individual resources and capabilities of the combining companies, whether this be based on organizational similarities or difference" (Schoenberg, 2003: 105). In other words, the 'generic mechanisms' model emphasizes that value creation within M&As can be realized through effective "resource sharing, knowledge transfer, combination benefits, and restructuring" (Schoenberg, 2003: 107). This argument is strongly supported by the findings of this study, demonstrating that employee OCB can be a significant moderating factor in the relationship between M&As and its performance (see Table 1). For instance, in terms of horizontal M&As, the case study shows that the HG-HG case, where both a bidding and a target firm have high-level group OCBs, has the highest 'value creation' potential through a merger; whereas the LG-LG case, where both firms have low-level group OCBs, has the highest 'value destruction' possibility (illustrated in Table 5 and Figure 3). Based on this finding, it can be rationally assumed that high-level OCBs of employees can accelerate knowledge transfer, resource sharing, and cooperation between the acquiring firm and the acquired firm; ultimately contributing to greater synergy creation during the M&A process. In conclusion, the findings of this study indicate the possibility for theoretical reconciliation between the 'strategic fit' and 'generic mechanisms' perspectives regarding the value creation ability of M&As.

Additionally, since the moderating effects of employee OCBs on the relationship between M&A and value creation has rarely been studied, the findings of this study may provide useful guidelines for managers considering engaging in M&As and can lead to a better understanding of the impact of OCBs on their M&A processes; and consequently, help in finding more appropriate partners to maximize synergy creation through M&As.

Limitations and Future Research Directions

Although it is assumed that there is a positive relationship between employee OCBs and M&A performance, it is also probable that some OCBs may have a negative effect on M&A execution. For instance, Borman & Motowidlo (1997) describe organizational loyalty as activity that involves endorsing, supporting, and defending organizational objectives. In particular, organizational loyalty includes representative behaviors that involve defending the organization against threats and contributing to its good reputation (Graham, 1991: 255). It can thus be expected that high levels of organizational loyalty can negatively influence M&A process,

because a high level of desire to defend organizational objectives and constructs against perceived threats, including the new missions, strategies, and operation systems of an acquiring company, might exist among the employees of acquired companies. In fact, Lubatkin et al. (1999) suggest that in most cases the percentage of an acquired company's top management team that either leaves or is asked to quit is roughly 25% after the first year, 35% after the second year, 48% after the third year, 55% after the fourth year, and 61% after the fifth year (Hunger & Wheelen, 2007: 145). Therefore, based on these arguments, it is recommended that the negative effects of OCB on M&A be investigated in any future research. Furthermore, longitudinal and process-oriented studies must also be conducted to explore the possibility that OCBs of employees in firms involved in M&As can be changed, dependent upon their new work environment.

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SPECIAL PURPOSE ENTITIES AND THE SHADOW BANKING SYSTEM: THE BACKBONE OF THE 2008 FINANCIAL CRISIS

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ABSTRACT

Special Purpose Entities (SPEs) are business entities that exist for a narrow purpose, such as securitizing a portfolio of receivables or financing the acquisition of a building. These thinly capitalized entities are often created to help a sponsoring firm limit exposure to financial risk or obtain access to low-cost financing. The origins of SPEs can be traced back to the 1970s, when they were used to monetize a very narrow set of bank loans. By the 1990s, SPEs had become more commonplace, being used to securitize a variety of financial assets and provide a structure to facilitate leasing transactions. By the 2000s, SPEs had become an essential piece of the financial system, providing the structure necessary to securitize mortgage lending. While these entities were extremely effective at removing risky assets from an individual financial institution's balance sheet, they also created a shadow banking system that exposed the U.S. economy to excessive financial risk. This paper discusses the complex issues related to SPEs, their interaction with Structured Investment Vehicles (SIVs), and the role that SPEs played in contributing to the 2008 financial crisis.

INTRODUCTION

In October of 2001, energy giant Enron spiraled quickly into bankruptcy following revelations of wide spread accounting fraud that hid enormous amounts of debt and losses. At the heart of this fraud was a web of accounting structures known as Special Purpose Entities (SPEs), which allowed Enron to exclude large amounts of debt from the company's balance sheet. Less than six years later, in March 2007, the failure of New Century Financial, the second largest sub-prime mortgage lender in the U.S., signaled the beginning of a financial crisis that would prove to be one of the worst in U.S. history. Once again, unanticipated losses residing in SPEs that were not included on the company's balance sheet catapulted the company into failure.

Over the last four decades, SPEs have evolved from an exotic financing structure that was used sparingly, to a complex vehicle that is at the center of the U.S. and global financial systems. While many of these structures are legitimate and offer a viable mechanism for distributing risk through the capital markets, their close association with financial crisis means

that they can also be a tool for fraud and imprudent management. In the remainder of this article, we: (i) introduce the structure of special purpose entities, (ii) review the history of SPEs, (iii) explore their connection and contribution to structured investment vehicles (SIVs), and (iv) discuss their impact on the 2008 financial crisis.

SPECIAL PURPOSE ENTITIES

Gorton & Souleles (2007, p. 550) define a special purpose entity as “a legal entity created by a firm (known as the sponsor or originator) by transferring assets to the [SPE], to carry out some specific purpose or circumscribed activity, or a series of such transactions.” A primary benefit of the SPE structure is its favorable accounting treatment, which is termed “off-balance sheet financing”. If the sponsor meets certain criteria, the SPE will be treated as a separate economic entity for financial reporting purposes. This allows the sponsor to remove the assets and liabilities that are housed in the SPE from its (the sponsor’s) balance sheet. Since most SPEs are highly leveraged, this reduces the sponsor’s debt load relative to equity. As a result, the sponsor will likely achieve a higher credit rating, which reduces its overall borrowing costs.

To achieve these desirable accounting results, an SPE has several essential characteristics:

1. It must be a separate legal entity from the sponsor,
2. The entity is “bankruptcy remote”,
3. It is created to carry out a fairly specific activity, and
4. It is thinly capitalized, (i.e., heavily leveraged), with the residual equity ownership held by a third party other than the sponsor.

Each of these characteristics is necessary for the SPE to achieve its ultimate objective, which is to provide off-balance sheet financing for the sponsor. The first characteristic, the establishment of a separate legal entity, is necessary because the SPE will need to generate its own financial statements that are exempt from consolidation by the sponsor. This is only possible if the SPE has a legal form that is separate and distinct from the sponsor.

Second, the entity must be structured so that there is a remote chance that it will become bankrupt. This is typically accomplished by securing (or collateralizing) the debt issued by the SPE directly to the assets in the SPE. In addition, the debt issued by the SPE will typically be structured in such a way that creditors effectively “waive” their rights to force the entity into bankruptcy. When structured in this manner, the possibility that the SPE will go bankrupt is remote. A tangential issue, however, is that any assets transferred to the SPE must also be isolated from the sponsor in the event of the sponsor’s bankruptcy. Only if the assets are beyond the reach of the sponsor’s creditors can the transfer of the assets to the SPE qualify as a sale, with both the assets and associated debt treated as rights and obligations of a separate entity.

Third, the SPE is established to carry out a specific activity. This characteristic is driven primarily by the applicable accounting rules. In particular, one popular SPE structure requires

that the activities of the entity be entirely defined by the SPE's legal documents governing its existence in order to qualify for off-balance sheet treatment. As a practical matter, however, this characteristic is also necessary to issue debt that is tied to the assets of the SPE. In order to entice creditors to effectively waive their bankruptcy rights, a very specific scope for the SPE is necessary for the investment to make sense from the creditors' perspective.

Finally, the SPE is typically thinly capitalized. This characteristic is more practical than structural, as the primary advantage of the structure is its ability to generate leverage that is not reported on the sponsor's balance sheet. In this sense, there is little need to layer equity into an SPE. In addition, if the SPE debt is securitized (i.e., explicitly secured by the assets in the entity through a securitization structure), there will likely be little incentive for equity investors to take large residual interests, as there is no or limited potential return on their investment. As a result, SPEs are characterized by small amounts of equity relative to debt.

Off-balance sheet treatment for financial reporting purposes is generally necessary for an SPE to achieve the sponsor's objectives. To qualify for this treatment, SPEs must meet certain accounting tests, which vary depending on the types of assets being transferred to the entity. These rules have shifted dramatically over the past decade, and the evolution of these standards is discussed in the following section.

HISTORY OF SPECIAL PURPOSE ENTITIES

1970s: The early years

Hartgraves & Benston (2002) note that SPEs emerged during the late 1970s as a way for banks and other financial institutions to convert consumer finance receivables to cash at more favorable rates than they might obtain through an outright sale to an unrelated third party. The bank would sell these receivables to an SPE that was financed with both debt and equity. In addition, the bank would guarantee the debt of the entity. The combination of an equity cushion and the guarantee of the SPE debt resulted in a borrowing rate that was very favorable, allowing the sponsor to receive greater cash proceeds for receivables sold into the entity.

1980s: The development of the off-balance sheet financing model

The use of SPEs grew throughout the 1980s. This growth was propelled by a set of 1983 accounting standards that provided the first financial reporting guidance for transactions involving what would come to be known as SPEs. The first of these standards was SFAS No. 76 (FASB, 1983a), dealing with the extinguishment of debt. This standard introduced the process of "in substance defeasance", which allowed a company to remove debt from its balance sheet prior to maturity if: (i) the company established a separate trust, (ii) it irrevocably placed sufficient assets in trust solely for the purpose of satisfying the principal and interest payments under the debt, and (iii) the possibility that the debtor would have to make future payments on

the debt was remote. From this point forward, companies could utilize a funded trust structure, or an SPE, to extinguish debt from their balance sheets.¹

The second 1983 accounting standard to advance the use of SPEs, SFAS No. 77 (FASB, 1983b), dealt with the more nuanced issue of selling receivables with recourse. When a receivable is sold to a third party with recourse, it means that the seller is liable to the buyer for any defaults of the financial asset that may occur after the sale. Financial reporting had historically been unwilling to allow a company to record a transfer as a sale when the seller retains a continuing obligation that is uncertain at the time of the sale. However, SFAS No. 77 significantly altered this model by allowing companies to treat receivables that were sold with recourse as a sale for accounting purposes, provided the recourse obligation could be estimated. This accounting rule change was critical to the evolution of the SPE market, as it opened the door for companies to remove financial assets from their balance sheets, even if these assets were sold into a trust with recourse.

In 1984, the term “special purpose entity” first entered the accounting lexicon in Emerging Issues Task Force (EITF) Issue No. 84-30, “Sales of Loans to Special-Purpose Entities” (EITF, 2002). The issue emerged in response to the growing application of SFASs 76 and 77 by banks selling their loans into separately funded SPEs. While the EITF did not reach consensus on this issue, and no formal authoritative guidance resulted, Hartgraves & Benston (2002) note that the FASB staff commented publicly that SPEs should be consolidated by the transferor.² This is significant, as consolidation effectively offsets the benefits of the sale, as the assets and associated liabilities must be brought back onto the sponsor’s balance sheet through consolidation.

At the same time that the Financial Accounting Standards Board (FASB) was wrestling with the accounting for SPEs, the securitization market was coming into its own. Plain vanilla pass-through securitizations, where the SPE would issue a single security tied to the cash flows of the assets held by the SPE, had existed for over a decade. However, the 1980s and the innovations of Michael Milken and Drexel Burnham would bring a new twist to SPE structures that would forever change the role of SPEs in the financial system. As Drexel’s junk bond scandal was nearing its climax, the firm introduced the concept of tranching collateralized debt offerings, or tranching CDOs. The SPEs in this structure issued multiple “tranches” of debt securities that had different claims on cash flows from the mortgages held by the SPE. The first deal, fulfilled for Imperial Savings and Loan, issued three tranches of securities. The senior tranche was rated AAA because it had first claim to the associated cash flows, and thus the lowest risk of default. Conversely, the junior tranche had the highest risk and carried a junk rating. As Bratton & Levitin (2013) note, the tranching CDO structure had little impact on the Milken/Drexel scandal. However, this new arrangement would revolutionize the structure and functionality of the SPE for decades to come.

1990s: Expansion of the SPE market

The growth in SPEs during the 1980s was not lost on accounting standard setters, and in 1989 the EITF once again addressed the issue, this time focusing on when SPEs should be consolidated by their sponsor. In EITF Topic D-14, “Transactions Involving Special-Purpose Entities” (EITF, 2002), the SEC observer to the EITF meetings laid out, for the first time, three criteria for consolidating an SPE for financial reporting purposes. Specifically, the guidance allowed the sponsor to avoid consolidation if there was: (i) a substantive equity investment by an independent third party who (ii) has control of the SPE, and (iii) has the substantive risks and rewards of owning the SPE. This guidance was significant, as it provided the framework for determining when an SPE could be treated as a separate financial reporting entity, with its assets and liabilities reported separately from the sponsor.

During this time, the breadth of SPE transactions expanded into such areas as equipment leasing and research and development activities. Synthetic leasing, in which the lessee treats the lease as a capital lease for tax purposes but as an operating lease for financial reporting purposes, became extremely popular. In this model, lessees were able to get both the tax benefits of asset ownership (e.g., accelerated depreciation and implied interest expense) as well as off-balance sheet treatment for financial reporting purposes (Dharan, 2002).

In response to the growth in SPE leasing transactions, the EITF outlined the accounting for non-consolidation of leasing SPEs in EITF Issue No. 90-15, “Impact of Nonsubstantive Lessors, Residual Value Guarantees, and Other Provisions in Leasing Transactions” (EITF, 2002). The SEC observer to this EITF meeting developed the infamous “three-percent rule,” which stated that SPEs should not be consolidated if they have a 3% substantive residual equity interest. This bright line test proved to be a critical ingredient in the explosion of SPEs. Now, investors and financial institutions had a formula they could follow that would guarantee off-balance sheet treatment for SPEs. All that was needed to avoid consolidation was an outside equity investment of at least 3%. This guidance, combined with the framework in EITF Issue D-14, was perceived to be a robust formula for avoiding consolidation.

During this time, the use of SPEs in the financial services industry became more prevalent, as banks took advantage of SPEs to securitize home equity loans, credit card receivables, auto loans, and student loans. There are two fundamental accounting hurdles that are necessary for the debt issued by an SPE in a securitization to stay off the sponsor’s balance sheet: (i) true sale treatment, and (ii) non-consolidation of the SPE. Both of these criteria must be met for the SPE’s debt to be excluded from the sponsor’s balance sheet.

The first hurdle (“true sale” treatment) focuses on determining whether the assets transferred into the SPE have actually been sold to the SPE, rather than being pledged as collateral for a loan from the SPE to the sponsor. If the transfer is considered to be a loan, then the sponsor is deemed to have borrowed the cash from the SPE with the transferred assets treated as pledged collateral. In this case, the sponsor must keep the assets on its balance sheet and treat any funds received from the SPE as a loan. This effectively eliminates the motivation for the

SPE securitization structure as it adds debt to the sponsor's balance sheet. If the transfer is treated as a sale, however, the assets transferred are removed from the balance sheet and replaced with the cash received from the transfer. The second hurdle ("non-consolidation") focuses on whether the resulting SPE should be consolidated by the sponsor. In general, the criteria laid out in EITF Issue D-14 provided the framework for this determination.

Because of the complications surrounding the two accounting hurdles in securitization transactions, the FASB issued Statement No. 125 in 1996. The primary focus of this standard was to provide guidance on the first hurdle, and clarify the conditions that define a "true sale" when financial assets are transferred into a securitization SPE. In general, SFAS No. 125 focused on whether the assets transferred into the SPE were isolated from the transferor and no longer under the control of the sponsor. In addition, the standard provided for a new kind of SPE structure, called a Qualifying Special Purpose Entity (QSPE). Assets transferred into SPEs that met the QSPE criteria established in SFAS No. 125 were guaranteed sale treatment under the standard (FASB, 1996).

A critical missing piece in SFAS No. 125 was the lack of a minimum substantive residual equity requirement as specified in EITF Issue No 90-15. This omission set up a natural conflict with the 3% test for consolidation established in EITF 90-15, leaving open the question of whether a QSPE automatically met the second key hurdle for securitization – avoiding consolidation. The EITF quickly responded to this issue in 1996, indicating that SPEs structured as QSPEs automatically qualified for non-consolidation and were not subject to the 3% test set forth in EITF 90-15 (EITF, 2002). In 2000, the FASB superseded SFAS No. 125 with SFAS No. 140, which narrowed the applicability of the earlier standard and formalized the non-consolidation of QSPEs (FASB, 2000).

Early 2000s: The Enron Setback

In 2001, the demise of Enron brought SPEs out of the shadows and into the spotlight. As the energy giant's financial maze unwound, it became clear that SPEs and other forms of off-balance sheet financing exposed Enron to an unmanageable level of leverage. When the dust settled, Enron's collapse highlighted the risks of SPEs, and prompted regulators and accounting standard setters to make it more difficult for sponsors to use SPEs for fraudulent or questionable purposes.

While the Enron scandal introduced an alphabet soup of new regulatory agencies and requirements, the most substantive changes to SPEs came from accounting standard setters. In early 2003, the FASB issued FIN 46, followed by a slightly revised version, FIN 46R, in December 2003. This interpretation aimed at bringing SPEs back onto the sponsor's balance sheet by clarifying some of the EITF guidance on SPEs. While the guidance in FIN 46R was extremely complicated, its substance resulted in two major accounting changes. First, it abolished the 3% substantive equity rule established in EITF Issue D-14, effectively increasing the threshold to 10%.³ Second, it introduced a risks-and-rewards model for consolidation, which

requires the entity holding the majority of the risks and rewards of the SPE to consolidate the entity, regardless of the level of ownership interest (FASB, 2003a; FASB, 2003b).

Post-Enron: The Explosion of the Shadow Banking System

The regulatory and accounting changes resulting from Enron were intended to make off-balance sheet financing more difficult. Financial institutions and their clients quickly found themselves facing increased leverage from the consolidation of these SPEs. Zion & Carcache (2003) identified a wide range of companies at risk of substantially increased leverage due to consolidation of previously unconsolidated SPEs. These companies included financial institutions such as Bear Stearns and Wachovia, as well as non-financial institutions such as General Motors Corporation, Ford Motor Company, and American Airlines.

The financial services industry quickly realized that a new structure was necessary to absorb existing SPEs and provide a mechanism for future off-balance sheet transactions. Fortunately, two structures already existed that would provide an end run around FIN 46R and allow financial institutions to continue to generate structured transaction fees: (i) QSPEs, and (ii) Structured Investment Vehicles.

Because FIN 46R was an “interpretation” of existing accounting principles, it did not change the accounting guidance for SPEs under SFAS No. 140. As such, SPEs that met the existing criteria for a QSPE continued to be afforded off-balance sheet treatment. Financial institutions that securitized loans and receivables using a QSPE were not affected by FIN 46R, as off-balance sheet treatment was still allowed under SFAS No. 140. However, financial institutions now faced a challenge in finding a way to entice investors to buy the securities that were issued by the QSPE.

To overcome this challenge, the focus turned to another financing vehicle, the Structure Investment Vehicle (SIV). An SIV is a separate legal entity that is sponsored, or created, by a financial institution (e.g., Bear Stearns, HSBC) to purchase (or invest in) the securities issued by the institution’s QSPEs. An SIV is similar to a traditional bank in that it: (i) is highly leveraged, and (ii) generates a return from the difference between the return on its assets (securities purchased from the QSPE) and the rate it pays on its liabilities (securities issued by the SIV). SIVs differ from a traditional bank in that they are: (i) unregulated, (ii) domiciled offshore to avoid regulatory oversight, and (iii) have an implicit, but not explicit, guarantee from the sponsoring financial institution.

To illustrate, suppose a financial institution has made a large volume of loans. Loan origination is extremely profitable for the financial institution, but it does not want to increase its leverage as that would increase its overall cost of capital. The financial institution would like to sell \$1 billion of its loans into a QSPE, which would then convert the loans into cash, allowing the institution to originate more loans and generate more fees. However, before it can sell the loans to the QSPE, it needs to find investors to buy the securities issued by the entity.

To create investors for the securities issued by the QSPE, the financial institution sponsors an SIV. The SIV needs to raise \$1 billion in capital to buy the QSPE's securities, which are backed by the loans the financial institution is selling to the entity. To fund the SIV, the financial institution secures \$67 million in equity financing. These investors might be hedge funds, pension funds, or wealthy individuals. Once the equity investors are in place, the sponsoring financial institution will help the SIV issue \$933 million in short- and medium-term debt. The \$1 billion that the SIV raises will be used to purchase the securities issued by the QSPE, which used \$1 billion to purchase the loans originated by the sponsoring financial institution.

The new model was now set. Financial institutions could securitize loans through QSPEs. The securities issued by the QSPEs would be purchased by large SIVs. The SIVs would generate a return on the yield spread between the assets and liabilities in the SIV. Because SIVs were funded with low-interest short- and medium-term debt, and invested in higher yielding long-term debt issued by the QSPE, they became extremely popular equity investments. The debt investments in SIVs were also popular because they carried the implicit backing of the sponsoring financial institution. They also helped the financial institution by ensuring that the debts of the QSPE and the SIV were kept off-balance sheet.

In the years following Enron, the use of SPEs and SIVs grew dramatically. Global issuances of debt from collateralized debt obligations (CDOs), one form of SPE, increased from under \$160 billion in 2004 to over \$500 billion in 2006 (Securities Industry and Financial Markets Association, 2013). At the same time, the number of SIVs operating increased from 14 in 2003 to 34 in July 2007, with SIV assets under management increasing from roughly \$120 billion in 2003 to nearly \$400 billion in 2007 (Taber, 2010). While the accounting changes brought about by Enron were intended to reduce the amount of off-balance sheet leverage lurking in the shadows, it appeared to have the opposite effect – propelling the growth of a shadow banking system that was built on highly-leveraged unregulated SIVs.

THE FINANCIAL CRISIS

In 2007, however, concerns began to emerge about the impact SIVs and SPEs could have on the financial system. PIMCO money manager Paul McCulley described these off-balance sheet vehicles as a “shadow banking system” that provided liquidity to the financial markets, without regulation or transparency (McCulley, 2007). At the same time, the underpinnings of this system began to show signs of weakness. The loans housed in these SPEs began to default at a greater rate than originally anticipated, causing the value of the debt securities issued by SPEs to correspondingly deteriorate. While this had little impact on the SPEs, which were flow-through entities, the drop in value of the securities they issued had a major impact on the highly-leveraged SIVs that held these securities.

One of the key structural elements of an SIV was the use of short- and medium-term debt funding. Commercial paper, in particular, was an extremely popular source of SIV funding. Weekly commercial paper outstanding in the U.S. jumped from roughly \$1,330 billion at the end of 2003 to roughly \$2,140 billion in mid-2007. These short-term funding sources were particularly advantageous for the SIV because of their low borrowing rates, which increased the yield spread earned by the SIV. However, relying on funding sources that have a shorter maturity than its assets means that an SIV's debt will mature prior to its assets generating offsetting cash inflows. When an SIV's short- and medium-term debt comes due, the SIV effectively has three options:

- Option 1: Roll the debt with the current lender. In this scenario the current lender agrees to renew the loan. The SIV makes the appropriate interest payment, but extends the principal balance. If the funding source is commercial paper, the SIV must roll the commercial paper frequently.
- Option 2: The SIV can issue debt to a new lender and use the proceeds from the new debt issue to repay the original lender. While slightly more complicated, this has the same effect as option 1. The SIV does not need to liquidate assets to repay debt principal.
- Option 3: Sell (liquidate) assets to generate enough funds to repay the debt. This option can lead to significant losses and reductions in equity if the assets are sold below their carrying value.

Options 1 and 2 are obviously the most desirable scenario, and these structures were built on the presumption that one of these two options would always be available. Up until mid-2007 this was the case, and SIVs were able to rely on rollover funding. But around that time the market began to change as the value of the securities held by SIVs deteriorated. Commercial paper markets began contracting as companies hoarded cash and sought to avoid credit risk. Within a year, weekly commercial paper issuances in the U.S. would be back to 2003 levels. SIVs found that options 1 and 2 were no longer available, forcing them to resort to option 3. And as the value of SPE securities deteriorated, so did the equity of SIVs.

The erosion of SIV equity created a follow-on problem. Most SIVs had internal triggers mandating the liquidation of the vehicle if the equity in the SIV dropped by more than a certain percentage. As the market for CDOs and other asset-backed debt securities issued by SPEs (and held as investments by SIVs) dried up, the collapsing market value of these assets resulted in a corresponding deterioration in SIV equity, causing the triggers to be hit. The large scale of SIVs made a swift liquidation virtually impossible, creating the question of what would happen next.

At the heart of the SIV, however, was an implicit guarantee by the vehicle's sponsor of the SIV's short- and medium-term creditors. This piece is critical. The lack of an explicit guarantee combined with an equity tranche owned by independent third parties allows the sponsor to avoid consolidating the SIV, because the sponsor does not technically share in the risks and rewards of the vehicle. However, as Henry Tabe, Moody's managing director of SIV ratings noted, "the blow to a bank's reputation that may be occasioned by a failure of an SIV may be more than the bank can tolerate. Even where the bank does not invest in the capital, the

relationship with capital note investors may be such that it behooves the bank to avoid losses to capital note investors to protect that relationship” (Weil, 2007).

By late 2007, the SIV crisis was spreading. HSBC bailed out two SIVs with roughly \$45 billion in assets, Citigroup bailed out \$49 billion in assets from its SIVs, and Bear Stearns loaned one SIV \$3.2 billion (Connolly, 2007; Kelly & Ng, 2007; Weil, 2007). In 2008, Bear Stearns would fail under the weight of its SIV problems causing the Federal Reserve to set up a separate fund to absorb the company’s most troubled assets (Federal Reserve Bank of New York, 2013). This was only the first act in a year-long saga that would bring the financial system to its knees.

CONCLUSION

In the wake of the 2008 global financial crisis, SPEs have received negative publicity and faced heightened scrutiny from regulators. While providing legitimate access to additional sources of financing, SPEs are frequently used to hide debt from investors and to conceal responsibility for these entities behind contractual arrangements that conflict with underlying economic reality. Historically, regulators and accounting standard setters have struggled to define, regulate, and reflect their impact on sponsors’ leverage and financial risk. The evolution of these entities leading up to the 2008 financial crisis, and their relationship with SIVs, illustrate a systematic challenge in regulating and defining a robust financial reporting model for SPEs. While some significant regulatory and reporting changes have occurred in response to the 2008 financial crisis, SPEs continue to play a prevalent role in capital markets, primarily as part of leasing and securitization transactions. The historical lessons leading up to the 2008 crisis should provide regulators and standard setters with an important roadmap for the future. Both must remain vigilant to the substance of special purpose entities, rather than simply relying on the legal form of the transaction.

ENDNOTES

- 1 It is important to note that under this structure, the creditor was not required to relieve the debtor of its initial obligation. Rather, this structure allowed the debtor to sequester assets in a trust in such a manner that the debt was, for all practical purposes, defeased.
- 2 It should be noted that FASB staff comments are not authoritative guidance, but reflect the Board’s current thinking on an accounting issue for which there is no authoritative guidance. SEC comments, however, are more binding as they indicate the SEC’s position on how they will enforce accounting standards.
- 3 As noted by Soroosh & Ciesielski (2004), the new 10% threshold was not intended to serve as a different, albeit higher, bright line than the “3% rule.” Rather, 10% represents a presumptive level of equity investment that must be evaluated for sufficiency in light of other criteria, such as the ability of the entity to fund its activities without obtaining additional subordinated financing.

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THE ECONOMIC IMPACT OF IFRS---A FINANCIAL ANALYSIS PERSPECTIVE

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ABSTRACT

For almost 40 years, a movement has existed to establish one set of global accounting standards to facilitate international trade and investment. Foreign companies often list their stock on the NYSE. One common set of accounting standards would promote greater understandability of international financial reports as well as increase transparency and comparability on a global scale, facilitating capital flow. On November 14, 2008, the SEC released a proposed road map toward IFRS (International Financial Reporting Standards) convergence. The mandated implementation date for large publicly traded companies is 2015. The purpose of this paper is to examine key reporting differences between IFRS and U.S. GAAP as reflected in a reporting entity's financial ratios---key performance metrics used by analysts and other users. Differences in key metrics measuring liquidity, profitability, efficiency, and solvency are examined. Implications of IFRS' elimination of LIFO inventory model are also explored. Finally, the paper discusses IFRS vs. GAAP valuation models, financial statement presentation, and disclosure requirements.

INTRODUCTION

In 2000, the SEC issued a concept release on international accounting standards, soliciting comments. FASB and the International Accounting Standards Board (IASB) initiated a convergence process in 2002. Since that time, the United States has been on a journey toward the adoption of International Financial Reporting Standards (IFRS). The shared objective of FASB and IASB has been the development of common, high-quality accounting standards with the ultimate goal of a single set of global accounting standards. In November 2008, the SEC issued a proposed road map to IFRS convergence. Subsequent opposition to the perceived too-rapid adoption of IFRS has been significant. Another recent milestone in the journey toward convergence was reached in 2010 with the issuance of the "SEC Statement in Support of Convergence and Global Accounting," providing an update and ongoing support for the convergence of U.S. GAAP and IFRS. The SEC permits foreign companies who list on U.S. exchanges to use IFRS in lieu of conversion to U.S. GAAP.

To date, approximately 120 countries have adopted IFRS as their home country standards. The SEC's convergence approach is "improve and adopt." IFRS incorporates a principles-based approach to standard setting vs. the rules-driven regime under U.S. GAAP. The

Sarbanes-Oxley Act (SOX) of 2002 called for an SEC study addressing the need to adopt a principles-based approach to standard setting to replace U.S. GAAP's rule-based system defined by bright-line rules to establish acceptable practices. The SEC study noted that weaknesses/imperfections exist when standards are promulgated on either a rules or principles-only basis. The SEC expressed concern that principles-based standards provide little guidance or structure on implementation.

Rules-based standards applying bright-line tests often enable company financial engineers to structure a transaction to achieve technical compliance with a standard while evading the standard's intent and thus, contributing to a lack of comparability among firms' financial statements. The SEC study [SEC 2008] recommends standard development on an objectives-oriented basis.

LITERATURE REVIEW

In 2005, IFRS replaced U.S. GAAP as the single most widely used accounting standard in the world. Proponents of IFRS argue that it has become the "gold standard" for financial reporting in global financial markets, and that its widespread adoption places U.S. GAAP users at a competitive disadvantage in attracting foreign capital [Bloomberg and Schumer, 2007; SEC 2008]. Prior research has examined the effects of IFRS adoption on firms in adopting countries [Defond et al. 2011; Landsman et al. 2012], and the resulting evidence supports greater comparability benefits among IFRS users due to lower information costs. Defund et al. 2012 finds that the widespread adoption of IFRS reduces U.S. firms', particularly small firms', attractiveness to foreign investors.

The case for IFRS adoption in the United States and in other countries is generally made on the basis of improvements in reporting quality and comparability across firms and countries. Financial reporting and disclosure quality are generally linked to economic outcomes, such as market liquidity, cost of capital, and corporate decision making. Empirical studies support this argument and provide evidence that higher quality disclosures reduce information asymmetry and increase market liquidity [Welker 1995; Healy et al. 1999; Leuz and Verrecchia 2000; Bushee and Leuz 2005]. Likewise, empirical studies support the existence of a statistically significant link between reporting and disclosure quality and firms' cost of capital [Botosan 1997; Botosan and Plumlee 2002; Hail 2002; Francis et al. 2004, 2005; Hail and Leuz 2006; Leuz and Schrand 2009]. Better reporting reduces information asymmetries that otherwise inhibit capital acquisition. Quality reporting facilitates external monitoring, such as from institutional investors and analysts, which in turn enables more efficient managerial decision making [Bushman and Smith 2001; Lombardo and Pagano 2002; Lambert et al. 2007]. Quality reporting and disclosure in one firm may also help reduce agency problems in other firms [Hail et al. 2010]. Another important dimension of corporate reporting is its comparability across firms. Making it easier and less costly for investors and other stakeholders to compare across

firms from different countries facilitates cross-border investment and capital market integration [Aggarwal et al. 2005; Leuz et al.2009].

Despite the aforementioned benefits of better and more comparable reporting and disclosure, there also exist direct and indirect costs to improving or changing corporate reporting. While higher quality and more comparable reporting and disclosure may have economy-wide benefits and positive externalities, economic assessment of the current reporting environment within a market or country must determine if changes to the reporting environment can move reporting quality and comparability to socially optimal levels (net of costs). Prior research evidence supports that capital markets reward high quality reporting and transparency. However, recent studies challenge the premise that changing accounting standards in and of themselves leads to more informative, more comparable corporate reporting. These studies point to the importance of firms' reporting incentives as a key driver of reporting quality [Ball et al. 2000, 2003; Leuz et al. 2003; Ball and Shivakumar 2005; Burgstahler et al. 2006]. Managers' reporting incentives are influenced by a country's legal institutions (rule of law), enforcement regime strength (auditing and regulation), capital market forces (financing needs), a firm's specific operating characteristics, product market competition, capital structure, and corporate governance.

RESEARCH METHODOLOGY

The purpose of this paper is to examine key reporting differences between IFRS and U.S. GAAP as reflected in a reporting entity's financial ratios---key performance metrics used by analysts and other users to evaluate a firm's effectiveness and efficiency. Financial statement analysis is the use of the financial statements to analyze a company's current financial position, results of operations, and cash flows as well as to assess future financial performance. Financial analysis is an integral part of investment and credit analysis and is useful for internal and external decision making. Company managers use industry norms as benchmarks in evaluating performance and as desirable performance targets for future performance.

The research question addressed in this paper is:

What is IFRS's impact on key financial ratios? In order to answer this question, this study will address material differences between IFRS and current U.S. GAAP. Ratios evaluating firm liquidity, profitability, solvency, efficiency, and leverage will be examined to determine the size and direction of the change induced by IFRS adoption. Implications of IFRS' elimination of the LIFO inventory model are explored. The paper also discusses IFRS vs. GAAP valuation models, consolidation standards, financial statement presentation, and disclosure requirements.

The ratios examined and the performance characteristics measured are listed below:

- **Liquidity**
 1. Current Ratio
 2. Quick Ratio

- **Activity/Efficiency**
 1. Inventory Turnover
 2. Fixed Asset Turnover
 3. Accounts Receivable Turnover
- **Profitability**
 1. Net Profit Margin
 2. Return on Assets
 3. Return on Equity
- **Coverage/Solvency**
 1. Times Interest Earned
 2. Debt/Equity Ratio
 3. Debt/Total Assets Ratio
- **Stockholder Ratios**
 1. Earnings Per Share

Since mandated or early adoption of IFRS by U.S. public companies does not currently exist, this study examines each area of difference between IFRS and current U.S. GAAP and from this analysis posits the most likely generic effect on the majority of U.S. firms. A year-end balance sheet and income statement for a hypothetical U.S. public company transitioning to IFRS are prepared, showing U.S. GAAP balances, IFRS transition effects, and IFRS balances with accompanying explanatory notes. Utilizing the derived financial statement information, key financial ratios are prepared under U.S. GAAP and under IFRS. Following this analysis, convergence opportunities and challenges are explored.

COMPARISON OF IFRS AND U.S. GAAP---SIGNIFICANT DIFFERENCES

	U.S. GAAP	IFRS
Inventory		
Costing Methods	LIFO acceptable.	LIFO prohibited.
Measurement	Lower of cost or market.	Lower of cost or net realizable value.
Write-down		
Reversals	Reversals prohibited.	Reversal of previous impairment losses up to original impairment loss.
Permanent Inventory		
Write-downs	Such markdowns reduce inventory carrying cost to	Reduction of inventory carrying cost below the lower of cost or net

	net realizable value, less an allowance for a normal profit, which may be less than both original cost and net realizable value.	realizable value is prohibited.
Property, Plant & Equipment (PPE) Valuation	Historical Cost Valuation. Revaluation prohibited except for impairments. Losses---P&L. No write-down recoveries.	Cost or Fair Value for entire class of assets, applied consistently. Increases---Other Comprehensive Income Decreases---P&L; Recoveries up to original asset value.
Depreciation (PPE)	Component depreciation permitted, but uncommon.	Component depreciation required if components have differing benefit patterns.
Business Combinations Noncontrolling Interest	Fair value required. Full goodwill (GW).	Fair value (full goodwill) or at the proportionate share of the acquiree's identifiable net assets (partial GW).
Development Costs	Expensed as incurred.	Capitalized when technological & economic feasibility demonstrated.
Intangible Assets	Revaluation prohibited.	Revaluation to fair value of intangible assets other than GW permitted for entire class of assets, but uncommon.
Impairment PPE	2-step approach. 1. Recoverability test **CV compared with sum of future undiscounted cash flows generated through use and disposition. 2. Loss=CV – FV	1-step approach. Loss calculation if impairment indicators. Loss=CV-Recoverable Amount (higher of 1. FV – Cost to sell or 2. Value in use (PV of in use future cash flows, including disposal value.)
GW Impairment	2-step approach. 1. Recoverability test at Reporting Unit (RU)	1-step approach. Impairment testing at Cash Generating Unit (CGU) level. Loss=CGU's CV –

	Level. If CV of RU > FV, impairment testing must be performed. Loss = CV-FV of GW within the RU.	recoverable amount.
Indefinite-Lived Intangible Assets	Loss=CV-FV. Reversals prohibited.	Loss=CV-recoverable amount. Reversals prohibited for GW, but allowed for other indefinite-lived intangibles up to original CV.
Financial Instruments		
Classification	Specifically identifies instruments with both debt and equity characteristics that must be classified as liabilities. Other contracts indexed to, and potentially settled in an entity's own stock are classified as equity if they either 1.require physical settlement, or 2. give the issuer a choice of net-cash settlement or settlement in its own shares.	Focuses on contractual obligation--- economic compulsion does not constitute a contractual obligation. Contracts indexed to, and potentially settled, in an entity's own stock are classified as equity if settled only by delivering a fixed # of shares for a fixed cash amount.
Compound (hybrid) Financial Instruments	Hybrids (e.g., convertible bonds) are not necessarily split into debt & equity components.	Hybrids are required to be split into debt & equity components.
Impairment Available for sale Debt & Equity Instruments	Impairment loss---P&L. No reversals permitted. Management intent governs.	Impairment loss---OCI. Reversals recognized---OCI.
Held-to-maturity Debt Instruments	Impairment Loss=amortized cost – FV. Portion of impairment loss related to	Loss=CV-PV of estimated future cash flows. Recognized in OCI.

	credit loss recognized in P&L. Remainder, OCI.	
Hedging	Definition of derivative requires notional amount and net settlement. Risk components specifically defined.	Definition does not require notional amount or net settlement. Flexibility in hedging risk components.
Hedge Effectiveness	Shortcut method for interest rate swaps permitted. Permits inclusion of option's time value.	Not permitted.
	Recognized even when inputs are not observable.	Evidenced by observable market inputs.

Income Taxes		
Intercompany Sales within a Consolidated Group	Tax expense from intragroup sales is deferred until related asset is sold and no deferred taxes are recognized for buyer's change in tax basis.	Tax expense is recognized and deferred taxes are recognized for the change in tax basis using buyer's tax rate.
Uncertain Tax Positions (FIN 48)	Accounting for tax consequences reflects management's expectations.	Treatment based on probability of a tax position being sustained.
Recognition of Deferred Tax Assets	Recognized in full and reduced by valuation allowance for non-probable portion.	Recognized to extent their recovery is probable.
Classification of Deferred Tax Assets & Liabilities	Split between current and non-current based on underlying asset or expected reversal period.	Always non-current.
Deferred Tax Assets & Liabilities Measurement	Enacted tax rates must be used.	Enacted or substantively enacted tax rates as of balance sheet date.

Contingent Liabilities(CL)

Loss must be “probable” defined as a high likelihood (e.g., 70% or higher). Discounting allowed only if timing and amount of future cash flows are fixed and determinable.

Loss must be “probable” defined as more likely than not (> 50%). Discounting required.

CL Measurement

Most likely outcome or low end of range.

Best estimate to settle obligation---expected value method.

Revenue Recognition

Public companies must recognize revenue when the risks and rewards of ownership have been transferred, there is persuasive evidence of an arrangement, the fee is fixed or determinable, and collectability is reasonably assured.

Revenue recognized only when risks and rewards of ownership have been transferred, buyer has control of the goods, revenues can be reliably measured, and it is probable that the economic benefits will flow to company.

Long-Term Construction Contracts

Completed contract method is permitted.

Completed contract method is not permitted

Pensions Expected Return on Plan Assets

Based on FV of plan assets or a “calculated value” which incorporates asset-related gains and losses over a period of no more than 5 years.

Limited to the “net interest” on the net defined liability/asset calculated using the benefit obligation’s discount rate.

Recognition of Actuarial Gains & Losses

May be recognized in net income as they occur or deferred through a corridor approach.

Recognized immediately in OCI. Gains & losses not subsequently recognized in net income.

Prior Service Costs

Initially deferred; subsequently

Recognized immediately in

	recognized in net income over the average remaining service life of employees.	net income.
Settlements & Curtainments	Settlement gains & losses recognized when obligation is settled. Curtainment gains recognized when curtailment occurs. Losses are recognized when curtailment is probable.	Settlement gains & losses recognized as incurred. Curtailment gains & losses recognized the earlier of when incurred or when related costs or termination benefits are recognized.
Earnings per Share Calculation of YTD Diluted EPS	When each interim period is profitable, the denominator is the weighted average of the incremental shares added in each of the quarterly periods.	Regardless of whether the period is profitable, do not average the individual interim period incremental shares.
Contracts that May be Settled in Shares or Cash at Issuer's Option	Presumed to be settled in shares unless evidence is provided to the contrary.	Always assumed to be settled in shares.
Contingently Convertible Debt	Potentially issuable shares are included in diluted EPS even if contingency is not satisfied at the end of the reporting period.	Potentially issuable shares are included in diluted EPS only if contingency is satisfied at end of reporting period.
Consolidation	Focus on controlling financial interests.	Focus on the power to control.
Special Purpose Entities (SPE)/VIEs	Primary beneficiary must consolidate the VIE.	SPEs consolidated when the substance of the relationship indicates that an entity controls the SPE.
Consolidated Financial Statements	Required.	Generally required, limited exemption for parent company

		that is itself a wholly owned subsidiary.
Parent & Sub Reporting Dates	Permitted to have different year-ends of up to 3 months.	Must be prepared as of same reporting date.
Equity Method Investments	Potential voting rights are not considered in determining significant influence. Fair value option available to account for certain investments. Uniform accounting policies between investor & investee not required.	Potential voting rights are considered in determining significant influence. Fair value option not available. Uniform accounting policies between investor & investee are required.
Presentation		
Income Statement		
Expense Classification	No general requirement. Public companies must present expenses by function.	May present expenses by either function or nature.
Extraordinary Items	Restricted to items that are both unusual & infrequent.	Prohibited.
Discontinued Operations	Classification is for components held for sale or disposed of, provided there will be no significant continuing cash flows or involvement with the disposed component.	Classification is for components held for sale or disposed of that are either a separate major line of business or geographical area or a sub acquired with the intent to sale.
Performance Measures	No general requirements.	“Operating profit” not defined. Diversity in practice exists regarding line items, headings, and subtotals on the Income Statement.
Third Balance Sheet	Not required.	Required when there is a

		retrospective application of a new accounting policy, restatement or reclassification that is material in effect.
Interim Reporting	Each interim period is viewed as an integral part of an annual period. As a result, costs that benefit more than one interim period may be allocated among those periods, resulting in deferral or accrual of certain costs.	Each interim period is viewed as a discrete reporting period. A cost that does not qualify as an asset at the end of an interim period is not deferred, and a liability recognized at an interim reporting date represents an existing obligation.

INVENTORY VALUATION

U.S. GAAP provides guidance regarding inventory valuation in ARB 43; the IASB offers detailed guidance under IFRS in IAS 2. Inventories are defined as assets that a company intends to sell in the normal course of business or is in production of for future sale or are used currently in production of goods to be sold. Therefore, inventories include raw materials, work-in-process, and finished goods. Capitalized as inventory costs are purchase costs, conversion costs, as well as additional costs such as transportation and any cost necessary to bring inventories to their present location and condition. IAS 2 allows interest capitalization for inventories requiring a substantial period of time to bring to a saleable condition. While both U.S. GAAP and IFRS define inventory in a similar manner, there remains divergence with respect to valuation, balance sheet presentation, impairment losses, and the financial ratios derived there from.

Both IFRS and U.S. GAAP do not require the inventory valuation method selected to correspond to or approximate the physical flow of inventory within a company. U.S. GAAP allows companies to choose from FIFO, LIFO, and average costing cost flow assumptions. IFRS prohibits the use of LIFO. Currently, more than one-third of U.S. companies use LIFO inventory valuation [Jeffers and Askew 2010]. The primary reason for LIFO's widespread use can be attributed to the fact that during a period of rising prices, the LIFO method typically creates lower taxable income and thus, lower tax liability than other inventory valuation methods. Due to the IFRS LIFO prohibition, U.S. companies currently using LIFO would be required to switch to FIFO or average costing. In periods of rising prices, both FIFO and average costing result in higher ending inventory, lower cost of goods sold and therefore, higher net income and higher corresponding taxes. In addition, LIFO reserves would be recognized as income over a four year

period when the LIFO reserve maintains a credit balance, resulting in additional tax liability with no real additional income to pay for the additional tax. The retrospective adjustment to convert a company's inventory valuation from LIFO to FIFO or average costing results in:

- an increase in inventory values
- an increase in current income taxes because of the effective increase in the income tax base
- and an increase to retained earnings for the effect of the net income increase.

THE IMPACT OF IFRS LIFO PROHIBITION ON COMPANY FINANCIAL RATIOS

Based on the previous analysis, key financial ratios are presented below indicating the expected directional change induced by conversion from U.S. GAAP to IFRS, under which LIFO is prohibited.

Liquidity:

- A. Current Ratio (Current Assets/Current Liabilities)
Result: Increases due to higher inventory valuation
- B. Operating Cash Flow Ratio (Net Cash Flow from Operating Activities/Current Liabilities)
Result: Decreases due to higher inventory valuation, holding all other factors constant
- C. Quick Ratio (Cash + Short-Term Investments + Receivables)/Current Liabilities
Result: Unchanged, holding all other factors constant

Activity:

- A. Inventory Turnover (Cost of Goods Sold/Average Inventory)
Result: Net Decrease (Decrease in Cost of Goods Sold offset by increase in Average Inventory valuation)
- B. Asset Turnover (Net Sales/Average Total Assets)
Result: Decreases due to higher inventory valuation, holding all other factors constant
- C. Accounts Receivable Turnover (Net Sales/Average Accounts Receivable)
Result: Unchanged, holding all other factors constant

Profitability:

- A. Net Profit Margin (Net Income/Net Sales)
Result: Increases----Higher net income due to lower cost of goods sold
- B. Return on Assets (Net Income/Average Total Assets)
Result: Increases---higher net income offset by higher average inventory values
- C. Return on Equity (Net Income/Average Equity)
Result: Increases---higher net income offset by higher average equity, assuming the company must recognize LIFO reserve in income.

Coverage/Solvency:

- A. Times Interest Earned (Operating Income Before Interest and Taxes/Interest Expense)

- Result: Increases due to higher net income
- B. Cash Debt Coverage Ratio (Net Cash from Operating Activities/Average Total Liabilities)
Result: Decreases---lower net cash flow from operations due to higher inventory values
- C. Debt to Equity Ratio (Total Liabilities/Total Equity)
Result: Increases assuming the company must recognize its LIFO reserve in income, which increases total debt usually offset by a larger increase in total equity.
- D. Debt to Total Assets Ratio (Total Liabilities/Total Assets)
Result: Increases assuming the company must recognize its LIFO reserve in income, which increases total debt usually offset by a larger increase in total assets.

Shareholder Ratios:

- A. Earnings Per Share [(Net Income – Preferred Dividends)/Weighted Average Common Shares Outstanding]
Result: Increases due to higher net income
- B. Return on Common Equity (Net Income/Average Common Equity)
Result: Increases assuming the company must recognize its LIFO reserve in income---higher net income offset by a larger increase in common equity.

INVENTORY IMPAIRMENT AND DISCLOSURE

Under both U.S. GAAP and IFRS, public companies must report inventories at the lower of cost or market. However, U.S. GAAP defines market as the median of replacement cost, net realizable value (ceiling), and net realizable value minus a normal profit (floor). IFRS defines market as net realizable value. Both standards allow this rule to be applied on an individual item basis or to pools of items. However, it should be noted that IFRS and U.S. GAAP will provide similar results only when replacement cost is greater than net realizable value [Doupnik and Perera 2009].

In the event that cost is higher than market value, both IFRS and U.S. GAAP require recognition of an impairment loss in the year of occurrence. However, while U.S. GAAP prohibits reversal of an impairment loss in a subsequent year, IFRS requires recognition of the reversal if the selling price increases. IFRS and U.S. GAAP require accounting policy disclosure regarding inventory carrying amounts, current period impairments recognized, carrying amounts of inventories pledged as security for liabilities and cost of goods sold, and in the case of IFRS, any write down reversals to net realizable value.

ANALYSIS: PROPERTY, PLANT, & EQUIPMENT; BIOLOGICAL & AGRICULTURAL ASSETS

Property, plant, and equipment may be measured using the cost-depreciation-impairment model or the revaluation-through-equity model. Revaluation calls for fair value measurement as

of the revaluation date, less any subsequent accumulated depreciation and impairment losses. Residual values must be adjusted to fair value under IFRS. The revaluation model would increase profitability ratios if asset values had increased. Fixed and total asset turnover (activity/efficiency) ratios would decrease due to the increase in average fixed and total assets. Leverage/solvency ratios (e.g., debt/total assets) would decrease if the fair value of property, plant, and equipment has increased.

Depreciation should reflect the expected consumption of the asset's economic benefits. Depreciation based on a "components" approach is required under IFRS for assets with differing patterns of benefits. The components approach could result in either increases or decreases in otherwise recognized total depreciation expense, with relative effects on profitability and activity/efficiency ratios.

ANALYSIS: VALUATION

Intangible assets may be measured using the cost model or the revaluation model if an active market exists, providing observable input values for fair value measurement. Investment property may be accounted for using the cost model or fair value model. Land use rights may be reclassified as investment property. Impairment loss recoveries for indefinite-life intangibles other than goodwill are allowed under IFRS. Reversals of write-downs are also permitted for financial assets, such as available-for-sale securities. Inventory write-downs may be reversed up to the amount of the original impairment loss. Permanent inventory write-downs, such as under the retail inventory method, are not allowed if they reduce the carrying value of inventory below the lower of cost or net realizable value. Also, LIFO inventory costing is prohibited under IFRS.

Biological and agricultural assets must be reported at fair value under IFRS. If fair value is greater than original cost, activity ratios would decrease. Changes in fair value would be recognized in the income statement, resulting in increased earnings per share (assuming fair value increases) and decreased return on assets due to increased profitability offset by larger average total asset values.

Biological and agricultural assets must be reported at fair value under IFRS. If fair value is greater than original cost, activity ratios would decrease. Changes in fair value would be recognized in the income statement, resulting in increased earnings per share (assuming fair value increases) and decreased return on assets due to increased profitability offset by larger average total asset values.

Under IFRS, deferred tax assets may not be recognized in full, as they are with U.S. GAAP. IFRS recognizes deferred tax assets only to the extent it is probable (more than likely) that they will be realized. All deferred tax assets and liabilities are classified as non-current in an IFRS balance sheet.

While all research expenditures must be expensed, development expenditures must be capitalized if technical and economic feasibility can be demonstrated. Regarding business

combinations, non-controlling interests may be measured at fair value or measured at the non-controlling interest's share of the acquiree's identifiable net assets. The overall consolidation approach under IFRS is based on the power to control.

The recognition threshold for contingencies is greater under IFRS. Both U.S. GAAP and IFRS require that a loss be "probable" to be recognized. However, while "probable" under IFRS is defined as "more than likely"---meaning a probability of greater than 50%, U.S. GAAP defines "probable" as denoting a high likelihood (e.g., 70% or more). Therefore, under IFRS, larger total contingent losses and corresponding liabilities would be expected.

ANALYSIS: REVENUE RECOGNITION

Long-term construction contracts are required to use percentage-of-completion accounting. The completed contract method is prohibited under IFRS. When the stage of completion cannot be estimated reliably, revenue is recognized to the extent that recoverable expenses have been incurred.

While U.S. pension accounting rules initially defer recognition of prior service costs in favor of periodic allocation of expense over the employees' average remaining service life, IFRS requires immediate recognition of the expense in net income. Actuarial gains and losses must be immediately recognized under IFRS in other comprehensive income without subsequent income recognition. Under U.S. GAAP actuarial gains and losses could be recognized in net income immediately or deferred through a corridor approach. Pension settlement gains or losses are recognized as incurred under IFRS rather than later when the obligation is settled as required under U.S. GAAP.

PRESENTATION

The Statement of Comprehensive Income must be presented under the single-statement approach for IFRS. Performance measures, such as "operating profits" are not typically presented in the IFRS income statement. Likewise, there is great diversity between IFRS and U.S. GAAP income statements in regard to line items, headings, and subtotals. Extraordinary items are prohibited on the IFRS income statement.

The Statement of Cash Flows under IFRS allows interest and dividends received or paid to be classified as operating, investing, or financing on a consistent basis. IFRS requires separate disclosure of cash flows related to discontinued operations.

Balance sheet classifications may differ under IFRS as previously mentioned. Offsetting is not permitted under IFRS. Also under IFRS, a third balance sheet is required as of the beginning of the earliest comparative period when there is a retrospective application of a new accounting policy, restatement, or reclassification that could have a material effect on the balances of the third balance sheet.

ANALYSIS: SUMMARY

Four distinct themes can be gleaned from the comparison of U.S. GAAP to IFRS:

- 1. IFRS and U.S. GAAP are broadly similar
- 2. IFRS has a balance sheet focus, which can be further described as the 3 Ds: definition, disaggregation, and discounting.
- 3. What goes down can go up.
- 4. Disclosure is paramount.

From the previous comprehensive comparison of IFRS and U.S. GAAP, general directional trends in financial statement elements can be derived/predicted. The following directional trends have been synthesized from this analysis:

- Higher potential revenues under IFRS; higher total assets; higher contingent liabilities
- Potentially higher depreciation and amortization expenses under IFRS
- Less expense related to development costs; extraordinary items prohibited
- Lower cost of goods sold expense; higher ending inventories; potentially higher taxes
- Reclassification; greater disclosure requirements; higher stockholders' equity

HYPOTHETICAL END OF YEAR BALANCE SHEET RECONCILIATION TO IFRS (IN MILLIONS OF \$)

Assets	Note	U.S. GAAP	Transition	IFRS
Cash & Equivalents		6,000		6,000
Marketable Securities		4,000		4,000
Net Accounts Receivable		6,000		6,000
Inventories	(a)	5,500	520	6,020
Other (including Deferred Tax)		3,000		3,000
Total Current Assets		24,500	520	25,020
PPE	(b)	14,000	317	14,317
Goodwill	(c)	3,000	300	3,300
Other net intangibles	(d)	500	850	1,350
Investments in subs	(a)	700	(45)	655
Other (including Deferred Taxes)		5,000		5,000
Total Assets		47,700	1,942	49,642
Liabilities				
Accounts Payable		2,500		2,500

Accruals		6,500		6,500
Accrued Taxes Payable		3,500		3,500
Total Current Liabilities		12,500		12,500
Long-Term Debt		12,200		12,200
Pension Liabilities		550		550
Accrued OPEB		2,550		2,550
Other (including Deferred Taxes)	(e)	2,150	1,500	3,650
Total Liabilities		29,950	1,500	31,450
Stockholders' Equity				
Share Capital		600		600
Cumulative Translation Adjustment	(f)	400	(400)	
Retained Earnings	(i)	17,125	542	17,667
Non-controlling Interest	(a)		25	25
Accumulated Other Comprehensive				
Loss	(g), (h)	(375)	275	(100)
Total Stockholders' Equity		17,750	442	18,192
Total Liabilities & Stockholders' Equity		47,700	1,942	49,642

Notes:

(a) Inventory				
Restatement of inventory from LIFO to FIFO		\$470		
Consolidation of subs previously excluded		50		
Total Impact---Inventory increase		\$520		
(b) Property, plant, & equipment				
Restatement to fair value		\$850		
Impact of impairment losses recognized net of depreciation expense		(500)		
Additional depreciation on net PPE adjustments		(33)		
Total Impact---increase to PPE		\$317		
(c) Goodwill				
Consolidation of subs previously excluded under U.S. GAAP		\$300		
Other Intangible Assets				
Opening retained earnings adjustment related to IPR&D acquired as part of acquisition of ABC Technologies in 2012.		\$1,325		
Amortization for year ended 2013		(475)		
Net other intangible adjustment		\$850		

- (d) Deferred tax adjustments & other noncurrent liabilities adjustments.

\$1,500

The change in deferred taxes represents the adjustment necessary to transition to IFRS.

- (e) Cumulative translation adjustment

The cumulative translation adjustment account was reset to zero on January 1, 2013.

There were no additional changes in the CTA account for the year ended December 31, 2013.

- (f) Pension adjustment

The company elected to recognize all cumulative actuarial gains and losses as of January 1, 2013. On January 1, 2013, the company recognized \$100 million in retained earnings related to actuarial losses recorded in U.S. GAAP accumulated other comprehensive loss.

- (g) Hedge accounting exemption

Management had applied the “shortcut” method for its existing interest rate swaps on its variable rate debt instruments under U.S. GAAP. All changes in fair value were recorded in accumulated other comprehensive income. Under IFRS, although the hedging relationship was not adjusted on the opening balance sheet, it did not qualify for hedge accounting going forward due to different documentation requirements. As a result, an additional \$175 million in unrealized losses were recorded under IFRS during the year ended December 31, 2013.

- (h) Retained Earnings

Other than for reclassification items, all of the above adjustments were recorded against the opening retained earnings at January 1, 2013, or reflect the income and retained earnings impact for the year ended December 31, 2013.

Hypothetical End of Year Reconciliation of Net Income to IFRS

(in millions of \$)	Note	U.S. GAAP	Transition	IFRS
Sales		\$37,000		\$37,000
Cost of sales	(a)	30,000	439	30,439
Gross Profit		7,000	(439)	6,561
Other operating income		(100)		(100)
Selling expenses		2,100		2,100
Administrative expenses		400		400
Other operating expenses		600		600
Operating Profit/Loss		4,000	(439)	3,561
Interest expense	(b)	(800)	(50)	(850)
Share of Sub profits		200		200
Income before tax		3,400	(489)	2,911
Income tax expense/benefit	(c)	1,525	(196)	1,329

Net Income	1,875	(293)	1,582
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Notes:

(a) Cost of sales affected by:

• Inventory costing method change---quarterly change in LIFO reserve	\$30
• Additional depreciation on net adjustments to PPE	33
• Amortization of IPR&D	<u>376</u>
Net Decrease in cost of sales	439

(b) Interest expense on interest rate swaps for which the shortcut method was applied under U.S. GAAP.

(c) Tax impact of adjustments.

**FINANCIAL RATIOS CALCULATED USING HYPOTHETICAL COMPANY INCOME
STATEMENT AND BALANCE SHEET**

Ratios	U.S. GAAP	IFRS
Liquidity:		
Current ratio	1.96	2.002
Quick ratio	1.28	1.28
Profitability:		
Net Profit Margin	5.07%	4.3%
Return on Assets	3.93%	3.19%
Return on Equity	10.56%	8.7%
Activity/Efficiency:		
Inventory Turnover	5.45 times	5.06 times
Accounts Receivable Turnover	6.17 times	6.17 times
Fixed Asset Turnover	2.64 times	2.58 times
Total Asset Turnover	0.78 times	0.75 times
Coverage/Solvency:		
Times Interest Earned	5.0	4.2
Debt to Total Assets	0.6279 to 1	0.6335 to 1
Debt to Equity	1.69 to 1	1.73 to 1
Shareholder Performance Measures:		
Basic Earnings Per Share (Assuming no preferred stock and assuming 100 million shares outstanding the entire year.)	\$18.75	\$15.82

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