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CONTENTS

THE VALUE RELEVANCE OF OTHER COMPREHENSIVE INCOME AND ITS COMPONENTS

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ABSTRACT

The value relevance of comprehensive income, other comprehensive income, and its components were investigated in this paper. Using data of S&P 500 for 2014 and utilizing the pricing model developed by Ohlson, the results suggest that both comprehensive income and other comprehensive income have no value relevance as measured by the coefficient of determination (R^2). However, the components of other comprehensive income, such as derivatives, hedging and gains and losses from available for sale securities do have value relevance. The results of this research support the Financial Accounting Standard Board position on disclosure of other comprehensive income and its components.

INTRODUCTION

Some revenues, expenses, gains, and losses under both Generally Accepted Accounting Principles, and International Financial Reporting Standards are excluded from the computation of net income on the income statement. These items have not been realized, but they are listed after net income on the income statement. These items such as foreign currency translation gains or losses, gains and losses on derivatives, unrealized holding gains or losses on available for sale securities, pension plan gains or losses, and pension prior service costs or credits, are called components of other comprehensive income. The purpose of reporting it as stated by Financial Accounting Standard Board (FASB) is "to report a measure of all changes on an entity that result from recognized transactions and other economic events of the period other than transactions with the owners in their capacity as owners." Prior to June 2011, FASB allowed companies to present the components of other comprehensive income in two separate statements, in a single continuous statement of comprehensive income or disclosed in the statement of changes in stockholder's equity. However, the FASB in its update in June 2011 eliminated the last option to improve the consistency, comparability, and transparency.

The FASB, in its update, pointed out that reporting comprehensive income coupled with appropriate disclosure and other information in the financial statements may assist readers in assessing a company's performance, and its future cash flows. The FASB cautioned that although the comprehensive income amount is a useful number, the disclosure of information about the components of other comprehensive income is needed in order to better understand an entity's performance and its future cash flows. Information, thus, about the components of comprehensive income provides more useful information than total comprehensive income. For example, the literature on value relevance U.S.A and U.K suggests that

other comprehensive is not value-relevance especially when it is not separately disclosed in financial statement (Cheng et al. 1993, Pope and O, Hanlon 1999).

The purpose of this research is to investigate whether comprehensive income, as well as other comprehensive income and its components, have the value relevance. The rest of the paper is organized as follows: Section two covers prior literature review. Section three covers the hypotheses, data collection, and the models. The results are discussed in section four, and the conclusion is in the last section.

LITERATURE REVIEW

Research on value relevance is motivated by the fact that investors and other financial users rely on financial statements to make informative decisions. The financial information must be relevant and reliable in order to be useful. The financial information is relevant if it influences the user's decision and reliable if, users depend on representing the economic event faithfully. The firm value is reflected by what the market perceived about the company's present and future performance. Accounting information contributes significantly to that perception.

Breif and Zarowin (1999) compared valuation models that include price to book value and earnings, and price to book value and dividends using USA data from 1978 to 1997. Their results suggest that the variables, book value, and dividends have almost the same explanatory power as book value and earnings. Moreover, for firms with transitory earnings, dividends have greater explanatory power than earnings and book value and earnings have the same explanatory power as book value and dividends. When earnings are transitory, and book value is a poor indicator of value, dividends have the greatest explanatory power of the three variables. The latter result is confirmed again in statistical tests using holdout samples.

Since many firms do not distribute dividends, many studies investigated the value relevance of earnings per share, the book value per share, and cash flows. Many researchers found that the most important pieces of financial information are earnings per share (EPS) and book value (e.g., Dechow, 1994; Cheng *et al.*, 1996; Holthousen and Watts, 2001; Choi *et al.*, 2006; Kwon, 2009). Although cash flows is an important piece of information, it fails to contribute significantly to the firm value due to the inherent problem of matching and timing problems (Barth *et al.*, 1998; Collins *et al.*, 1999). They documented that the explanatory power of earnings per share and book value variables systematically varies across industries. Ferraro and Veltri (2012) indicated that marketable security adjustment is the only other comprehensive income component that improves the association between income and returns. Biddle and Choi (2006) found that comprehensive income dominates the informational purpose of income and should be disclosed separately from other income components. In a study conducted by Khan, Bradbury, and Courtenay (2014), the results suggest that there is a positive association between stock price and market returns, as well as assets revaluation reserves, and available-for-sale securities. Rees and Shane (2012) indicate that the reporting of comprehensive income by valuation models requires clean surplus.

At the international level, studies vary in their degree in considering whether comprehensive income is relevant and the strength of the relativeness. In New Zealand, Cahan, Courtenay, Gronewoller, and Upton (2000) argue that comprehensive income contained a relevant value when determining the currency translation reserve for companies. Caha et al. (2000), Isidro et al. (2006) report no incremental information content for comprehensive income components. Researchers did not consider relevant value in all aspects of the comprehensive income and the firms. For example, Brimble and Hodgson (2004) did not find evidence of value relevance for a sample of companies in Australia. Kanagaretnam, Mathieu, and Shehata (2009) found that comprehensive income is more value relevant than net income for Canadian corporations and available-for-sale and cash flow hedge components are associated with price and market returns. In Japan, the result of Kubota, Suda, and Takehara (2009) suggests that net income is the most

dominant income, but other comprehensive income is more informative. Abayadeera (2010) examined the value relevance of financial and non-financial information in high-tech firms. The results showed that book value was the most significant factor and those earnings were the least significant factor in deciding firm value in high-tech industries in Australia. Duran et al. (2007) tested the value relevance of Ohlson model (1995) using Mexican data. Their sample consisted of 145 companies listed in the Mexican stock market from 1991 to 2003 (1,046 firm-year observations). They found that the model with operating cash flow per share provides extra information and better statistics than the original Ohlson model. Brimble and Hodgson (2007) investigated the value-relevance of earnings and book value information on the Australian Stock Exchange from 1974 to 2001. They found the value relevance of earnings, book value, and combined variables were low being 0.10, 0.09 and 0.16 percent respectively. Moreover, they documented that explanatory power for small firms is much higher than for large companies.

Bartov *et al.* (2005) investigated the effect of adoption of International Accounting Standards (IASs) for a sample of 37 German firms using a linear pricing model. They employed a pre-post design and found an increase in the value relevance of earnings on switching from the German GAAP to IASs. Hung and Subramanyam (2007) examined the value relevance of re-statement differences for 80 firms adopted IASs early in Germany. They found that both the value relevance of EPS and book value per share decreased after the switch to the IASs. Filip (2010) also tested the impact of the mandatory IFRS adoption in Romania, and the results showed an increase in the value relevance of earnings post-IFRS implementation.

Other researchers tested the value relevance of environmental and corporate social responsibility using different valuation models in different developing countries, such as Sweden (Hassel et. al. 2005), Spain (Moneva and Cueller 2009), and Finland (Schadewitz and Niskala, 2010). The results of their research were mixed. Schadewitz and Niskala (2010) and Hassel et al. (2005) provided evidence that corporate social responsibility has value relevance. Moreover, Dhaliwal et al. (2011) found a positive effect of corporate social responsibility on the cost of capital under certain conditions. On the contrary, Moneva and Ortas (2008); and Murray et al. (2006) found no such evidence. Jones et al. (2007) examined the relation between abnormal return and sustainability disclosure by large Australian firms. Their result showed that corporate social responsibility is relevant but weakly associated with abnormal returns.Based on the viewpoints of FASB on its update of other comprehensive income and its components, we hypothesize the following:

Hypothesis-1 Disclosure of comprehensive income has value relevance.
Hypothesis- 2 Disclosure of Other comprehensive income has value relevance.
Hypothesis-3 Disclosure of components of other comprehensive income has value relevance.

DATA AND METHODOLOGY

Data for S&P 500 for 2014 are obtained from Compustat for financial statements variables such as share prices, book value per share net income, other comprehensive income, derivatives, hedging, gains, and losses from available for sale securities and comprehensive income. Share prices are obtained three months after financial year-end. Data from financial and insurance companies are excluded due to their unique characteristics as regulated industries. The final number of firms in the sample is 446. The research hypotheses in the study are whether comprehensive income, other comprehensive income, and the components of comprehensive income have value relevance. The pricing model developed by Ohlson (1995) and decomposition model derived by Theil (1971) were used to investigate changes in the value relevance of earnings, book value, and the components of other comprehensive income. The relationship between the independent variables and the dependent variables (book value and earnings) can be expressed in a linear regression (Olson 1995) as follows:

$$P_{it} = \alpha_1 + \alpha_2 BV_{it} + \alpha_3 IN_{it} + \varepsilon_{it} \qquad (1)$$

Where:

P_{it} = the share price of firm i three months after the end of fiscal year t.
BV_{it} = the book value per share of firm i at the end of fiscal year t.
IN_{it} = the net income of firm i at the end of fiscal year t.
ε_{it} = other value relevant information of firm i at the end of fiscal year t.

Since we investigate the value relevance of the comprehensive income, the net income is replaced with comprehensive income in the following function.

$$P_{it} = \alpha_1 + \alpha_2 BV_{it} + \alpha_3 Comototal_{it} + \varepsilon_{it} \qquad (2)$$

Where Comototal = total comprehensive income of firm i at end of fiscal year t. Since the earning per share is one of the most important pieces of information that the investment community is interested in, we included earnings per share in Eq. (3) as follows:

$$P_{it} = \alpha_1 + \alpha_2 BV_{it} + \alpha_3 EPS_{it} + \alpha_4 Other\ comm_{it} + \varepsilon_{it} \qquad (3)$$

The FASB indicated that "the information about components that make up the comprehensive income is needed to understand better an entity's activities and future cash flows."

$$P_{it} = \alpha_1 + \alpha_2 BV_{it} + \alpha_3 EPS_{it} + \alpha_4 Derivatives_{it} + \varepsilon_{it} \qquad (4)$$

$$P_{it} = \alpha_1 + \alpha_2 BV_{it} + \alpha_3 EPS_{it} + \alpha_4 Hedging_{it} + \varepsilon_{it} \qquad (5)$$

$$P_{it} = \alpha_1 + \alpha_2 BV_{it} + \alpha_3 EPS_{it} + \alpha_4 SecuritiesGL_{it} + \varepsilon_{it} \qquad (6)$$

$$P_{it} = \alpha_1 + \alpha_2 BV_{it} + \alpha_3 EPS_{it} + \alpha_4 Hedging_{it} + \alpha_5 Derivatives_{it} + \alpha_6 SecuritiesGL_{it} + \varepsilon_{it} \qquad (7)$$

Where:

Hedging$_{it}$: Hedging variable of the firm *I* three months after the end of fiscal year t.

Derivatives$_{it}$: Derivatives variable of the firm *I* at the end of fiscal year t.

SecuritiesGL$_{it}$: "Gains and losses from available for sales Securities" variable of the firm I at the end of fiscal year t.

RESULTS AND DISCUSSIONS

The purpose of this research is to test whether comprehensive income or its components have value relevance. Table 1 provides descriptive statistics for the variables: market value, book value, net income, earnings per share, comprehensive income derivatives, hedging, other comprehensive income, and gains and losses of available for sale securities. The standard deviation for market value and book value are 1.31 and 0.98 times the mean values respectively, while for net income, comprehensive income, and other comprehensive income the standard deviation is approximately two time the mean.

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Table 1: Descriptive Statistics for Variables Used in the Analysis

Variables	Number	Maximum	Minimum	Mean	Std. Deviation
MV	446	5.62	1192.01	81.3722	106.48
BV	445	-49.20	259.98	23.0078	22.625
ESP	445	-6.16	40.03	3.6576	4.3566
Comptotal	445	-3,387.00	36067	2130.5	4296.7
Derivatives	422	-3,529.00	445.00	-12.802	184.13
Hedging	162	-1,604.00	713.00	-11.991	158.60
OtherCom	446	-40,4663	2373.8	-31473	49652
NI	442	-2462.00	37037	1874.9	3737.5
SecuritiesGL	427	-6312.00	1155.0	-54.617	447.85

This table shows each variable included in the study, the maximum, the minimum, the mean, and the standard deviation of each variable.

Panel A in Tables 2, shows the model summary in equation 1. The coefficient of determination (R^2) is 0.295 and F-test for the regression is 0.925, which is significant indicating that the model is valid. (Table 2, panel B) shows the parameters for the regression and the results of the t-test.

Table 2: Value Relevance of Book Value and Net Income

Panel A: Model Summary						
R	R-Square	Adjusted R Square	Std Error of the Estimate	Change Statistics		
				R Square Change	F Change	Df1
0.554	0.295	0.292	89.953	0.295	92.048	2
Panel B: Regression Coefficients						
Variables	Unstandardized Coefficients		Standardized Coefficients		t	Sig.
	B	Std Error	Beta			
Constant	20.590	6.318			3.316	.001*
BV	2.528	0.190	0.537		13.319	000*
NI	0.001	0.001	0.043		1.072	0.284

Table (2) shows the regression estimates of the equation (1) Panel A shows the results of the model summary. Panel B shows the regression coefficients of both book value and net income. ***, ** and * indicate significance at 1, 5 and 10 percent levels respectively.

The coefficient of book value is significant while the coefficient of net income is insignificant suggesting that disclosure of net income does not contribute to company value. Net income is not a good indicator of company performance as it ignores the company size. When net income is replaced with comprehensive income (equation 2), the change in (R^2) value is insignificant suggesting that the value relevance for both comprehensive income and net income are the same while F-test is approximately 0.92 which is significant (Table 3, panel A). Panel B in Table 3 shows that the t-test of the coefficient of the variables in the model. The result of t-test for comprehensive income is insignificant being 0.59, and the R^2 equals 0.293 which is the same as net income suggesting that the comprehensive income has no value relevance.

Table 3: Value Relevance of Book Value and Comprehensive Income

Panel A: Model Summary						
R	R-Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics		
				R Square Change	F Change	Df1
0.541	0.293	0.290	89.76	0.293	91.679	2
Panel B: Regression Coefficients						
Variables	Unstandardized Coefficients		Standardized Coefficients		t	Sig.
	B	Std Error	Beta			
Constant	22.19	6.20			3.578*	000
BV	2.525	0.191	0.547		13.19*	000
Comptotal	0.001	0.001	0.022		0.541	0.590

Table (3) shows the regression estimates of the equation (2) Panel A shows the results of the model summary of the regression. Panel B shows the regression coefficients of both book value and comprehensive income. ***, ** and * indicate significance at 1, 5 and 10 percent levels respectively.

Perhaps, the reason is that companies disclose net income and comprehensive income at the same time. Therefore, the first hypothesis that the comprehensive income has value relevance is rejected.

Table 4: Value Relevance of Book Value, Earnings Per Share, and Other Comprehensive Income

Panel A: Model Summary						
R	R-Square	Adjusted R Square	Std Error of the Estimate	Change Statistics		
				R Square Change	F Change	Df1
0.710	0.504	0.500	75.36	0.504	149.1	3
Panel B: Regression Coefficients						
Variables	Unstandardized Coefficients		Standardized Coefficients		t	Sig.
	B	Std Error	Beta			
Constant	1.273	5.676			0.224	0.823
BV	0.934	0.201	0.198		4.655*	0.000
EPS	13.67	1.042	0.559		13,12*	0.000
OtherCom	0.000	0.000	-0.127		-3.793*	0.000

*Table (4) shows the regression estimates of the equation (3) Panel A shows the results of the model summary of the regression. Panel B shows the regression coefficients of both book value and comprehensive income. ***, ** and * indicate significance at 1, 5 and 10 percent levels respectively.*

When net income is replaced with earnings per share and other comprehensive income, the model improves significantly (Table 4, panel A). The R^2's value increases from 0.29 to 0.504. The results of t-test for book value, earnings per share and other comprehensive income are significant at 0.01 (Table 4, panel B). The test results indicate that both the earnings per share and other comprehensive income have incremental value. Comparing the results of t-test of net income in Panel B in Table 2, and t-test of earnings per share in regression shows that the earnings per share have incremental value more than net income as the computation of earnings per share control for firm size.

Table 5: Value Relevance of Book Value, Earnings Per Share, and Derivatives

Panel A: Model Summary						
R	R-Square	Adjusted R Square	Std Error of the Estimate	Change Statistics		
				R Square Change	F Change	Df1
0.800	0.641	0.638	58.37	0.641	248.3	3
Panel B: Regression Coefficients						
Variables	Unstandardized Coefficients		Standardized Coefficients		t	Sig.
	B	Std Error	Beta			
Constant	7.320	4.100			1.785**	.075***
BV	0.830	0.158	0.197		5.264*	0.000
EPS	14.57	0.823	0.653		17.70*	0.000
Derivatives	-0.003	0.015	0.006		-0.201	0.841

*Table (5) shows the regression estimates of the equation (4)   Panel A shows the results of the model summary of the regression. Panel B shows the regression coefficients of both book value and comprehensive income. ***, ** and * indicate significance at 1, 5 and 10 percent levels respectively.*

Three components of other comprehensive income separately included in the model to replace other comprehensive income: derivative, hedging, and gains and losses from available for sale securities. Data on the components of other comprehensive income other than those are not available. Therefore we exclude them from our analysis. Panel A in Table 5 shows the regression results of adding derivatives to the model. R^2 is 0.64 compared with 0.504 in Table 4 for other comprehensive income, indicating that disclosure of derivatives has value relevance although t-test for derivatives is insignificant in panel B Table 5 . However, the t-test is not meant to test a large sample. F-test for the whole regression is 248. When derivatives variable is replaced with hedging variable, the R^2 is 0.64 suggesting that hedging gains and losses have value relevance, (Table 6 panel A). The t-test for hedging is 0.526, which is not significant on Table 7 panel B. However, the result of F-test for the whole regression is significant being 92.68.

Table 6: Value Relevance of Book Value, Earnings Per Share, and Hedging

Panel A: Model Summary						
R	R-Square	Adjusted R Square	Std Error of the Estimate	**Change Statistics**		
				R Square Change	F Change	Df1
0.799	0.638	0.631	40.31	0.638	92.68	3
Panel B: Regression Coefficients						
Variables	**Unstandardized Coefficients**		**Standardized Coefficients**		t	Sig.
	B	Std Error	Beta			
Constant	25.71	4.645			5.534*	0.000
BV	0.932	0.175	0.311		5.340*	0.000
EPS	8.691	0.872	0.583		9.868*	0.000
Hedging	0.011	0.020	0.025		0.526	0.600

Table (6) shows the regression estimates of the equation (5) Panel A shows the results of the model summary of the regression. Panel B shows the regression coefficients of both book value and comprehensive income. ***, ** and * indicate significance at 1, 5 and 10 percent levels respectively.

Table 7: Value Relevance of Book Value, Earnings Per Share, and Gains and Loss From Sale of Available Securities

Panel A: Model Summary						
R.	R-Square	Adjusted R Square	Std Error of the Estimate	**Change Statistics**		
				R Square Change	F Change	Df.1
0.700	0.490	0.487	75.93	0.490	135.6	3
Panel B: Regression Coefficients						
Variables	**Unstandardized Coefficients**		**Standardized Coefficients**		t	Sig.
	B	Std. Error	Beta			
Constant	25.04	4.941			5.067*	0.000
BV	0.963	0.182	0.319		5.282*	0.000
EPS	8.534	0.907	0.573		9.406*	0.000
SecuritiesGL	0.300	0.008	0.013		0.370	0.711

Table (7) shows the regression estimates of the equation (6). Panel A shows the results of the model summary of the regression. Panel B shows the regression coefficients of both book value and comprehensive income. ***, **, and * indicate significance at the 1, 5, and 10 percent respectively.

Table 8: Value Relevance of Book Value, Earnings Per Share, and the Components of other Comprehensive Income

Panel A:	**Model Summary**					
R	R-Square	Adjusted R Square	Std. Error of the Estimate	**Change Statistics**		
				R Square Change	F Change	Df.1
0.800	0.639	0.630	41.33	0.639	65.61	4
Panel B: Regression Coefficients						
Variables	**Unstandardized Coefficients**		**Standardized Coefficients**		t	Sig.
	B	Std. Error	Beta			
Constant	25.04	4.941			5.067*	0.000
BV	0.963	0.182	0.319		5.282*	0.000
EPS	8.534	0.907	0.573		9.4068	0.000
Derivatives	-0.031	0.045	-0.034		-0.684	0.495
Hedging	0.012	0.021	0.028		0.564	0.573
SecuritiesGL	-0.066	0.009	-0.490		-7.139*	0.000

Table (8) shows the regression estimates of the equation (7) Panel A shows the results of the model summary of the regression. Panel B shows the regression coefficients of both book value and comprehensive income. ***, **, and * indicate significance at the 1, 5, and 10 percent levels respectively.

In equation (6) we replaced hedging with gains and loss from available for sale securities. The R^2 value decreases to 0.49, (Table 8 panel A). The result of t-test is insignificant, but F-test is significant Table 7, panel B). This is due to the fact that the data points for this variable are limited. Based on the test result, the third hypothesis that the components of other comprehensive income have value relevance is accepted. Therefore, the components of other comprehensive income provide useful information to investors that affect the company value.

When hedging, derivatives, and securities GL variables are added to the equation (7), the R^2 value does increase to 0.639 Table 8 panel A. F-test for the whole regression is approximately 0.66 which significant. Therefore, disclosing more than one component of the other comprehensive income has no incremental value. Moreover, the Panel B in Table 8 shows that the t-test results of both of derivatives and hedging are insignificant.

CONCLUSION

The purpose of the study is to test the value relevance of other comprehensive income, and its components and comprehensive income. Data of S&P 500 for 2014 are obtained from Compustat for financial statement variables such as net income, book value per share, comprehensive income, other comprehensive income and its components, hedging, derivatives, and gains and losses from available for sale securities. Based on Ohlson model (1995) and decomposition model derived by Theil (1971), seven functions were derived for testing the hypotheses. The results suggest the other comprehensive income and its components have value relevance, but comprehensive income has no value relevance. The findings of this research support the FASB position on the subject and provide empirical evidence.   The limitation of this research is that it focused on S&P 500 only and therefore, results may not apply to other companies. Future research may investigate the value relevance of goodwill impairment, and other intangible assets with unlimited useful lives.

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RETURNS AND ATTRIBUTION FROM A STUDENT-MANAGED PEER-TO-PEER LOAN FUND

Lynda S. Livingston, University of Puget Sound and Four Horsemen Investments

ABSTRACT

Many business schools run equity-based student-managed funds. However, few extend that experiential learning opportunity to incorporate fixed-income assets. In this paper, we report the seven-year results from a unique student-managed fund of peer-to-peer (P2P) loans. The minimum investment in these loans is low enough to allow even the smallest schools to offer students opportunities for meaningful, ongoing credit analysis. Our results show that P2P returns can be high, that defaults are significant, and that active management can add value in this market. They also support our contention that the institutional money now swamping the market is making P2P lending less attractive for retail investors.

JEL: G11, G21

KEYWORDS: Student Managed Funds; Peer-To-Peer Lending

INTRODUCTION

Managing real money through a student-managed fund is an exciting and meaningful learning opportunity for business students. Hundreds of business schools have now linked their curricula to this sort of hands-on experience (see, for example, Peng, *et al.*, 2009, Clinebell, *et al.*, 2008, and Morgan, 2008). Most student funds focus heavily on equity, range in size from hundreds of thousands to millions of dollars, and are tied to their universities through professor oversight and endowment funding. However, our fund is different. Our fund is small, focused on fixed income, and completely independent from our university. It is structured as a 501(c)(3) not-for-profit corporation, which allows us to run the fund without oversight by the university's administration or constraints from its endowment policy. Of course, "no endowment constraints" also means "no endowment money." Since fixed-income funds usually need to be magnitudes larger than equity funds—to accommodate bonds' large round-lot sizes—we needed a way to significantly scale down traditional debt investing. We found it through the peer-to-peer (P2P) market.

The P2P market was designed to allow retail investors to fund small personal loans. Lenders can offer amounts as low as $25 to a potential borrower; if the borrower attracts enough lender interest to fund her request fully, a loan is created. Lenders receive "notes" for their pieces of the loan, and cash flows occur monthly as the underlying loan amortizes. This structure is ideal for our purposes: it allows us to create a well-diversified fund with a small initial investment; it allows our student-managers to conduct meaningful credit analysis on a plethora of consumer loans; and it generates ongoing inflows that permit continual reinvestment. To date, our fund has been successful, earning between 6% and 10% per year on each of the two platforms we use. However, the future may not be as bright. The P2P market is changing rapidly as professional investors have recognized its potential for superior returns. Institutions have created multi-million dollar funds to invest in P2P loans, swamping the market and crowding out the "peer" lenders. Thus, despite our past success in this market, our fund will probably no longer have access to its best loan opportunities, and will have to move into more traditional asset classes as we continue to grow. The paper proceeds as follows. In the next section, we briefly review the relevant

literature on student-managed funds and peer-to-peer lending. We then describe our fund and its returns since inception, and we provide an attribution analysis ascribing our results to credit quality allocation, loan choice, and loan weighting. Finally, we consider how our business model is threatened by market evolution.

Background and Literature Review

Our work links research on student-managed funds (SMFs) with that on peer-to-peer lending. We consider both in this section. Student-managed funds are investment pools owned by universities and managed by their students. Schools establish these funds to provide meaningful experiential learning opportunities to their business students, and many offer those students access to professional resources such as dedicated trading rooms and Bloomberg terminals (Peng, *et al.*, 2009; Mallett and Lerro, 2001). Schools usually commit to the funds, regardless of returns, but—consistent with the educational purpose of SMFs—require student managers to undertake specific academic or extracurricular training. Faculty mentors provide ongoing monitoring (and possibly veto power over investments). Allowable strategies and asset classes are usually prescribed by the university, and governing documents are designed to be consistent with the Investment Company Act of 1940 (Mallett and Lerro, 2001; Morgan, 2008).

These sorts of funds have been around since the 1950s (Peng, *et al.*, 2009; see also Mallett and Lerro, 2001, for an overview of early literature on specific universities' early funds). However, over the last twenty years or so, they have gone from a curiosity to a staple at business schools around the world, with hundreds in the U.S. alone (Clinebell, *et al.*, 2008; Morgan, 2008). In fact, in 2001, Mallett and Lerro concluded that their "analysis indicates that student-managed programs will become the norm for business students, rather than the exception." To establish an SMF, schools usually get seed funding from individual donations or from the university's endowment. It is very rare for a fund to be smaller than $100,000—the median amount Mallett and Lerro's (2001) sample, and the amount they deemed "reasonable to start a diversified equity portfolio." In Peng, *et al.*'s (2009) 33-fund sample, only six were below this threshold. In contrast, the median fund size was $460,000, and the average $1.44 M. Many funds are even much larger than this. Three (9%) of Peng, *et al.*'s (2009) sample were above $3 M, one of which exceeded $10 M; four of Morgan's (2008) funds exceeded $5 M, one of which—Iowa State University's—clocked in at $100 M.

One of the most important characteristics determining a fund's optimal size is its asset allocation. Funds that focus on debt are usually much larger than equity funds. Bond transaction sizes are huge relative to equity: a bond trade of $100,000 is considered "very small" in a market where a round lot requires at least $1 M (Estabrook, 2015; Perrotta, 2014). Thus, one small trade would consume a large proportion of the average SMF's capital. It is not surprising, therefore, that in Morgan's (2008) sample, debt funds are two to three times larger than the average equity fund. All of the $5-$100 M funds mentioned above are debt funds. Size is not the only hurdle to running a fixed-income fund. If we consider other practical difficulties—for example, that bonds are relatively illiquid and expensive to trade—it is perhaps not surprising that the vast majority of SMFs focus on equity investing (Morgan, 2008). Peng, *et al.* (2009), in their survey of 35 SMFs, find that 24 (69%) of them use at least 90% equity, while only one uses none. Only five of the funds indicate that they periodically switch their focus between equity to debt; 86% maintain their asset allocation, and therefore their concentration on equities. Morgan's (2008) findings echo this focus on equity. Two-thirds of his funds have at least 90% in stocks. Less than a quarter mix in a meaningful—but still a minority—amount of debt, averaging 22% in fixed-income. Only 14% actually emphasize debt: the 6% of his funds restricted to bonds, and another 8% that effectively act as if they are (holding at least 95% in bonds). Morgan (2008) worries that the large required size of debt funds makes it "harder to increase the level of practical education to both students and corporate America." The traditional scale certainly would have been an insurmountable obstacle for us. Unlike every other fund that we are aware of, ours is not sponsored by our university. Instead, it is part of a 501(c)(3) not-for-

profit corporation set up by a group of students (after our university refused to allow any institutional funds—even targeted donations—to be managed by students). We knew that we were never going to be able to raise enough money for a well-diversified equity fund, much less for a fixed-income fund. We also knew that we wanted our fund to be about helping people, not just about profit. We had to think outside the box to find the ideal instrument for our needs: peer-to-peer loans.

Peer-to-peer (P2P) loans are unsecured personal loans. The market was conceived as a way for retail investors—like the proverbial dentist who wanted to diversify his portfolio—to provide small loans to borrowers who needed money for things like home renovations or weddings. Lenders and borrowers find each other through an online platform like Prosper or Lending Club (LC). (See Herzenstein, *et al.*, 2008, Iyer, *et al.*, 2009, and Freedman and Jin, 2008a, for descriptions of the early operations of these U.S. P2P markets.) Potential borrowers provide basic background information to a platform, which runs a credit check. The platform then assigns the loan request a credit grade based on borrower and loan characteristics. (For example, LC automatically reduces the grade on a loan request for amounts larger than certain pre-determined thresholds.) Requests accepted by the platform become "listings" on the site, available for perusal by lenders. Lenders screen loans and bid on those they wish to fund. Lenders may bid as little as $25 per loan, and listings become funded loans if they garner enough lender bids to provide the amount requested. The funding for successful listings actually comes from a bank associated with the platform; in turn, the platform issues "notes" to the lenders for their bid amount. As the borrowers make their monthly payments, the platform passes them along—principal and interest, less the platform's fee— to the associated lenders.

In the early days of P2P lending, borrowers were able to craft individualized loan requests to entice lenders. Motivated borrowers gave detailed justifications for their requests, including proposed budgets, descriptions of their families, and even pictures. Lenders were also able to interact with borrowers through a platform's Q&A feature. The insight that lenders gleaned from this qualitative, "soft" data was meaningful. For example, Iyer, *et al.* (2009) estimated that lenders were able to use this sort of data to infer up to one-third of the credit information they could get form a traditional credit score. Duarte, Siegel, and Young (2009) found that lenders could use "physiognomy-based proxies" from posted pictures to predict default and assess trustworthiness, even when lenders also had access to traditional credit variables. (Borrowers must have appreciated pictures' value, since over 60% of listings included them.) Herzenstein, *et al.* (2008), using a sample of over 5,000 Prosper listings, find that 91% of the requests that demonstrated effort—like the provision of qualitative data—were funded. These authors concluded that P2P markets encourage "relational" lending, with the potential to allow traditionally underserved groups (like women) to access credit more easily. They therefore pronounced P2P to be the great "democratizer" of credit. It certainly was the great democratizer of the student-managed fund, at least for us. In the next section, we describe the portfolio we were able to build in this market.

Portfolio Description and Returns

We started our Prosper portfolio in 2009. We have invested in a total of 131 notes, thirty of which are still active, and ten of which have been charged off. In 2011, we expanded to Lending Club, where we have invested in 344 notes, of which 179 are current and 19 have been charged off. In this section, we summarize the returns from this portfolio; describe the number of months of contractual payments from our loans; and attribute performance to active bets on credit grades, loan size, and loan choice.

Portfolio Overview

Table 1 describes all 475 of our peer-to-peer note investments. We characterize these notes by platform, credit grade, performance, and size. Our Prosper portfolio, which is older, exhibits more dispersion in loan characteristics. We started this in the very early days of P2P, and our first few member cohorts were

able to experiment with Prosper's initial latitude on loan sizes and borrower quality. This part of the portfolio is relatively seasoned, so Table 1's default statistics should adequately describe its performance. In contrast, the Lending Club portfolio is newer and more concentrated. Since we will focus our lending on LC going forward, this part of the portfolio will be more affected by the platform changes that we discuss later, and we therefore are less confident that our current default experience will extrapolate.

Table 1: Summary of P2P Portfolio

	PROSPER				LENDING CLUB			
	Defaults		Nondefaults		Defaults		Nondefaults	
	number	%	Number	%	Number	%	Number	%
n	10		121		19		325	
credit grades:								
AA	2	20%	16	13%	4	21%	33	10%
A	3	30%	29	24%	4	21%	113	35%
B	2	20%	35	29%	3	16%	85	26%
C	1	10%	28	23%	7	37%	75	23%
D	1	10%	10	8%	1	5%	17	5%
E	1	10%					2	1%
HR			3	2%				
standard note sizes:								
$25	5	56%	42	36%	14	74%	238	73%
$50	4	44%	71	61%	4	21%	80	25%
$75			2	2%	1	5%	7	2%
$100			1	1%				
nonstandard sizes:								
n	1		5		N/A		N/A	
average	$72.00		$62.84					
maximum			$157.00					
minimum			$39.58					

This table summarizes all of our notes on our two P2P platforms. Both platforms assign credit grades to loans, although their systems are different. The taxonomy in the table is Prosper's. LC uses letter grades A-G, plus subgrades numbered 1 (highest) to 5 (lowest). We have included grades A1 and A2 in the "AA" category. "Note sizes" provide the initial amount of our investment in a given loan. As we have moved more of our lending to LC, we have shifted toward higher-grade loans and have concentrated on $25 note sizes. "Defaults" are notes that have been charged off. We have experienced meaningful defaults among higher-grade and smaller loans on both platforms.

On both platforms, we have invested in notes across the credit spectrum. However, as we have moved more of our lending activity to LC, we have also concentrated more deliberately on higher-quality loans. 45% of our performing LC loans are for A grades, compared to 37% on Prosper. The 35% of our performing LC portfolio in the lower-grade As is especially notable, not only compared to the 24% of our portfolio at this grade on Prosper, but also relative to the LC platform overall (only 17% of whose originations from 2011-16 were A loans; LC, 2016). An even bigger difference between the Prosper and LC parts of our portfolio is note size. On both platforms, the minimum lender bid is for $25. In our LC portfolio, our loans are predominantly at this minimum level, while the majority of our Prosper loans are twice as large. This reflects an evolution in our members' approaches to lending: early cohorts, who used Prosper, took $50 as the expected investment, reducing allocations for less attractive loans; later cohorts, using LC, use a base amount of $25, only investing more in highly attractive loans.

We have experienced significant defaults on both platforms. We have written off almost 8% and 6% of our notes (both by number and by principal) on Prosper and LC, respectively. Perhaps reflecting our early members' strategy, $25 Prosper loans defaulted at a much higher rate than both $25 LC loans and larger Prosper loans. Half of our Prosper defaults were in A loans, as were 42% of our LC defaults. Our C-grade loans performed much worse on LC, accounting for another 37% of platform write-offs. Most of our defaults occur during the first 10 months or so (consistent with Freedman and Jin, 2008b). On Prosper, our exposure at default (EAD) is about 70% of principal (data not shown), with the proportion of EAD lost given default (LGD) of 88%; on Lending Club, our EAD is higher, at about 79% of principal, with similar LGD.

Portfolio Returns

We have used multiple measures to evaluate our returns. In this section, we report time-weighted, money-weighted, and holding period returns for notes on both platforms. For the Prosper notes, we report results for our full portfolio of 131 notes. For Lending Club, we use a random sample of 157 of our 344 notes. This sample closely matches the credit grade distribution of the Prosper sample, and includes 10 (6.4%) defaults. We start with the big picture. Using our complete Prosper portfolio for its full 78-month history, and accounting for all fees and charge-offs, we find a chain-linked holding-period return of just over 93%. This implies a geometric average monthly return of 84 bp, or an effective annual rate of 10.5%. Accounting for deposits and withdrawals, we find a money-weighted return (IRR) of 51 bp/month, for an EAR of 6.3%. For the 157-note Lending Club sample, the chain-linked return over 53 months is 41%, for an average monthly return of 65 bp and an EAR of 8%. The magnitude of these returns is consistent with reports in the literature (e.g., Freedman and Jin, 2008a; Paravisini, *et al.*, 2010).

For a more granular analysis, we start by presenting our holding period returns. Table 2 describes these HPRs both by note and by month. For the by-note returns, presented in the top panel, we first find a note's monthly gross returns (interest income for the month divided by the prior month's principal balance). We then average that note's monthly returns arithmetically, then average again with the returns of other notes in its credit grade. In the other three panels of Table 2, we report results by month—all of the monthly returns for all notes in a given credit grade are averaged arithmetically. In the second panel, these returns are gross; in the third, all platform fees are deducted; and in the last, all fees and principal lost to default are deducted. In Table 3, we present the IRRs for each note, which are averaged by credit grade. We include only those notes from Table 2 that either have been paid in full or have defaulted. In this table, we break out all LC notes by subgrade. To help visualize the data, in Figure 1, we plot the monthly net Prosper HPRs (from the third panel of Table 2) and the all IRRs (from Table 3) against the (monthly) stated rates for each loan.

Tables 2 and 3 give us the same basic story. Returns generally rise as credit grade falls. Returns on Prosper are higher than on LC; these return differences are highly statistically significant ($p << .01$) for all credit grades in both tables. In Table 3, we see that some defaulting loans generated severely negative IRRs. However, the bottom panel in Table 2 demonstrates that the portfolio continued to perform well, despite these write-offs. Tables 2 and 3 also provide information on the standard deviations of our realized returns. On Prosper, standard deviations tend to rise as credit grade falls. Prosper returns' standard deviations are almost all larger than those on Lending Club, and these differences are highly statistically significant ($p < .02$). In Table 2, the few cases where the LC portfolio is more variable are driven by fees and defaults. In Table 3, the one case for which the LC standard deviation is higher—the C loans—is a consequence of one nondefaulting loan's paying off so fast that its IRR was dragged below zero by platform fees.

Table 2: Holding Period Returns

	average	standard deviation	max	min	count	average	standard deviation	max	min	count
	BY NOTE: PROSPER					**BY NOTE: LENDING CLUB**				
AA (A1/A2)	0.76%	0.13%*	0.93%	0.42%	18	0.52%	0.04%	0.58%	0.36%	21
A (A3-A5)	0.95%	0.15%*	1.24%	0.71%	32	0.64%	0.09%	0.75%	0.20%	40
B	1.19%	0.20%*	1.67%	0.72%	37	0.94%	0.15%	1.17%	0.36%	45
C	1.48%	0.26%*	2.30%	1.10%	29	1.07%	0.17%	1.40%	0.64%	35
D	1.95%	0.31%	2.59%	1.59%	11	1.36%	0.21%	1.64%	0.72%	14
E	2.83%	N/A			1	1.54%	0.12%	1.62%	1.45%	2
HR	2.53%	0.22%	2.73%	2.22%	3					
	BY MONTH (GROSS): PROSPER					**BY MONTH (GROSS): LENDING CLUB**				
AA (A1/A2)	0.81%	0.22%*	2.43%	0.00%	414	0.52%	0.15%	2.18%	0.00%	437
A (A3-A5)	0.97%	0.29%*	5.77%	0.00%	866	0.65%	0.09%	1.32%	0.00%	867
B	1.24%	0.33%*	3.85%	0.00%	832	0.95%	0.20%	3.33%	0.00%	928
C	1.50%	0.55%*	7.45%	0.00%	534	1.11%	0.34%	2.93%	0.00%	540
D	2.01%	0.71%*	7.97%	0.00%	187	1.40%	0.30%	1.88%	0.00%	205
E	2.83%	0.46%	3.51%	2.20%	4	1.55%	0.34%	1.69%	0.00%	23
HR	2.51%	0.38%	3.73%	0.00%	74					
	BY MONTH (NET): PROSPER					**BY MONTH (NET): LENDING CLUB**				
AA (A1/A2)	0.73%	0.19%	2.21%	-0.39%	411	0.41%	0.24%	1.42%	-1.15%	438
A (A3-A5)	0.84%	0.42%*	5.77%	-5.96%	907	0.57%	0.16%	1.24%	-0.99%	866
B	1.05%	1.15%*	2.69%	-24.82%	831	0.86%	0.22%	2.96%	-0.57%	926
C	1.41%	0.51%*	6.87%	0.00%	534	1.06%	0.33%	2.74%	-0.62%	540
D	1.92%	0.68%*	7.27%	-0.09%	187	1.37%	0.30%	1.86%	0.00%	205
E	2.74%	0.45%	3.40%	2.14%	4	1.51%	0.34%	1.64%	0.00%	23
HR	2.34%	0.60%	3.67%	0.00%	77					
	BY MONTH (W/CHARGE-OFFS): PROSPER					**BY MONTH (W/CHARGE-OFFS): LENDING CLUB**				
AA (A1/A2)	0.26%	6.75%	2.21%	-96.66%	411	-0.05%	6.78%	1.42%	-100%	438
A (A3-A5)	0.64%	4.42%*	5.77%	-100.07%	907	0.45%	3.42%	1.24%	-100%	866
B	0.82%	4.88%*	2.69%	-95.88%	831	0.75%	3.32%	2.96%	-100%	926
C	1.23%	4.22%*	6.87%	-95.39%	534	0.32%	8.68%	2.74%	-100%	540
D	1.51%	5.66%	7.27%	-75.12%	187	0.88%	7.09%	1.86%	-100%	205
E	-21.75%	42.47%	3.40%	-95.31%	4	1.51%	0.34%	1.64%	0.00%	23
HR	2.34%	0.60%	3.67%	0.00%	77					

This table breaks down our holding period returns for our 131-note full Prosper portfolio and our 157-note Lending Club sample. The top panel lists average gross returns by note (interest income $_t$/principal balance$_{t-1}$). The rest of the panels provide returns by month. The second panel lists gross returns; the third, returns after platform fees; and the last, returns after both fees and defaults. Returns tend to rise with credit grade. Returns are generally higher and more variable on Prosper. Prosper standard deviations marked with an asterisk are significantly higher than the corresponding LC values, using alpha = .02.

Both the return and the variability results just discussed are driven partially by the changes in the platforms over time. The stated rates on early Prosper loans were set by lender auctions, and—even if these auctions were not as robust as initially envisaged—this process introduced loan-specific differences into our Prosper portfolio. We therefore observe much more variability in our Prosper loans' performance than in our LC loans' (given the strong correlation between promised and realized returns documented in Figure 1). Now, rates are set by platforms. On LC, all notes of the same credit subgrade are assigned the same rate, and rates for new loans change only "periodically," based on macroeconomic conditions and platform experience. On Prosper, a given letter credit grade is associated with a variety of rate ranges; the platform assigns a specific rate based on a borrower's credit score. However, since Prosper simply breaks a credit letter grade into credit score ranges, rather than explicitly using credit letter subgrades, this is effectively equivalent to LC's process. Given these changes, we expect that future returns—at least the *ex ante* ones—will be more comparable on the platforms, and less variable overall.

Table 3: Internal Rates of Return

		IRRs BY NOTE: LENDING CLUB								
		Defaults					**Nondefaults**			
	Average	**Standard Deviation**	**Max**	**Min**	**Count**	**Average**	**Standard Deviation**	**Max**	**Min**	**Count**
A1						0.40%	0.07%	0.49%	0.32%	4
A2	-18.54%				1	0.47%	0.06%	0.51%	0.36%	6
A3						0.51%	0.05%	0.58%	0.46%	6
A4	-64.23%				1	0.47%	0.22%	0.58%	-0.04%	7
A5						0.64%	0.05%	0.68%	0.56%	5
all A						0.50%	0.14%	0.68%	-0.04%	28
B1	-47.22%				1	0.73%	0.07%	0.78%	0.68%	2
B2						0.81%	0.03%	0.83%	0.77%	3
B3						0.92%	0.02%	0.93%	0.90%	4
B4						0.99%	0.04%	1.02%	0.94%	4
B5						1.00%	0.10%	1.10%	0.88%	5
all B						0.92%	0.11%	1.10%	0.68%	18
C1	-14.74%	2.19%	-13.19%	-16.28%	2					
C3						0.76%	0.79%	1.15%	-0.66%	5
C5						1.17%				1
all C						0.83%	0.73%	1.17%	-0.66%	6
D3	-13.34%				1					
D4	-36.96%				1					

		IRRs BY NOTE: PROSPER								
		Defaults					**Nondefaults**			
	Average	**Standard Deviation**	**Max**	**Min**	**Count**	**Average**	**Standard Deviation**	**Max**	**Min**	**Count**
AA	-2.34%	1.98%	-0.94%	-3.73%	2	0.65%	0.10%	0.80%	0.41%	14
A	-8.59%	12.87%	-0.21%	-23.40%	3	0.87%	0.16%	1.14%	0.49%	28
B	-16.36%	3.88%	-13.62%	-19.10%	2	1.15%	0.23%	1.61%	0.80%	25
C	-12.69%				1	1.50%	0.33%	2.23%	1.07%	15
D						1.77%	0.38%	2.21%	1.13%	8
E	-35.89%				1					
HR						2.45%	0.28%	2.63%	2.13%	3

This table lists the money-weighted returns for both Prosper and Lending Club. Again, we see that returns generally rise as credit grade falls, and that Prosper returns are usually higher and more variable than LC returns.

Contractual Payment Experience

Percentage values like IRRs and HPRs are incomplete measures of performance, since both—in different ways—abstract from the term over which the loan contributes to the portfolio. The relatively high cash flows thrown off from amortizing P2P loans ensure that our members have ongoing opportunities for reinvestment. Early loan payment, however, subjects us to reinvestment rate risk; we therefore face the same prepayment problem as holders of mortgage backed securities. As managers, we prefer to choose loans that will remain productive throughout their scheduled term.Thus, as a final measure of performance, we consider how long a borrower makes her contractual payments. For the 101 Prosper notes and 55 LC notes that have resolved, we count the number of months over which a loan delivers its amortizing payments. The month in which a loan pays off is counted, since interest is still paid that month on the prior month's balance. If a borrower does not pay for several months, then resumes payments, we count only the number of months before the initial missed payment. Eleven of the notes, all from Prosper, were written off. Both 36- and 60-month loans are included. The results are shown in Figure 2. The top panel of Figure 2 makes it clear that three years is the mode for loan resolutions. Sixteen loans pay off at month 35, ten of which are A loans and 15 of which are 36-month (that is, full-term) loans. Nonetheless, there are significant numbers of resolutions in earlier months. A-rated loans are spread fairly uniformly across the first three years; B loans are, too, although they start paying off a bit later, around month 5. C loans' resolutions spike after about a year, while over half of the D loans resolve by month 8. Ten of the eleven defaults occur by month 35. A-rated loans last the longest: the two defaults occur at months 29 and 35. Both C and two of three B loans fail by month 9; the single E loan fails in month 3. As we noted above, early defaults are not uncommon in the P2P market (see Freedman and Jin, 2008b), and—as we saw in Table 3—those defaults can be devastating for returns.

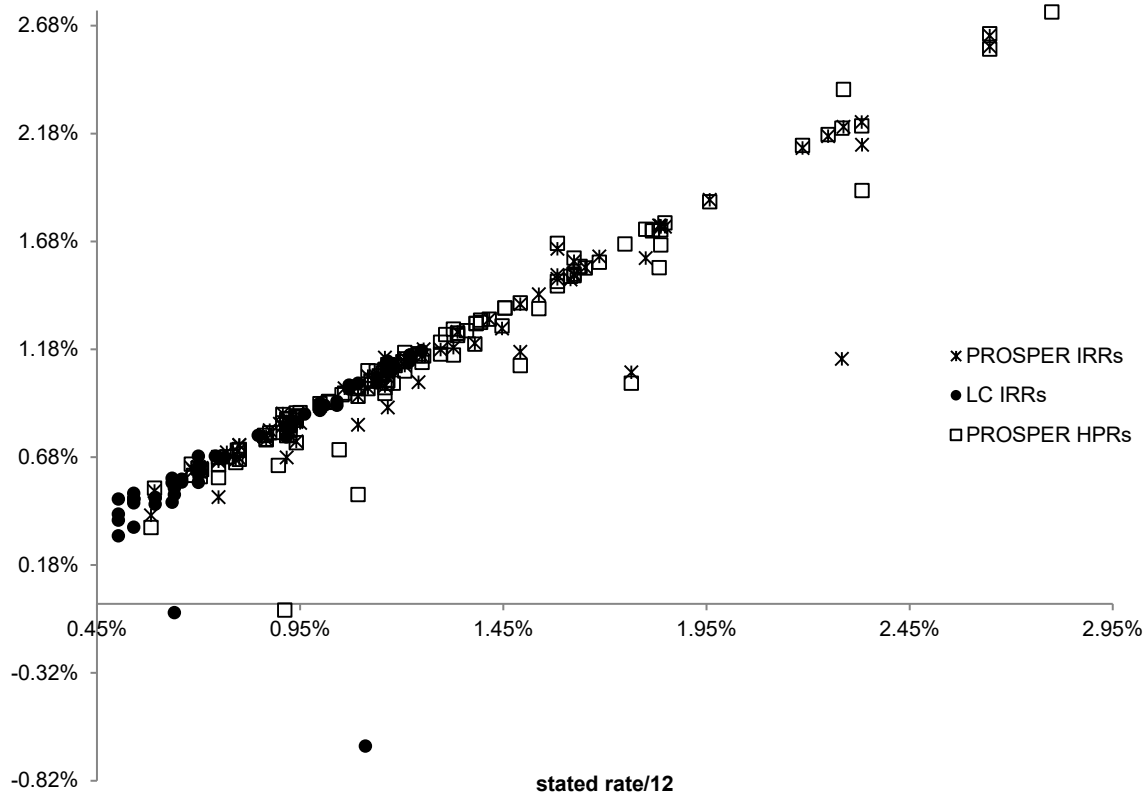Figure 1: Realized Note Returns Against Stated Rates

Figure 1 plots Prosper HPRs (from Table 2) and LC and Prosper IRRs (from Table 3) against the loans' stated rates. While we have had some very negative LC IRRs, the Prosper IRRs are, in general, more variable. We can also see the relative concentration of LC rates—both stated and realized—perhaps reflecting the P2P market's evolution from auction-determined to platform-specified rates.

The bottom panel of Figure 2 gives cumulative resolutions by credit grade. 99% of all loans resolve by month 47. This panel also presents results for the 39, 60-month loans in the sample (26 of which are from Prosper, and three of which—an A, a C, and a D—are defaults). Only eight of these take more than three years to resolve, including two-thirds of A loans, 80% of B, 89% of C, and all of the D loans. As the dotted curve shows, the resolutions are spread uniformly across the first three years. We expect loan performance to change going forward, since we will be concentrating on LC rather than Prosper, and since the P2P market itself is changing (as we discuss in the next section). Nonetheless, our history still provides useful evidence that can help us predict the number of months of contractual performance. Given evidence from prior P2P literature (e.g., Freedman and Jin, 2008a; Iyer, *et al.*, 2009; Livingston and Crosby, 2016) we identified thirteen variables that can help us explain how long a loan performs: the logs of loan amount and the borrower's revolving credit balance; the debt-income ratio; the

Figure 2: Number of Months of Contract Performance
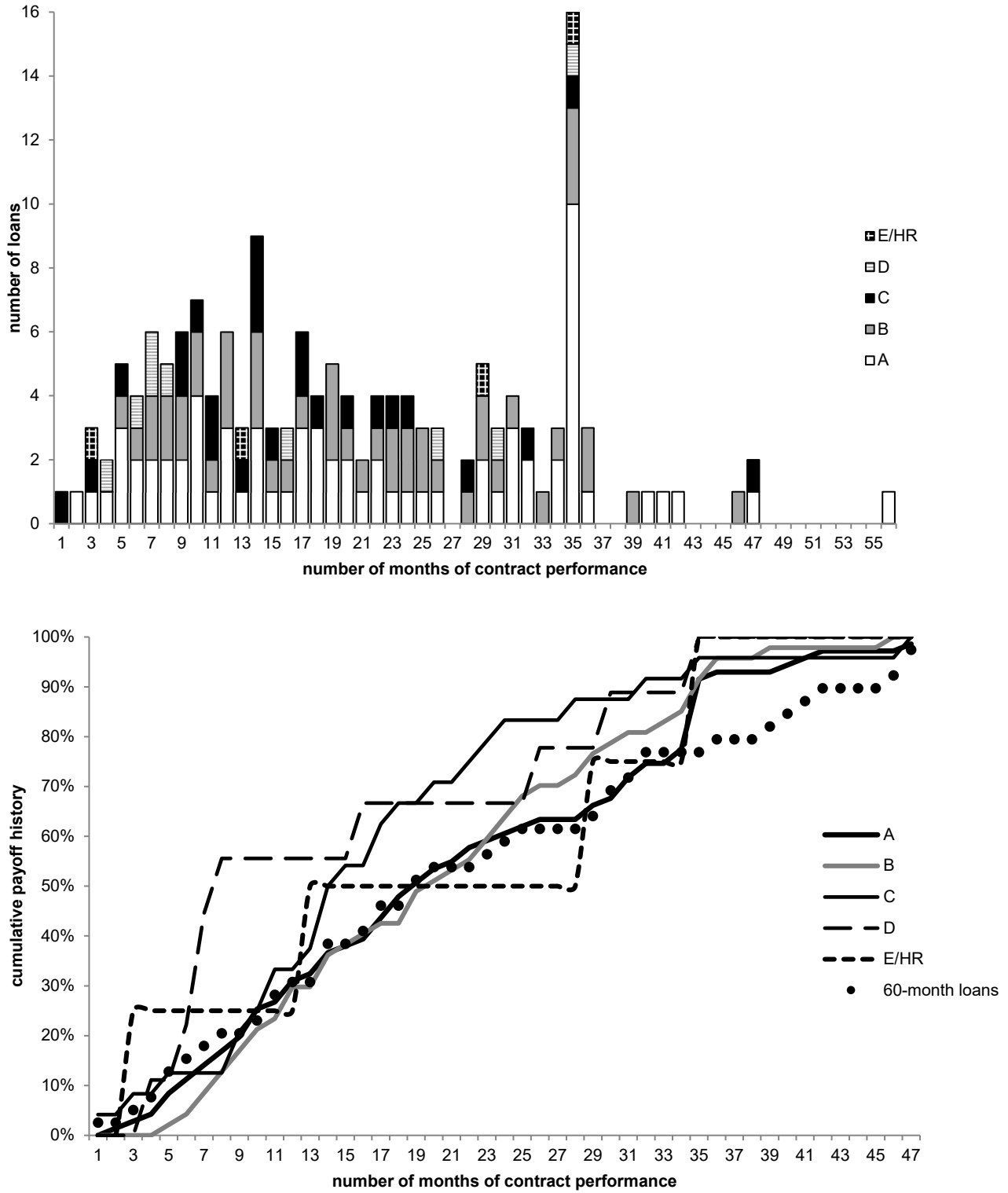
The top panel shows the distribution of loan resolutions for the 101 Prosper and 55 LC loans, by credit grade. The bottom panel gives the cumulative resolution history by credit grade. The bottom panel also shows the cumulative resolution history for 60-month loans only.

loan rate; dummy variables for income (1 ≡ < \$75,000/year), purpose (1 ≡ debt consolidation/credit card refinancing), term (1 ≡ 60 months), platform (1 ≡ Prosper), credit grade (1 [A] through 7 [HR]), number grade (e.g., equals 5 for a C5 loan), and loan-size identifiers (≡ 1 if the requested loan amount is a multiple of \$500 or \$5,000, respectively); and an interaction term between loan rate and platform. Using backward elimination with an alpha of .10, we generated the following predictive model:

number of months of contract performance $=$ 26.2 – 4.1*(\$500 dummy) (1)

– 7.5*(purpose dummy) + 3.4*(term dummy) + 83.0*loan rate – 4.0*(credit grade identifier)

Lower-rated loans resolve faster, as do credit card/refinancing loans. Note that this does not simply reflect default, since only half of our defaults were for refinancings (four of those five were rated C or D, however, which is consistent with the strong link between debt consolidation and lower grade with default; see Livingston and Crosby, 2016). Credit grade remains significant despite its high correlation with loan rate (r = .83). Loans with higher rates remain outstanding longer, as do longer-term loans; however, the marginal effect of doubling the term is to add only about three months of contractual performance. Having described our portfolio returns and contract performance, we turn now to the attribution of our returns among the different underlying active bets

Attribution

Our student members make many active bets as they manage our P2P portfolio. For example, they decide how much money to invest on each of our two P2P platforms and how much to lend in various categories such as debt consolidation. The platform choice, however, has been primarily an artifact of the timing of our entrance into the various markets, of loan availability, and of the students' perception of platform quality. Once we started using Lending Club, we concentrated our investing there to diversify our portfolio. Attractive new loans available to retail lenders started drying up on Prosper around the same time. As for loan purpose, our early investment policy statement precluded various forms of lending, including debt consolidation loans. The scope of active management along these dimensions, therefore, was very limited. There are nonetheless other critical choices to be made.

In this section, we focus on three fundamental active bets our members make when they choose our loans: the proportion of funds to allocate to each credit grade, the actual loans to choose, and the amount of money to bid for each loan. To investigate how important each of these choices is to our portfolio's performance, we use an attribution approach based on an asset/equity sector/security allocation example for a balanced fund from Bodie, Kane, and Marcus (1993). Their approach is more flexible, and therefore more informative for us, than is the standard industry breakdown (see, for example, Bailey, *et al.*, 2014, in the CFA Level III curriculum). The two approaches differ only in their allocations to selection (the last two terms in equation (2) below), which the industry approach breaks down into generic "active management" and "interaction" terms.

We use the following three-part attribution:

our portfolio return – return on market bogey =

$$\sum_{credit.class.j}(our.wt_j - mkt.wt_j)*(mkt.rtn_j - bogey) \; + \sum_{credit.class.j} our.wt_j *[\sum_{loan.i}rtn_{ij}*(our.wt_{ij} - neutral.wt)]$$

$$+ \sum_{credit.class.j} our.wt_j * [\sum_{loan.i} rtn_{ij} * (neutral.wt - mkt.wt_{ij})] \qquad (2)$$

where the market bogey return is found as $\sum_{credit.class.j} mkt.wt_j * mkt.rtn_j$.

The first term in equation (2) is the credit-class allocation term, which measures the contribution of credit-class weighting to our portfolio's incremental return. The credit classes, j, vary by platform. Over our sample period, Prosper uses seven categories (AA, A, B, C, D, E, and HR). Lending Club uses more, since it subdivided the letter categories using the numbers 1 through 5 (A1, A2, etc.). The remaining two terms in equation (2) measure the contributions from our active loan-weighting choices (term 2) and on our choice of loans (term 3, a residual term). The loans, indexed by i, are the loans that we chose to include in our portfolio. For each loan we choose, we evaluate the relative weight we used against a neutrally weighted alternative. This is the weight that the loan would have if it had been for $25. (This simply requires us to scale down the remaining balance on the loan—for example, by halving it for a $50 loan. We assume that portfolio size does not change.) If members invest more than the default amount of $25, they make a decisive active bet. In Table 4, we present the results of our attribution analysis. In panel A, we provide the inputs we used to calculate the platforms' bogeys (portfolio returns based on historical credit class performance and weights). Panel B gives the attribution.

Looking first at panel A, we see that our bogeys for Prosper are higher in all cases than those for Lending Club. While our own return experience at Prosper perhaps justifies higher returns for that platform (see Table 2), we nonetheless expect that these bogeys are too high. While Lending Club displays its data prominently on its website, Prosper seems to delight in opacity. We were forced to estimate its bogeys using data from its 10-K filings, adding an adjustment for default based on its reported experience. The latter was almost certainly inadequate, given the magnitudes of the implied bogeys relative to Lending Club's. For example, consider the 2015 "other" category, where the performance of Prosper's grade HR—even after assuming 17.5% of these loans default—is extremely high, especially relative to LC's clearly default-affected classes F and G. Underestimating Prosper's default probabilities for the higher-rate, lower-quality credit grades, in particular, could explain the negative attributions to credit class (since we emphasize higher-quality loans) and the large residuals assigned to loan choice.

Focusing on Lending Club, we see that we beat the bogey in the first three of the five periods. The active loan-weighting choice was uniformly a positive—albeit declining—contributor to our outperformance. However, the residual loan choice component clearly reflects the (increasing) impact of defaults. On Prosper, we beat the bogey (barely) only in 2015, despite returns as high as 13%. Credit-class allocation contributes positively to performance in the most recent two years (perhaps because the lower weight on the bogey's D-and-below grades is falling). Loan-weighting choices are positive contributors in all but one year. Table 4 demonstrates that active bets significantly affect our results. Going forward, however, we expect less scope for active management, especially in loan choice. As good loans become increasingly scarce, we will need to be much more defensive in loan weighting, concentrating our active focus on credit-class allocation. In the next section, we briefly describe some of the changes in the P2P market that have motivated these adjustments.

Table 4: Return Attribution

A: BOGEY INPUTS

		2010	2011	2012		2013		2014		2015		2016	
		P	P	P	LC	P	LC	P	LC	P	LC	P	LC
AA	rate	7.95%	7.57%	7.47%		6.68%		6.14%		5.85%		5.70%	
	weight	0.18	0.11	0.09		0.09		0.09		0.09		0.09	
A	rate	9.24%	10.24%	10.66%	4.33%	9.93%	5.55%	9.16%	5.18%	8.22%	5.17%	7.80%	5.33%
	weight	0.24	0.20	0.20	0.17	0.22	0.14	0.23	0.15	0.23	0.17	0.22	0.20
B	rate	13.22%	14.61%	14.86%	6.76%	13.23%	7.57%	11.93%	6.98%	10.87%	6.48%	10.49%	7.30%
	weight	0.11	0.16	0.19	0.31	0.24	0.30	0.26	0.24	0.26	0.26	0.26	0.28
C	rate	18.47%	17.93%	18.59%	7.78%	16.52%	8.99%	15.02%	7.48%	14.02%	6.76%	13.76%	8.47%
	weight	0.13	0.10	0.19	0.21	0.24	0.29	0.25	0.27	0.26	0.28	0.26	0.28
D	rate	22.95%	22.59%	21.58%	8.53%	19.65%	9.03%	18.37%	7.63%	17.75%	5.99%	17.79%	8.75%
	weight	0.18	0.24	0.19	0.16	0.13	0.14	0.11	0.20	0.11	0.16	0.11	0.13
E	rate	27.03%	26.25%	24.42%	9.30%	23.03%	10.09%	22.00%	6.61%	21.39%	4.70%	21.64%	7.42%
	weight	0.08	0.13	0.08	0.10	0.06	0.08	0.04	0.10	0.04	0.10	0.04	0.08
other	rate	25.85%	25.58%	25.35%	9.58%	24.64%	9.27%	24.21%	5.79%	24.11%	0.62%	24.28%	3.93%
	weight	0.08	0.07	0.06	0.06	0.03	0.05	0.01	0.04	0.01	0.04	0.01	0.04

B: ATTRIBUTION

	PROSPER					LENDING CLUB				
	Bogey	Return	Credit Class Allocation	Loan Weighting	Loan Choice	Bogey	Return	Credit Class Allocation	Loan Weighting	Loan Choice
2010	15.9%	8.3%	-2.9%	1.2%	-5.8%					
2011	17.5%	12.6%	-4.6%	1.5%	-1.8%					
2012	16.7%	13.1%	-4.1%	1.8%	-1.3%	7.3%	9.0%	-0.7%	3.9%	-1.4%
2013	14.4%	11.2%	-3.2%	1.6%	-1.7%	8.2%	10.0%	-1.0%	2.3%	0.6%
2014	12.8%	2.1%	-2.5%	-1.2%	-7.0%	6.9%	9.0%	-0.7%	0.8%	2.1%
2015	11.9%	12.1%	0.9%	1.6%	-2.3%	5.9%	4.2%	0.2%	0.4%	-2.2%
2016 (6 months)	11.7%	7.3%	0.8%	1.1%	-6.4%	7.3%	-3.0%	0.3%	0.1%	-10.7%

This table attributes our portfolio returns to active choices on credit class allocation, loan weighting, and loan choice (the residual). Returns on our portfolio are calculated monthly; monthly values are added to create annual returns. Panel A provides the inputs used to calculate the platform bogeys. Lending Club (LC) provides this data on its website, and adjusts its reported returns for default. Prosper bogeys were estimated from 10-K filing data, and were assigned default probabilities based on Prosper's reported historical experience (AA: 1% default rate; A: 3%; B: 5%; C: 7.5%; D: 10.5%; E: 13.5%; HR: 17.5%). Given the large discrepancies between LC's lower-grade default-adjusted returns (e.g., "other class" = grades F and G) and Prosper's estimated returns (e.g., "other class" = grade HR), these adjustments are too small. Note also that LC reports only data for "A" grades, while we follow Prosper's AA/A classification by assigning LC's A1 and A2 grades to an "AA" class. Panel B reports the attribution for our portfolio. Our reported returns are calendar-year time-weighted returns, incorporating default. These results show underperfomance from credit class allocation, given our emphasis on higher-quality loans, and generally positive contributions from our loan weighting choices.

CHANGES IN THE P2P MARKET

For the last seven years, our students have been able to use P2P loans as the basis for a unique student-managed debt fund. They have been able to perform meaningful credit analysis on a myriad of loan sizes and types, assessing both qualitative and quantitative data. A side benefit of using P2P—one in keeping with our not-for-profit educational mission—was that our students were able to look beyond profit by identifying borrowers they thought they could really *help*. (We are not the only lenders motivated by charity: according to Paravisini, *et al.*, 2010, 5% of LC lenders report that their main reason for using the platform is "to help others." See also Freedman and Jin, 2008a, and Bachmann, *et al,* 2011.) Now, however, changes in the P2P market are reducing the potential financial and philanthropic benefits of our

future participation. We are being driven out by a predictable evolution of the market: first, institutions are enticed by the growth and profit potential of P2P; next, the platforms respond to make the loan product more amenable to institutional scale and speed; and finally, the small "peer" lenders like us are squeezed out.

Institutional investors are always looking for new, potentially diversifying assets, and the recent low interest rate environment makes new fixed-income assets particularly interesting. Enter P2P. In a pitch to institutional clients, Price Waterhouse Coopers (PwC, 2015) touts the market's "explosive growth rates" and its ability to "reach vast new segments of untapped market potential." They "conservatively" estimate the market size in 2025 at $150 B, up from $5.5 B in 2014. Big money is responding to the potential to collaborate in such a market. PwC notes that one bank now buys $2 M per month in P2P loans, and another has a "flow agreement" allowing it to buy up to a quarter of a platform's loans at a preset price. And it is not just banks that are interested: Cortese (2014) notes that hedge funds, pension funds, and sovereign wealth funds also participate in the market, as do new P2P-only investment funds such as the Prime Meridian Income Fund.

In turn, the P2P platforms are making their loans more attractive to institutions. Since institutions want to build portfolios, not relationships, they do not need pictures or Q&A features. Gone are the early "groups" that allowed borrowers to affiliate using alumni or social ties, vetted and perhaps endorsed by a group leader—a structure that harnesses the power of "collective responsibility" to encourage repayment (La Ferrara, 2003; Freedman and Jin, 2008a). Thus, the platforms have abandoned almost all opportunities for borrowers to personalize their listings. The "soft" data, found to be so efficacious by early researchers into P2P markets (e.g., Iyer, *et al.*, 2009), is gone. Now, all listings look the same—sets of traditional credit statistics—and loans are commodities.

Institutional investors need scale to profit in this commodity market, so the P2P platforms have more than doubled the maximum sizes of their loans. They also now offer "whole" loans, which allow a single lender to fund an entire loan (as "certain institutional investors have indicated a preference to be able to purchase loans in their entirety…" LC, 2017). Over 90% of Prosper's loans were whole as of late 2014 (Shore, 2014); in 2015, there were almost twice as many whole loans funded as traditional "fractional" loans. Deep-pocketed institutions are able to peruse the new loan landscape with proprietary technology, using "custom algorithms…to automatically review and purchase loans, often before most general investors are aware of the loan listing" (PwC, 2015). (For example, the Prime Meridian Income Fund chooses loans using "a dedicated API [application programming interface] with proprietary credit algorithms"; PM, 2017) Big lenders are even locating servers close to Prosper and Lending Club to get faster access to loans (Cortese, 2014). Most significantly, platforms now give institutions the first-look at many new listings, passing only the rejected loans to the retail market.

The drain on supply is obvious from a recent check on our two sites: on August 16, 2016, Prosper had 216 listings available, and LC had 138. Even if each listing was for its site's maximum ($35,000 for Prosper and $40,000 for LC), and if each still had lots of funding available (they did not: the maximum on LC, for example, was 30% remaining for bid), and if each became a loan, these lending opportunities would still only amount to about 2% of the monthly origination value implied by 2015's platform totals of $3.4 B and $8.7 B, respectively. Thus, retail lenders like us not only have less information per listing, we also have fewer listings overall.

These trends probably exacerbate the adverse selection problems that have always characterized P2P lending. (See Iyer, *et al.*, 2009, for discussion of adverse selection; see Chafee and Rapp, 2012, for a general discussion of P2P risks.) For example, P2P lenders do not see a borrower's exact credit score; instead, they see a platform-determined credit "grade," determined by a platform-specific proprietary model. This may lead to credit grades' being populated by borrowers at the lower end of a credit-grade

range. (Indeed, Freedman and Jin, 2008a, found that listings became increasingly risky over Prosper's first two years.) If institutions use superior access and algorithmic firepower to cherry-pick the best loans, our members will be forced to choose from a smaller pool of riskier loans. Thus, going forward, we expect fewer good lending opportunities, just as the "Prime Meridian" marketing proclaims: "With the recent investments and commitments by Google and Blackrock, this asset class is becoming increasingly institutionalized…This is bad news for other lenders trying to participate, but it is good news for Prime Meridian…"

CONCLUSION

Running a student-managed fund offers students a meaningful opportunity to run real money in real time. However, establishing a fund requires a substantial commitment of university resources, especially if students are to venture outside the box and manage fixed-income assets. Traditional debt products are bulky, illiquid, and expensive to trade. However, peer-to-peer loans are none of those things.

We established what we believe to be the first P2P student-managed fund in the world. We also did it in a unique way: creating a 501(c)(3) educational not-for-profit, allowing us to be completely independent from our university. Our students invest and spend according to investment policy statements that they create, not ones dictated by endowment and university administrations. Since the fund's inception in 2009, our student managers have participated in almost 500 P2P loans, investing between $25 and $157 per loan. We have generated returns of between roughly 6% and 10% per year, net of defaults.

Those defaults have been significant, and raise the question of the adequacy of our risk-adjusted returns. We cannot assert that we have received adequate compensation for risk—in part, because there is no accepted measure of risk for P2P loans. Freedman and Jin (2008a), after comparing their estimated Prosper return of 6% to the 5.29% contemporaneously available on 6-month CDs and the 6.93% on the S&P500, note that Prosper loans really are comparable to neither, since "[i]t is difficult to quantify the risk premium needed for Prosper loans" given the fundamental differences between them and alternative investments. Paravisini, *et al.* (2010) suggest that investors make their loan choices as if all risk buckets have the same systematic risk, and that the loans' overall risk properties are consistent with what is posted on Lending Club's website. Regardless of the proper measure of risk, it is clear from the variability of our results that uninitiated retail lenders should *not* view the P2P market as a substitute for CDs or money market funds. Fortunately for us, we can take a more nuanced view of risk, given that we run our fund with an educational and philanthropic—rather than purely financial—mission.

This charitable motivation seemed to be a good fit for P2P lending when the market was young, when some peer lenders associated P2P with the microfinance of Grameen Bank. Nonetheless, P2P is a for-profit system. The lack of collective responsibility, reciprocity, and the attendant social collateral that characterize this relatively anonymous, one-shot, returns-driven model almost inevitably have led to the commoditization of its loans and the institutionalization of its lending.

As big money has flooded the market, platforms have eliminated most of the "peer" elements of lending—the pictures, narratives, and message boards that provided useful "soft" information to retail investors. Now, small lenders like us are forced to fight for the scraps that whole loan programs and flow agreements leave us. In fact, the whole market is being rebranded from "peer-to-peer" to "marketplace lending." Given these changes, we do not expect the sorts of returns we report in this paper to continue. This is a limitation of our research. Another is our relatively small sample size. Both Prosper and Lending Club provide reams of historical data on their platforms; future research could include investigating that data for performance-term and attribution. The most important question will be to characterize the listings available to institutions versus retail lenders, to assess the disparity induced by

institutional cherry-picking. Unless the platforms reserve some decent loans for the little guys, the "peer" market we discuss in this paper will be nothing but a historical curiosity.

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THE IMPACT OF FAIR VALUE ON AUDIT QUALITY: EVIDENCE FROM TUNISIA

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ABSTARCT

This study collects the views of Tunisian external auditors about the impact of audit challenges related to fair value on audit quality and the role of the International Standards on Auditing (ISA) 540 in mitigating these challenges. Based on responses from 52 Auditors to our questionnaire, we found out that the fair value is perceived as engendering technical difficulties for auditors. However, these challenges at fair value have no negative impact on audit quality. On the other hand, 78.8% of our respondents believe that the International Standards on Auditing 540 plays a significant role in mitigating the audit challenges related to fair value. Thus our study shows that in the eyes of Tunisian external auditors, benefits of fair value outweigh its disadvantages and the International Standards on Auditing 540 provide auditors by all the necessary tools to deal with audit challenges related to fair value estimates.

INTRODUCTION

Accounting standards are the basis on which is built any financial information. Thus, before issuing an opinion on the quality of financial statements, one must question the quality of standards that led to their establishment. In this regard, some research had indicated the presence of a significant relationship between the accounting framework adopted and earnings management (Barth et al. (2008)). The financial scandals that were arisen in the United States and Europe, such as Enron and WorldCom, have given rise to doubts, among investors, about the sincerity and credibility of disclosed financial information. To restore investor's confidence in the quality of published financial statements, the European Union (EU) applied to all the countries if the EU, had made mandatory the application of IFRS (International Financial Reporting Standards) for listed companies establishing consolidated accounts since January 1st 2005. In order to provide an international regulatory framework in favor of having financial information which is at the same time understandable, relevant and comparable for investors. Other countries, such as Australia, Turkey and South Africa, among others, had set the same rule.

IFRS are inspired by the Anglo-Saxon model that favors the dominance of an economic approach which estimate how much the company is currently worth, in detriment of a historical approach which reflects what has happened, produced and certain. So with IFRS, we have moved forward from a Stakeholder model to a Shareholder model prepared, in priority, to guarantee the specific informational needs of shareholders and investors. The impact of the transition to IFRS on the quality of financial reporting has been the subject of several empirical studies (Zimmermann & Goncharov (2003); (Leuz & Verrecchia (2000) and (Bartov et al. (2005)). According to these studies, this impact differs from one country to another, and sometimes, from one study to another within the same context. This topic was the subject of the keenest doctrinal controversies; there are two streams of research.

Proponents of IFRS are in favor of such adoption and believe that through these standards, which provide managers with limited flexibility in accounting choices, investors will have more transparent financial statements. On the other hand, opponents assume that IFRS adoption is a necessary condition for improving information quality but is still insufficient because it must take into account environmental factors (Ball et al. (2000)). Adversaries of such adoption justify their views based on the fact that IFRS are complex, abstract, expensive, and they are based on the principle of fair value, which is often accused of being a crisis accelerator (Laux & Leuz (2009)).

These suspicions on IFRS, particularly on fair value, were accompanied with a total loss of confidence in audit quality. According to Sikka (2009), audit firms have shown an increasing willingness to violate the laws, regulations, and help their clients to publish flattering financial statements. The growing demand on fair value accounting has resulted in a series of challenges for external auditors and auditing standard setters (Kumarasiri & Fisher (2011)). In recent years, we noted the disappearance of local accounting systems of different countries in detriment of the appearance of a single international accounting system. Tunisia was not apart of this movement. Indeed, the Tunisian authorities had aimed to adopt IFRS around 2014. And given the political and economic instability in the country since 2011, no decision has been taken. According to Ball (2006), the implementation of IFRS has not received enough attention and the implementation of fair value, among other IFRSs, may be more problematic given its complex and controversial nature, as well as other political and economic factors deeply rooted and vary by country. To successfully adopt IFRS in Tunisia, a change process must be designed in order to measure the complexity and depth of IFRS. Therefore, examining the implementation of fair value at each country is beneficial to get a further insight into the implementation of IFRS.

This paper aims to examine the impact of audit challenges in fair value on audit quality as required by the International Standards on Auditing (ISA) 540. Our decision to retain the Tunisian context is explained by the debate about adoption of IFRS in the current environment and the lack of studies that have addressed this topic. The objectives of our research are first, to examine the impact of fair value on audit quality while addressing the challenges audit fair value. And second, to analyze the impact of failures of the ISA 540 on its role in mitigating the challenges at fair value. In this paper, we first present the literature review, then the Data and methodology, the results and finally the conclusion.

LITERATURE REVIEW

In this part we present two research streams: the research stream that studies the fair value audit challenges and the research stream that studies the failures at the ISA 540.

Fair Value Audit Challenges

To understand how accounting estimates are verified, Griffith et al. (2012) interviewed 24 auditors belonging to six major audit firms, during the months of October and November. These interviewees noticed that the accounting estimates are difficult to verify because they must assess the reasonableness of the estimates rather than simply verify their accuracy. Montague (2010) sought to address potential problems with the audit of financial instruments measured at fair value. She concluded that the auditors should ensure that managers had classified assets / liabilities measured at fair value under the appropriate hierarchy.Martin et al. (2006), based on psychological studies to highlight the various problems that may occur during the verification of estimates at fair value, pointed out that the knowledge of specialized assessment needed to audit effectively estimates at fair value will be difficult for auditors to acquire and maintain, due to its complexity. They described the problems related to fair value from three different perspectives. First problem is the challenges to identify and assess the fair value estimates. Second is the potential bias of direction. Finally, the third problem is associated with the lack of internal control specific to fair value estimates. Kumarasiri & Fisher (2011) sought to identify and examine the issues and

challenges faced by auditors in auditing estimates at fair value in a context of developing countries based on a survey of 156 auditors in Sri Lanka. Among the problems they found is the prevalence of inactive markets in developing countries. According to the above-mentioned studies, we can formulate the following assumptions:

H1a: the complexity of fair value measures has a negative impact on audit quality.
H1b: the potential biases by managers have a negative impact on audit quality.
H1c: the lack of technical knowledge on the fair value measures has a negative impact on audit quality.
H1d: the absence of an active market has a negative impact on audit quality.
H1e: the absence of specific internal control for fair value measurement has a negative impact on audit quality.

Failures at the ISA 540

Canadian Public Accountability Board (CPAB, 2012) in its attempt to examine the effectiveness of the post-implementation of clarified ISAs, identified a number of deficiencies in ISA 540 that may affect audit quality. The members of board believed that the effectiveness of the audit procedures required by ISA 540 that are implemented in response to risks of significant anomalies are often insufficient to support the conclusion of the auditor on the reasonableness of the accounting estimates. Jeppesen & Liempd (2013) noted that when the auditor makes an estimate and uses assumptions or methods different from those used by managers, a difference may arise because the auditor used different but equally valid assumptions. Auditors are technically unable to determine what to do with the equally valid assumptions. According to the above-mentioned studies, we can formulate the following assumptions:

H2a: failures of audit risk procedures in ISA 540 have a negative effect on its role in mitigating fair value audit challenges.

H2b: the lack of guidelines for equally valid assumptions in ISA 540 have a negative effect on its role in mitigating fair value audit challenges.

DATA AND METHODOLOGY

Background and Sample

In this research, we selected a sample of Tunisian Certified Public Accountants (TCPAs), referred here as external auditors. Our questionnaire was realized in 2014 and had two steps. A pre-exploratory survey was conducted among some TCPAs belonging to our sample to adapt different questions to the Tunisian context and improve the measure scales. The second phase consists of the distribution of the final questionnaire by email and via social networks such as Facebook and LinkedIn. We sent 110 questionnaires, we received 59 responses and after excluding incomplete responses. We retained only 52 responses. The variables developed in the survey and used in our analysis are presented in Table 1. Table 2 details the descriptive statistics of the sample.

Table 1: Variables in the Study

Variable	Definition
Sample characteristics	
V_1 (AGE)	Age of the responding
V_2 (GENDER)	Gender of the responding
V_3 (EXP)	Number of years of respondent's experience as an auditor
V_4 (BIG6)	Responding member of Big 6 (Y/N)
Dependent	
V_5 (JV-QD)	Fair value has a negative impact audit quality (Y/N)
V_6 (ISA540)	ISA 540 plays a sufficient role in mitigating the challenges of audit related to fair value measurements (Y/N)
Independent	
V_7 (COMP)	Complexity to measure at fair value
V_8 (MANQ)	Lack of technical knowledge on fair value measurement
V_9 (AB_M_A)	Absence of an active market
V_{10} (AB_CI)	Absence of specific internal control to measure at fair value
V_{11} (POTEN)	Potential bias of fair value by management
V_{12} (RISQ)	Failures of risk assessment procedures in ISA 540 relative to fair value estimates
V_{13} (EST_VAL)	Lack of guidelines for equally valid estimates in ISA 540

This table lists the variables developed in the survey and used in our analysis

Models of the Study

We developed two logistics regression models. In the first model, we try to analyze the impact of fair value audit challenges on audit quality. In the second model, we analyze the impact of failures of ISA 540 in its role in mitigating the challenges of audit related to fair value measurements.

Model 1

$$JV - QD = \beta_0 + \beta_1 COMP + \beta_2 MANQ + \beta_3 AB\_M\_A + \beta_4 AB\_CI + \beta_5 POTEN + \beta_6 EXP + \beta_7 BIG6 + \varepsilon_{i,t} \tag{1}$$

Where

> JV-QD, COMP, MANQ, AB_M_A, AB_CI, POTENT, EXP and BIG6 are the variable defined in Table 1
> EXP and BIG6 are control variables.

Model 2

$$ISA540 = \beta_0 + \beta_1 RISQ + \beta_2 EST\_VAL + \beta_3 EXP + \beta_4 BIG6 + \varepsilon_{i,t} \tag{2}$$

Where

> ISA540, RISQ, EST_VAL, EXP and BIG6 are the variable defined in Table 1
> EXP and BIG6 are control variables.

Table 2: Descriptive Statistics of the Sample Characteristics

	Variable	Modality	Frequency	Percentage
Sample Characteristics	AGE	[20 – 30]	16	30.8%
		[30 – 40]	30	57.7%
		[40 – 50]	4	7.7%
		>= 50	2	3.8%
	GENDER	Male	41	78.8%
		Female	11	21.2%
	EXP	=< 10	36	69.2%
		[11 - 20]	14	26.9
		>= 21	2	3.8
	BIG6	Yes (1)	19	36.5%
		No (0)	33	63.5
Dependent Variables	JV-QD	Yes (1)	19	36.5%
		No (0)	33	63.5%
	ISA540	Yes (1)	41	78.8%
		No (0)	11	21.2%
Independent Variables	COMP	1	0	0.0%
		2	12	23.1%
		3	10	19.2%
		4	23	44.2%
		5	7	13.5%
	MANQ	1	9	17.3%
		2	4	7.7%
		3	15	28.8%
		4	18	34.6%
		5	6	11.5%
	AB_M_A	1	2	3.8%
		2	6	11.5%
		3	10	19.2%
		4	20	38.5%
		5	14	26.9%
	AB_CI	1	7	13.5%
		2	8	15.4%
		3	6	11.5%
		4	16	30.8%
		5	15	28.8%
	POTEN	1	2	3.8%
		2	4	7.7%
		3	13	25.0%
		4	15	28.8%
		5	18	34.6%
	RISQ	1	5	9.6%
		2	6	11.5%
		3	19	36.5%
		4	13	25.0%
		5	9	17.3%
	EST_VAL	1	1	1.9%
		2	9	17.3%
		3	23	44.2%
		4	14	26.9%
		5	5	9.6%

This table shows the descriptive statistics of the sample for each variable. These statistics are, the modality, the frequency and the percentage for each variable

RESULTS

After verifying the absence of outliers that can skew our statistics and the absence of multicollinearity between the independent variables that are introduced in our regression models, we tested the significance of the coefficients assigned to our variables based on the Wald test. Then, we examined the adequacy and classification of our empirical models.

Model 1: Impact of Fair Value Audit Challenges on Audit Quality

Table 3 presents the logistic regression estimates of Model 1. Wald statistics measures the statistical significance of each regression coefficient. The null hypothesis of this test H_0, states that the independent variables have no impact on the dependent variable. We accept H_0 if the significance of the Wald statistic is greater than the significance level of 0.05. So, we can conclude from Table 3 that the independent variables (COMP, MANQ, AB_M_A, AB_CI and POTEN) have no impact on audit quality. Thus, hypothesis H1a, H1b, H1c, H1d and H1e are rejected. Therefore, the complexity of fair value measures (H1a); the potential bias of managers (H1b); the lack of technical knowledge on the fair value measurements (H1c); the absence of an active market (H1d) and the absence of specific internal control to fair value measurement (H1e) have no negative impact on the quality of audit. From Table 3, we can conclude that the model 1 for measuring the impact of fair value audit challenges on audit quality can be written as follow:

$$JV - QD = .248COMP - .073MANQ + .287AB_{M_A}.183AB_{CI}.012POTEN \\ + 1.391EXP + .203BIG6 - 5.001 \tag{3}$$

Table 3: Logistic Regression Parameter Estimates for Model 1

	B	**Std. Error**	**Wald**	**Df**	**Sig.**	**Exp(B)**
Intercept	-5.001	2.039	6.017	1	0.014**	0.007
COMP	0.248	0.404	0.378	1	0.539*	1.282
MANQ	-0.073	0.277	0.069	1	0.793*	0.930
AB_M_A	0.287	0.347	0.684	1	0.408*	1.332
AB_CI	0.183	0.290	0.396	1	0.529*	1.200
POTEN	0.012	0.333	0.001	1	0.971*	1.012
EXP	1.391	0.639	4.747	1	0.029**	4.020
BIG6	0.203	0.702	0.083	1	0.773*	1.225

Nagelkerke's pseudo-R^2: 0.610 Significant at: *1%, **5% and ***10% This table shows the logistic regression estimates of Model 1. Wald statistics measures the statistical significance of each regression coefficient. From this table, we can conclude that the independent variables (COMP, MANQ, AB_M_A, AB_CI and POTEN) have no impact on audit quality

Table 4 (Model 1) measures how well the model can predict the dependent variable based on the independent variables. The percentage of correct classification for affirming that fair value has a negative impact on audit quality is 68.4% and for infirming it is 93.4%. The Overall Percentage classification rate is 84.6%, which is considered as a good classification rate as well as a good predictive power.

Table 4: Classification Rate

	Model 1				**Model 2**			
Observed		**Predicted**			**Observed**		**Predicted**	
	Yes	**No**	**% Correct**			**Yes**	**No**	**% Correct**
Yes	13	6	68.4%		Yes	36	5	87.8%
No	2	31	93.4%		No	5	6	54.5%
Overall Percentage			84.6%		Overall Percentage			80.8%

This table measures how well the model can predict the dependent variable based on the independent variables. It is used for Model 1 and 2.

The Nagelkerke's pseudo-R^2, which measures the explanatory power of the model, has a value of 0.610. This means that 61% of the variation of the dependent variable is explained by the model. Hosmer-Lemeshow's test measures the goodness of fit of a model. Table 5 shows that model 1 fits well with the data. In fact, we accept the hypothesis (H_0) that the model is well adjusted since the value χ^2 is equal to 8.488 and is significant.

Table 5: Hosmer and Lemeshow Test

	Model 1				Model 2		
Step	**Chi-square**	**Df**	**Sig.**	**Step**	**Chi-square**	**Df**	**Sig.**
1	8.488	8	0.387**	1	7.812	8	0.452*

Significant at: *1%, **5% and ***10% This table shows that both models (1 and 2) fits well with the data

Model 2: Impact of Failures in ISA 540 on Its Role In Mitigating Fair Value Audit Challenges

Table 6 presents the logistic regression estimates for Model 2. As mentioned earlier, Wald statistics measures the statistical significance of each regression coefficient. The null hypothesis of this test H_0 states that the independent variables have no negative impact on the dependent variable. We accept H_0 if the significance of the Wald statistic is greater than the significance level of 0.05. So, we can conclude from Table 6 that the independent variables (RISQ and EST_VAL) have no negative impact on the role of ISA 540 in mitigation fair value audit challenges. This explains that 88.5% of the respondents think that ISA 540 makes a positive contribution to the quality of audit, 11.5% think otherwise. Thus, hypothesis H2a and H2b are rejected. Therefore, failures of audit risk procedures in ISA 540 and the lack of guidelines for equally valid assumptions in ISA 540 have no negative impact on its role in mitigating fair value audit challenges and in its role in mitigating fair value audit challenges.

Table 6: Logistic Regression Parameter Estimates for Model 2

	B	**Std. Error**	**Wald**	**df**	**Sig.**	**Exp(B)**
Intercept	2.479	2.037	1.481	1	0.224*	11.925
RISQ	-0.107	0.412	0.068	1	0.794*	0.898
EST_VAL	-0.724	0.533	1.847	1	0.174*	0.485
EXP	1.485	1.088	1.865	1	0.172*	4.416
BIG6	-0.316	0.793	0.159	1	0.690*	0.729

Nagelkerke's pseudo-R2: 0.382 Significant at: *1%, **5% and ***10% This table presents the logistic regression estimates for Model 2. Wald statistics measures the statistical significance of each regression coefficient. From this table, we can conclude that the independent variables (RISQ and EST_VAL) have no negative impact on the role of ISA 540 in mitigation fair value audit challenges.

From Table 6, we can conclude that the model 2 for measuring the impact of failures of ISA 540 in its role in mitigating the challenges of audit related to fair value measurements can be written as follow:

$$ISA540 = -.107RISQ - .724EST_{VAL} + 1.485EXP - .316BIG6 + 2.479 \tag{4}$$

Table 4 (Model 2) measures how well the model can predict the dependent variable based on the independent variables. The percentage of correct classification for affirming that fair value has a negative impact on audit quality is 54.5% and for infirming it is 87.8%. The Overall Percentage classification rate is 80.8%, which is considered as a good classification rate as well as a good predictive power. The Nagelkerke's pseudo-R^2, which measures the explanatory power of the model, has a value of 0.382. This means that 38% of the variation of the dependent variable is explained by the model. Hosmer-Lemeshow's test measures the goodness of fit of a model. Table 5 shows that model 2 fits well the data. In fact, we accept the hypothesis (H_0) that the model is well adjusted since the value χ^2 is equal to 7.812 and is significant. The objective of this work is to collect the TCPAs views on the impact of the adoption of IFRS, particularly, the impact of the fair value measurements on the quality of audit as well as the

impact of the contribution of ISA 540 on the quality of audit. The results of our statistical analysis show that, according to TCPAs, the five challenges of auditing fair value measurements, namely, the complexity of fair value measures; the potential bias of managers; the lack of technical knowledge on the fair value measurements; the absence of an active market and the absence of specific internal control to fair value measurement have no negative impact on the quality of audit. In other words, according to the TCPAs, the benefits of the fair value outweigh its disadvantages. In addition, the ISA 540 gives auditor all the necessary tools to face the challenges of auditing at fair value. However, it seems that there are convergence issues in Tunisia with this standard.

CONCLUSION

This research aims to test the impact of fair value audit challenges on audit quality and the impact of failures in ISA 540 on its role in mitigating fair value audit challenges in the Tunisian context. For our research, we selected a sample of Tunisian Certified Public Accountants (TCPAs), referred here as external auditors. Our questionnaire was realized in 2014 and had two steps. A pre-exploratory survey was conducted among some TCPAs belonging to our sample to adapt different questions to the Tunisian context and improve the measure scales. The second phase consists of the distribution of the final questionnaire by email and via social networks such as Facebook and LinkedIn. We sent 110 questionnaires, we received 59 responses and after excluding incomplete responses, we retained 52 responses. The result of our study shows that, according to the auditors interviewed, no fair value audit challenge has a negative effect on audit quality. One can speculate that fair value is perceived as engendering technical difficulties for auditors. However, it is seen as an essential feature and its advantages overcome its disadvantages.

These results are consistent with those of Kumarasiri & Fisher (2011). In fact, they found that Sri Lankan auditors perceive fair value as an essential feature, allowing managers to select the models that best suit their business despite the lack of an active market and the lack of experience as well as the additional audit fees involved in the context of developing countries. This study shows also that according to the auditors interviewed, no fair value audit challenge has a negative effect on audit quality. In fact, 53.8% of the respondents think that it is appropriate to introduce the standards of fair value in Tunisia, against 46.2% who think the opposite. Based on our statistical analysis, the failures of risk assessment procedures and the lack of guidelines for equally valid estimates in ISA 540 have no negative impact on the role played by this standard in mitigating audit challenges in fair value. 78.8% of the respondents believe that ISA 540 plays a significant role in mitigating fair value audit challenges. Only 21.2% believe that this role is not sufficient. This explains why 88.5% of our respondents think that the ISA 540 makes a positive contribution to audit quality, while 11.5% think the opposite. The present research can be extended to identify challenges and obstacles that prevent Tunisian Certified Public Accounts (TCPAs) to comply with ISA 540 specifically, and with international auditing standards generally. In addition, it will be interesting to identify the political and economic factors that may influence how fair value is measured and disclosed in the financial statements in the Tunisian context.

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MACROECONOMIC DETERMINANTS OF INTERNATIONAL FINANCIAL REPORTING STANDARDS (IFRS) ADOPTION: EVIDENCE FROM THE MIDDLE EAST NORTH AFRICA (MENA) REGION

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ABSTRACT

The adoption of International Financial Reporting Standards (IFRS) as a country's Generally Accepted Accounting Principles (GAAP) has accelerated in the last 5 years with approximately 120 sovereign governments designating IFRS as the required financial reporting framework for at least some companies in the country. The American Institute of Certified Public Accountants (AICPA) reports that of these, about 90 countries have adopted it fully for all businesses, large and small. In an annual update, PricewaterhouseCoopers (PwC) lists 147 countries that have some relationship with IFRS (the U.S. is listed, for instance, as it allows foreign companies with a capital market presence to use IFRS instead of converting their results to U.S. GAAP). Yet many of the world's 201 recognized countries have resisted fully adopting IFRS, particularly in the Middle East North Africa (MENA) region of the world. This begs the question: what are the perceived benefits of adopting IFRS at the country level?

JEL: M4, O53

KEYWORDS: International Financial Reporting Standards **(**IFRS), Generally Accepted Accounting Principles (GAAP), Middle East North Africa (MENA), Macroeconomics, Capital Flows, Disclosure

INTRODUCTION

Many potential benefits for adoption of International Financial Reporting Standards (IFRS) have been articulated in the literature (Armstrong et al., 2010, Defond et al., 2012, Horton et al., 2013, Kosi and Pope 2010, Florou and Kosi, 2015) particularly at the firm level. At the firm level a dominant explanation for adoption of IFRS suggests that the increased transparency which entails IFRS adoption potentially increases the reputation of the firm. Benefits of adopting IFRS at the country level are relatively sparse (see exceptions: Ramanna and Sletten, 2009, Hope et al., 2006). Thus the motivation for driving IFRS choice as a policy at the country level is an important and relatively under-researched idea. Of particular interest is whether the economic background of a country leads to adoption of IFRS in the Middle East North Africa (MENA) region.

We use variables associated with a country's efforts at increasing outside investment flows and add several variables that are specific to the region. If a country adopts IFRS, what compels it to do so? At the most fundamental level the issue is a cost-benefit analysis. The costs have been shown in the literature reviewed below to be mostly a one-time conversion cost. The benefits have been shown to be increased capital flows

and the resulting increase in GDP. However, the benefits are not automatic. They can be enhanced or nullified by pre-existing conditions within the country or region. We posit that because IFRS adoption is costly, countries only bear the costs when other factors are in place to create a favorable environment for capital inflows. We find that the probability of adoption is increasing in bureaucratic quality and GDP per capita, but is decreasing in the level of oil and gas reserves and socioeconomic conditions.

The rest of the paper is organized as follows: we provide a brief overview of the costs and benefits for adoption at the country level and the firm level identified in the literature. We describe our data, sources of information, and the construction of our models. We end with an analysis of the implications of our results.

LITERATURE REVIEW

The American Institute of Certified Public Accountants (AICPA) maintains a website for IFRS resources and discusses the benefits and costs in its FAQ section. It presents the advantages of adopting IFRS at the firm level as follows:

"By adopting IFRS, a business can present its financial statements on the same basis as its foreign competitors, making comparisons easier. Furthermore, companies with subsidiaries in countries that require or permit IFRS may be able to use one accounting language company-wide. Companies also may need to convert to IFRS if they are a subsidiary of a foreign company that must use IFRS, or if they have a foreign investor that must use IFRS. Companies may also benefit by using IFRS if they wish to raise capital abroad." (*http://www.ifrs.com/ifrs_faqs.html#q5*)

The costs are primarily a function of conversion costs and are estimated at approximately 0.13% of total revenue as a one-time cost (PricewaterhouseCoopers, 2013). Similarly, much research about the adoption of IFRS has focused on the benefits and costs at the firm level. IFRS adoption is linked to many capital-market benefits at the firm level, including enhanced market liquidity, lower costs of capital, and positive changes in stock price (Daske et al., 2013, Bova and Pereira, 2012). At the firm level, adoption of IFRS improves information efficiency for the firm although this is dependent on country-specific characteristic of type of law (civil vs. common) (Lambertides and Mazouz, 2013, Apergis 2015). Florou and Kosi (2015) document that the cost of public debt decreases and its use increases for mandatory adopters of IFRS in a broad sample of countries that include both EU and non-EU members. Kosi and Pope (2010) also find that credit relevance is higher for firms that adopt IFRS but that the improvement is dependent on the effectiveness of a country's enforcement regime. Horton et al. (2013) use the changes in analyst's forecast errors and produce results that suggest "mandatory IFRS adoption has improved the quality of information intermediation in capital markets and as a result firms' information environment by increasing both information quality and accounting comparability."

Hope et al. (2006) and Ramanna and Sletten (2009) look at country-level adoption and conclude the likely adopting countries have weaker investor protection environments (Hope et al., 2006) or moderate governance standards (Ramanna and Sletten, 2009). Hope et al. (2006) attribute this phenomenon to countries using "bonding theory" to signal that their capital markets are high quality (as other IFRS adopting nations). Ramanna and Sletten (2009) surmise that countries with better corporate governance standards view IFRS adoption "as being too costly." They argue that countries which have already implemented high-quality governance standards have laid the foundation for increased capital flows without any change in the financial reporting regime. Yet other incentives may compel firms (and countries) to adopt a particular standard. Network effects may induce countries to adopt IFRS in response to the actions of their trading partners. Such adoptions are carried out to reduce transaction costs among partners (Ramanna and Sletten, 2014). A special standards problem exists in the Middle East North Africa (MENA) region: in addition to country Generally Accepted Accounting Principles (GAAP) required for government reporting, many MENA countries have also adopted special standards related to sharia finance disclosures, issued by the

Accounting and Auditing Organization for Islamic Financial Institutions (AAOIFI). Some member countries require strict adherence to these standards and others require additional disclosures primarily for banks that regularly lend money. This suggests that some MENA countries may have less of an incentive to adopt standards that give the appearance of better governance, when they already perceive their governance standards as high quality.

A number of studies have examined problems with adoption in addition to the benefits that accrue to firms or countries. Daske et al. (2013) separate firms into two groups, as "serious" vs. "label" adopters. Label only adopters change to the new standards but make no other legal or institutional changes to reinforce the new reporting regime. They find that the positive capital-market effects documented by previous research accrue almost exclusively to "serious" adopters. This firm-level effect has parallels with country-wide adoption, in that countries with lax enforcement regimes are not likely to reap the benefits of higher investment activity that is normally associated with higher quality financial reporting (Nandialath and Rogmans 2013). Encompassing the problem of lax enforcement regimes is the more general measure of institutional framework. Apergis (2015) studies the role of the adoption of IFRS in the MENA region for improving financial reporting quality and reports that the lack of a strong institutional framework may reduce the expected benefits of improved quality.

Costs are sometimes difficult to anticipate and occur well after the adoption of the new standards has taken place. These costs happen in two ways. Using semi-structured interviews, Fox et al. (2013) find that among various stakeholders in the U.K. and Italy, "there was widespread agreement that costs exceeded the benefits of reporting under the new standards." Other external stakeholders can be affected by the policy choices that are allowed under IFRS that may not be present in a country's current GAAP. IFRS can be adopted in variations that can substantially change the impact on individual firms and the overall transparency of financial reporting at the country level. Kvaal and Nobes (2010) study five developed countries [Australia, France, Germany, Spain, and the UK] with mandatory IFRS reporting requirements and document wide differences in versions between countries both in standards required and in accounting policy choices at the firm level. They believe that this makes comparability among firms questionable, as many of the variations would be difficult for analysts to disentangle. The benefit of high quality standards adoption at the country level is increased capital flows. Hope et al. (2006) conclude that

The adoption of IFRS is likely viewed as a means to improve disclosure policies and accounting systems, to enhance the integration of domestic markets into world markets and to subsequently accelerate economic growth. In order to improve financial reporting quality, the adoption of IFRS by a country is an important step." (Hope et. al, 2006)

Increased capital flows are important for those countries that need to augment their internal markets with outside flows and as Ramanna and Sletten (2009) observe, countries with very strong governance mechanisms appear to eschew IFRS adoption. Klibi and Kossentini (2014) also examine macroeconomic effects of IFRS adoption at the country level by examining the effects of adoption on share market development in the MENA region. They find that adoption of IFRS is positively related to share market expansion and development. Rogmans and Ebbers (2013) specifically look at determinates of Foreign Direct Investment (FDI) flows among macroeconomic indicators at the country level for the MENA region. Their main findings support existing theory on FDI flows but add findings related to resource endowments. High levels of natural resource holdings are negatively related to FDI flows, whereas relatively high prices for resources encourage FDI flows. Our analysis focuses on macroeconomic indicators specified for the MENA region to test these assumptions and findings on the likelihood of IFRS adoption.

Firms may have many motivations for implementing higher quality financial reporting but at the country level, most research indicates that due to the costs of adopting IFRS, countries choose to adopt new standards to encourage investment through increased interest in capital markets (Klibi and Kossentini,

2014) or to increase their perceived corporate governance in order to attract foreign direct investment (Rogmans and Ebbers, 2013). Under most conditions countries choose to bear the costs of increasing financial reporting quality when other factors are favorable for attracting capital. The most commonly identified factor associated with increased capital flows is a country's market size, usually measured by a country's GDP (Bevan and Estrin, 2004). High levels of per capita GDP indicate markets with high spending power and this can be expected to increase capital market inflows. We use GDP per capita to control for this effect and expect it to be correlated to the choice to adopt high quality reporting standards. An alternate measure is related to openness of trade, as measured by the ratio of exports to GDP. Jun and Singh (1995) found that export orientation was the single most important determinant in capital inflows for a set of 31 developing countries.

One would expect poor institutions and high levels of environmental risk ('institutional hazards') to deter capital inflows. Today a large number of risk ratings are available that consider a country's environmental risk from different perspectives. The major country risk-rating agencies focus on credit risk (Standard and Poor's), corruption, or overall risk (e.g. Political Risk Group's *International Country Risk Guide* (ICRG)). The World Bank also publishes a set of governance indicators which consists of an amalgamation of a number of measures published by different sources. We use the ICRG indicators. The expected relation to IFRS adoption depends on the indicator as some are positive attributes (e.g. bureaucratic quality) and some are negative (e.g. corruption). Despite some variations depending on specific characteristics of individual studies, existing research indicates that a high level of environmental risk in a country leads to lower capital inflows, especially among developing countries and countries with high risk levels.

Natural resource endowments such as oil and gas are generally believed to attract resource-seeking capital (Estrin and Meyer, 2004). However there is a counter argument to the notion that natural resources attract capital inflows. The 'Dutch disease' theory was first put forward by *The Economist* in 1977 to explain the paradox of the Dutch economy in the years after large oil deposits were discovered. As the country's oil wealth increased, overall GDP growth fell and capital inflows decreased. As a country earns foreign exchange reserves through exports of natural resources, its real exchange rate increases, making outside capital investments relatively expensive (C.W. Kiev, 2014). In addition to the actual resource endowment of a country, capital flows can also be affected by the world market prices for these resources. If the impact described does exist, it is likely to be a lagged effect, since the effect of higher oil prices needs some time to work its way through to higher government revenues. Mina (2007) found a negative relation between oil price and capital inflows into the Gulf Cooperation Council (GCC) countries, but the relation became positive once a variable for institutional quality was added to the model.

DATA AND METHODOLOGY

The study covers political and economic characteristics of the 16 countries of the Arab Middle East North Africa (MENA) region between 1994 and 2008. Data has been obtained from the relevant United Nations Conference on Trade and Development (UNCTAD) World Investment Reports. UNCTAD is part of the United Nations system for investment and enterprise development with 30 years of data collection in these areas. UNCTAD promotes understanding of key issues, particularly matters related to foreign direct investment. UNCTAD also assists developing countries in attracting and benefiting from foreign direct investment (FDI), and in building their productive capacities and international competitiveness. "The emphasis is on an integrated policy approach to investment, technological capacity building and enterprise development" (*World Investment Report* 2009). Ratings on environmental risk factors and institutional quality for each of the years of the study for each country were obtained from the *International Country Risk Guide (ICRG)*. The *ICRG* is one of the world's most reliable commercial sources of country risk analysis and ratings monitoring 140 countries. The guide provides financial, political, and economic risk information and forecasts. The *ICRG* assigns values to the 22 indicators underlying *ICRG*'s business-oriented model for quantifying risk, examining such country-specific elements as "currency risk, political

leadership, the military and religion in politics, and corruption" (*ICRG* 2009). Other publically available data sources were used for oil and gas reserves and oil prices (British Petroleum (BP) *Statistical Yearbook* 2009), GDP figures (World Bank) and international trade statistics (World Trade Organization (WTO)). A country's gas reserves were converted into oil equivalent using the industry standard conversion ratio of 6.6 barrels of oil per 1000 cubic meters of gas, thereby arriving at one measure of each country's overall energy resource endowment. Table 1 provides key descriptive statistics on the country sample for the period under study with aggregated risk factors.

Table 1: Descriptive Statistics by Country (Aggregated Risk Factors) (Rogmans & Ebbers 2013)

Country	Population	GDP	GDP Per Capita	Composite (1-100)	Political (1 – 100)	Economic (1-100)	Financial (1-100)
	Millions	US $ Millions	US Dollars	Average 1994-2008	Average 1994-2008	Average 1994-2008	Average 1994-2008
Algeria	34.4	166,545	4,845	59	51	33	34
Bahrain	0.8	21,903	28,240	72	64	40	39
Egypt	81.5	162,283	1,991	63	58	33	34
Iran	71.0	286,058	4,028	60	56	31	32
Jordan	5.9	21,238	3,596	66	62	36	33
Kuwait	2.7	148,024	54,260	73	64	41	41
Lebanon	4.2	29,264	6,978	49	46	28	25
Libya	6.3	93,168	14,802	62	56	34	34
Morocco	32.1	88,883	2,769	66	64	34	34
Oman	2.7	41,638	15,273	73	69	39	39
Qatar	1.1	71,041	62,451	69	66	38	34
Saudi Arabia	24.6	468,800	19,022	71	63	39	39
Syria	20.6	55,204	2,682	61	60	32	30
Tunisia	10.3	40,309	3,903	67	66	35	33
UAE	4.4	198,693	45,531	72	65	42	38
Yemen	22.9	26,576	1,160	60	48	29	29

This table shows economic indicators and risk factors for each sample country. Risk factors are rated from 1 to 100, with 100 being the best (most favorable).

We develop three regression models to indicate the likelihood of a MENA country to adopt IFRS reporting. The base model includes natural resources and macroeconomic indicators, but is not adjusted for any risk factors. We then compare the base model to a second model that includes aggregated risk factors, and a third model that includes disaggregated risk factors. The general models are:

Probability of IFRS Adoption Model: Probability of IFRS adoption at the country level $= f$ (natural resource holdings, country wealth (GDP measures), economic risk, financial risk, composite governance risk) The specific models we test are as follows:

Base Model:

$$IFRS_j = \beta_0 + \beta_1 OilRes_j + \beta_2 OilPrice_j + \beta_3 Open_j + \beta_4 GDPgrow_j + \beta_5 GDPPC_j + \varepsilon_j \tag{1}$$

Base Model with risk factors aggregated:

$$IFRS_j = \beta_0 + \beta_1 OilRes_j + \beta_2 OilPrice_j + \beta_3 Open_j + \beta_4 GDPgrow_j + \beta_5 GDPPC_j + \beta_6 EconR_j + \beta_7 FinR_j$$
$$+ \beta_8 CompositeR_j + \varepsilon_j \tag{2}$$

Base Model with risk factors disaggregated:

$$IFRS_j = \beta_0 + \beta_1 OilRes_j + \beta_2 OilPrice_j + \beta_3 Open_j + \beta_4 GDPgrow_j + \beta_5 GDPPC_j + \beta_6 BureauQual_j \tag{3}$$
$$+ \beta_7 Corrupt_j + \beta_8 DemAccount_j + \beta_9 Law_j + \beta_{10} InvestProf_j + \beta_{11} GovStable_j + \beta_{12} SocioEcon_j + \varepsilon_j$$

Table 2 provides additional descriptive statistics for disaggregated elements of composite risk as well as overall means and standard deviations for the resource and economic variables.

Table 2: Descriptive Statistics for Disaggregated Risk Factors

Variable	Mean	Standard Deviation
Openness (log)	1.24	1.19
Oil Price (log)	1.65	0.15
Oil and Gas Reserve (log)	60.87	91.27
Bureaucratic Quality (4)	1.90	0.58
Corruption (6)	2.63	0.80
Democratic Accountability (6)	2.51	1.24
Government Stability (12)	8.41	2.24
Investment Profile (12)	7.09	2.32
Law and Order (6)	3.87	1.27
Real GDP Growth (10)	9.15	13.44
GDP per Capita (5)	3.57	0.52
Socioeconomic Conditions	6.00	1.89

This table shows disaggregated risk factors with means and standard deviations for the sample countries. Indicators are shown in log form where noted. Note: Numbers in brackets represent the upper limit on the measurement scale with the lower limit set to 0.

RESULTS AND DISCUSSION

Our results are presented in Table 3. In general, the models perform well with adjusted R^2 ranging from 0.556 for the base model containing only natural resource and economic indicators to 0.743 for model 3 which contains the base model variables as well as disaggregated risk measures. Given the nature of the sample, Model 1 represents our baseline specification which includes measures on natural resources, primarily oil and gas reserves.

We also include macroeconomic controls for economic growth through GDP and also openness to trade. Our results for the base line model indicate that the larger the endowment of oil and gas in a country, the lower is the likelihood of adopting IFRS. The result is not surprising since countries with high oil and gas reserves tend to be wealthy and hence attracts more foreign investment despite the risk of lower transparency or institutional quality. The results also show that GDP, though statistically significant, does not seem to have any economic significance. The baseline model ignores the element of country risk, which could serve as an impediment for countries to improve trade or attract investment. To empirically control for risk, we use two model specifications, one of which includes composite measures of risk and the second includes disaggregated measures of risk. Our second model includes all of the variables from the baseline specification but with the additional aggregate measures which control for risk. Our results indicate that even after controlling for aggregate risk elements, the impact of higher oil and gas reserves on the probability of adopting IFRS remains negative. This further reaffirms our belief that traditionally wealthy nations may not require specific signals to attract investment. Notably, the effect of GDP on the probability of adopting IFRS remains statistically significant but the coefficient still is at 0, indicating no economic significance. Among the composite risk indices, we find that greater economic risk leads to a lower probability of adopting IFRS. This conclusion seems counter intuitive, as one of the main arguments of adopting IFRS is to reduce friction in the economic operations. This, in turn, should enable greater transparency, thus leading to positive economic outcomes for the country such as attracting more investment. However, this could be the result of a problem due to the operationalization of economic risk. To eliminate concerns regarding operationalization of the aggregated measure, we disaggregate the risk indices into individual components in model 3.

Table 3: Determinants of IFRS Adoption in the MENA Region

	Model 1	Model 2	Model 3
	Coefficient	Coefficient	Coefficient
Oil and Gas Reserves	-0.014***	-0.006*	-0.018***
	(-2.654)	(-1.759)	(-4.596)
Oil Price	0.071***	0.100***	0.119***
	(5.105)	(5.351)	(4.802)
Openness	-0.053	-0.166	-0.309
	(-0.204)	(-0.551)	(-1.097)
GDP growth rate	-0.014	0.009	0.055**
	(-0.675)	(0.520)	(2.172)
GDP per capita	0.000***	0.000***	0.000***
	(3.281)	(3.114)	(3.288)
Economic Risk (Comprehensive)		-0.316***	
		(-3.656)	
Financial Risk (Comprehensive)		0.009	
		(0.087)	
Composite Risk Measure		0.211*	
		(1.916)	
Bureaucratic Quality			3.294***
			(4.311)
Corruption			-0.661*
			(-1.901)
Democratic Accountability			0.057
			(0.261)
Law and Order			0.277
			(0.633)
Investment Profile			0.375*
			(1.662)
Government Stability			-0.066
			(-0.307)
Socioeconomic conditions			-0.386**
			(-2.334)
Constant	-4.784***	-10.283***	-14.229***
	(-7.585)	(-2.891)	(-3.330)
Number of observations	190	177	178
Clustered Standard Errors	Country	Country	Country
Adjusted R2	0.556	0.662	0.743

The estimated equations are: Base Model: (1) $IFRS_j = \beta_0 + \beta_1 OilRes_j + \beta_2 OilPrice_j + \beta_3 Open_j + \beta_4 GDPgrow_j + \beta_5 GDPPC_j + \varepsilon_j$ *Base Model with risk factors aggregated:* (2) $IFRS_j = \beta_0 + \beta_1 OilRes_j + \beta_2 OilPrice_j + \beta_3 Open_j + \beta_4 GDPgrow_j + \beta_5 GDPPC_j + \beta_6 EconR_j + \beta_7 FinR_j + \beta_8 CompositeR_j + \varepsilon_j$ *Base Model with risk factors disaggregated:* (3) $IFRS_j = \beta_0 + \beta_1 OilRes_j + \beta_2 OilPrice_j + \beta_3 Open_j + \beta_4 GDPgrow_j + \beta_5 GDPPC_j + \beta_6 BureauQual_j + \beta_7 Corrupt_j + \beta_8 DemAccount_j + \beta_9 Law_j + \beta_{10} InvestProf_j + \beta_{11} GovStable_j + \beta_{12} SocioEcon_j + \varepsilon_j$
Variable definitions are provided in the text. ***, **, and * indicate p-values of 1%, 5%, and 10% respectively.

The results from Model 3 indicates that after controlling for disaggregated risk factors, the impact of oil and gas reserves on the probability of adopting IFRS remains robustly negative. The effect of GDP is also robust in terms of both statistical and economic significance. The disaggregated measures of risk confirm our earlier beliefs regarding what motivates nations to adopt IFRS. We find that an increase in bureaucratic quality leads to a higher likelihood of adopting IFRS. The explanation for this effect is intuitive. Improving bureaucratic quality leads to an improvement in the internal governance mechanisms of the country which in turn should be perceived as improving institutional quality within the country. Second, we find that higher levels of corruption lead to lower likelihood of adopting IFRS. Clearly, adopting an international standard may lead to greater transparency which may not be a desirable outcome in countries where corruption is on the higher level. Third, we find that boosting the investment profile of a country leads to a greater likelihood of adopting IFRS. Finally, we find that better socio-economic conditions lead to lower likelihood of adopting IFRS.

CONCLUDING COMMENTS

In this paper, we examine the macroeconomic indicators which influence a country's adoption of IFRS accounting standards. We hypothesize that countries adopt high quality accounting standards to increase

the country's attractiveness to outside capital providers. Using a sample of developing countries from the MENA region, we utilize a set of regression models to test the assumption that certain macroeconomic indicators often associated with foreign direct investments are associated with the probability of adoption.

Countries adopt new accounting standards to increase the financial transparency of their capital markets and hence increase capital market inflows. Adopting new standards is costly, and if a country's government already perceives the extant reporting quality as high, or the country has adequate internally generated capital, then the benefits of converting to a higher quality financial reporting regime may be insufficient to induce a change. Our results suggest that when a MENA country has large oil and gas reserves the adoption of new accounting standards is less likely. This result suggests there is a trade-off. Traditionally oil-rich countries tend to be wealthy and firms and industries may have a natural inclination to do business with these countries as access to resources may supersede the need for high-quality institutions. Thus, these countries may not need to adopt IFRS reporting standards to signal their ability to attract investment.

On the other hand, when oil prices rise, the likelihood of adopting new standards increases. This result is consistent with the positive relationship between economic output per capita and adoption of new standards. Countries act rationally in regards to bureaucratic quality, that is, when bureaucratic quality is high, the groundwork is in place to generate the expected benefits from adopting new accounting standards. Relatedly, low levels of corruption and a favorable investment profile work in much the same way. They are necessary but not sufficient conditions to insure the returns of a strategy of improved financial reporting quality. Our results may not be generalizable to all areas or country cohorts. We suspect our results are limited to parts of the world where natural resources are high and the member country's institutional structure is evolving. Future research should continue to examine the link between developing countries institutional structure and the perceived benefits of adopting costly policy initiatives. Examples of adopting costly policy changes include new accounting standards but also financial market enhancements such as stronger corporate governance measures or enhanced environmental standards.

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TAX STRATEGIES FOR U.S. FARMERS: TAX REDUCTION AND AVERTING RISK

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ABSTRACT

This paper presents tax planning strategies specific to farmers. We discuss several opportunities in which a farming operation can either reduce its current tax liability or preserve tax benefits for the future. Under current U.S. tax laws, special provisions exist that are designed to offer the U.S. farmer favorable tax treatment. We specifically highlight these provisions in an effort to remind others of their existence. In addition, there are other provisions within U.S. tax laws that are not so favorable to the U.S. farmer. We provide some suggestions on how the farmer can bypass these rules simply by altering facts and circumstances, which is a lawful behavior. For example, the first strategy we discuss requires the U.S. farmer to plant a secondary crop in order to accelerate cost recovery on an irrigation system. By planting a secondary crop, the farmer has changed the facts and circumstances. Finally, some of the strategies we discuss contain potential risks. We specifically emphasize these risks areas and offer suggestions on how to avoid them.

JEL: G18, G38

KEYWORDS: Tax Planning, Farming, Agriculture, U.S. Tax Laws

INTRODUCTION

We address tax minimization strategies for the U.S. farmers most of which are not widely known. After an extensive search, we found few papers addressing the taxation of U.S. farmers. More specifically, we did not find any papers discussing the special provisions in U.S. tax law applicable to the U.S. farmer. Therefore, we provide specific strategies for the U.S. farmer incorporating these special provisions in an attempt to draw attention to them. We also highlight potential risk areas within certain strategies in which the potential for risk exists. When a potential for risk exists, we offer suggestions on ways to avert that risk.

According to the United States Department of Agriculture (USDA), there are over 2.2 million farms in the United States occupying over 922 million acres with an average farm size of 419 acres. The IRS reports that of these 2.2 million farms, 1.9 million file Schedule F (www.irs.gov/uac/SOI-Tax-Stats---Historical-Table-21) Further, the USDA reports that agriculture and agriculture-related industries contributed $789 billion to the U.S. Gross Domestic Product (GDP) in 2013 making this industry a major part of the U.S. economy (USDA, 2013). Finally, some type of agricultural production occurs in every state in the union; therefore, this industry is not regional or localized, such as oil production, but occurs throughout the United States. Consequently, tax practitioners throughout the U.S. have an opportunity for practice development if farming is not currently an area of practice of a firm.

Several papers have examined tax planning incentives and strategies (e.g. Armstrong, Blouin and Larcker, 2011; Erickson Heitzman and Zhang, 2013). Other papers have examined tax aggressiveness (e.g. Desai and Dharmapala, 2006; Frank, Lynch and Rego, 2009) but these papers examine strategies and incentives

under the context of drawing more general conclusions. To the best of our knowledge, no paper has examined tax incentives and strategies related specifically to the U.S. farmer. We provide these strategies through the analysis of the Internal Revenue Code and other tax authority.

In this paper, we analyze the Internal Revenue Code, Treasury Regulations and other IRS guidance (e.g. Revenue Rulings) to offer thirteen strategies in which the U.S farmer can either reduce current tax liability or preserve tax benefits for future use. In our analysis and discussion, we also provide suggestions on avoiding potential pitfalls in the implementation of these strategies. These suggestions include changing facts and circumstances, which is not evading tax. In other words, changing facts and circumstances "after the fact" but merely strategies implemented during the planning stages. The remainder of this paper is organized as follows: Section 2 provides the literature review; Section 3 provides the tax strategies; Section 4 concludes.

LITERATURE REVIEW

Most of the prior tax research in accounting has focused on the financial reporting of U.S. income taxes. Hanlon and Heitzman (2010) provide that this research fall into at least four categories. The first category explores the informational role of a firm's financially reported tax expense and other tax disclosures; the second category involves tax avoidance; the third category investigates the role taxes has on corporate decision making including capital investment, capital structure and entity choice and the fourth category involves taxes and asset pricing.

We focus on the second category of tax avoidance since we are suggesting tax planning strategies specifically directed at the U.S. farmer in order to avoid tax. The theory behind corporate tax avoidance, whether the avoidance is from a farming corporation or some other corporation, was set within the agency framework model (Slemrod, 2004; Chen and Chu, 2005; and Crocker and Slemrod, 2005). The general theme of these studies is if tax avoidance is a worthy activity then incentive contracts should be structured to ensure that managers make efficient tax decisions. The empirical papers in tax avoidance evaluate measures for tax avoidance, determinants of tax avoidance and the consequences of tax avoidance.

Several tax avoidance papers have developed various proxies for tax avoidance. One of these measures is the GAAP effective tax rate (ETR) or some version of it. GAAP ETR represents the total tax expense per dollar of pre-tax book income. Since the average corporate tax rate is approximately 35%, a lower GAAP ETR will indicate tax avoidance. Some papers have used a variation of ETR such as the Cash ETR (Dyreng et al. 2008) which is used to determine a long run measure of tax avoidance. This measure represents the cash taxes paid per dollar of pre-tax book income. Other papers attempt to measure tax avoidance by using some form of book-tax difference such as discretionary accruals (Desai and Dharmapala, 2006, 2009), the discretionary portion of permanent book-tax difference (Frank et al., 2009). Finally, other papers have measure tax avoidance using a tax shelter proxy (Wilson, 2009) and unrecognized tax benefits (Lisowsky, 2010).

For determinants of tax avoidance, studies have evaluated firm level characteristics association with tax avoidance such as family firms (Chen et al., 2010), international operations (Rego, 2003) and size (Zimmerman, 1983) just to name a few. Other studies examine determinants beyond firm level characteristics and ownership. For example, Robinson et al. (2010) find that when the tax department is considered a profit center, GAAP ETRs are lower whereas Cash ETRs are not. For the consequences to corporate tax avoidance, Hanlon and Slemrod (2009) find a negative market reaction to the information that a firm was involved in a tax shelter whereas Frischmann et al. (2008) find very little market reaction to the passage of FIN 48 and a very small market reaction to a firm's first disclosure under FIN 48.

The papers discussed above use mostly financial information and not actual tax data from the IRS. Further, the discussed papers only evaluate the existence of tax avoidance using cross-sectional data and try to explain why it is occurring. We present specific strategies for tax avoidance that can be utilized by the U.S. farmer.

TAX STRATEGIES

Tax Strategy #1 – A Cover Crop for Orchard Farmers

The uniform capitalization rules under Section 263A require the inclusion of direct and indirect costs in the basis of property or inventory produced rather than claim these costs as a current deduction. These capitalized costs are recovered through depreciation, amortization or through the cost of goods sold. Generally speaking, farmers are subject to these same rules unless the following conditions and costs exist: (1) the farmer is not organized as a corporation or partnership required to use the accrual method of accounting under Section 447 or a tax shelter prohibited from using the cash method of accounting [Regulation 1.263A-4(a)(2)]; (2) incurred costs of producing animals [Regulation 1.263A-4(a)(2)]; (3) incurred costs of producing plants with a preproductive period of 2 years or less [Regulation 1.263A-4(a)(2)]; and (4) incurred any costs of replanting certain plants lost or damaged due to a casualty [Regulation 1.263A-4(e)(1)].

The issue here is with crops that have a preproductive period of more than two years. The preproduction period begins when the taxpayer first incurs costs that directly benefit the plant and ends when the plants become productive in commercial quantities [Regulation 1.263A-4(b)(2)]. The implication is that farmers whose crops have a preproductive period in excess of two years are not exempt from the uniform capitalization rules concerning those costs. The IRS provides under Notice 2013-18 a list of crops (orchards) with preproductive periods in excess of two years which includes almonds, apples, cherries, plums, etc., just to name a few. Table 1 contains a comprehensive list of crops with a preproductive period in excess of two years. The IRS further provides that preproductive periods are determined using a nationwide weighted average for these crops.

Table 1: Notice 2013 - 18: List of Crops with Preproductive Periods in Excess of Two Years

Almonds	Coffee beans	Kiwifruit	Olives	Plums
Apples	Currants	Kumquats	Oranges	Pomegranates
Apricots	Dates	Lemons	Peaches	Prunes
Avocados	Figs	Limes	Pears	Tangelos
Blueberries	Grapefruit	Macadamia nuts	Pecans	Tangerines
Cherries	Grapes	Mangoes	Persimmons	Tangors
Chestnuts	Guavas	Nectarines	Pistachio nuts	Walnuts

The table provides a comprehensive list of those crops that are not exempt from the Uniform Capitalization rules under Section 263A of the Internal Revenue Code. Section 263A requires all costs incurred associated with a crop prior to the crop's yield be capitalized. Certain crops are excluded from this rule as long as the crop has a pre-productive period equal to or less than two years.

Since farmers whose crops exceed the two-year preproductive period of two years are not exempt from the uniform capitalization rules, the costs of producing the plants such as the cost of seeds, planting, cultivation and maintaining the plant should be capitalized. Additionally, the preproductive costs such as irrigation, pruning, and soil and water conservation should be capitalized [Regulation 1.263A-4(b)].

While these costs must generally be capitalized, the Cover Crop strategy focuses on the cost of the irrigation system and provides potential for an exception. Depending on the size of the crop, irrigation systems can be quite expensive, representing thousands of dollars in cost being capitalized over the preproduction period. To free up the capitalized cost of an irrigation system, consider growing a temporary secondary crop, known as cover cropping, until the preproduction period ends for the primary crop. With orchards,

this means growing the cover crop in between the immature trees in the orchard. The irrigation system is then watering the orchard and the temporary cover crop. A cover crop can be any crop with a preproductive period of 2 years or less. For example, Farmer X plants an apple orchard with a preproductive period of in excess of 2 years. Farmer X also plants barley, a cover crop with a preproductive period of 2 years or less, in between the rows of apple trees. Farmer X then installs a micro-sprinkler irrigation system. Since the irrigation system is watering the barley and the barley has a preproductive period of less than 2 years, Farmer X can immediately begin depreciating the irrigation system even though the apple orchard has a preproductive period in excess of two years. Of course, some thought must be given to the type of cover crop since these crops can create problems by making trees more susceptible to frost and by increasing water use. However, when the proper cover crop is selected, these problems are minimized. Some thought must also be given to an irrigation system that can provide water to both types of crops. For example drip irrigation systems might not irrigate both crops unless modifications are done to the system.

Regulation 1.263A-4(d)(2) allows farmers to elect out of the uniform capitalization rules if the farmer is not organized as a corporation, partnership or tax shelter required to use the accrual method of accounting under Section 447 or prohibited from using the cash method under Section 448. In addition, the election does not apply to the costs of planting, cultivation, maintenance, or development of a citrus or almond grove incurred prior to the close of the fourth taxable year beginning with the taxable year in which the trees were planted in the permanent grove.

If this election is made, the plants will be treated as Section 1245 property in which depreciation is recaptured up to the extent of any gain on the sale of the plant [Regulation 1.263A-4(d)(4)(i)]. Additionally, under this election, the farmer would be required to use the alternative depreciation method for predominantly all of the farming property [Regulation 1.263A-4(d)(4)(ii)].

Tax Strategy #2 – Income Averaging

Section 1301 permits an individual engaged in farming or fishing to average their income from farming or fishing (but not income from other sources). The term "individual" under Section 1301 does not include any estate or trust [Section 1301(b)(2)]. In addition, only an individual who is organized as a sole proprietorship engaged in a farming or fishing business, an individual who is a partner in a farming or fishing partnership, or an individual who is a shareholder in a S corporation engaged in a farming or fishing business qualify for income averaging. The partnership or S corporation themselves do not qualify for income averaging [Regulation 1.1301-1(b)(1)(iii)]. Also, services performed in farming or fishing business as an employee are disregarded in determining whether the individual is engaged in the farming or fishing business [Regulation 1.1301-1(b)(1)(iii)].

Essentially, Section 1301 allows an individual engaged in farming or fishing to average elected farm income (EFI) over the previous three years, considered the base years. EFI is the amount of income from an individual's farming or fishing business that the individual elected to tax at the base year tax rates. More specifically, EFI includes items of income, deduction, gain, and loss attributable to an individual's farming or fishing business which could include any net operating loss carryovers or carrybacks or net capital loss carryovers to the election year from the base years [Regulation 1.1301-1(e)(1)].

Electing to income average may reduce your farming or fishing client's current tax burden given that your client's current income from farming or fishing is high relative to the farming or fishing income from the base years. To make this election, you merely need to file Schedule J with your client's Form 1040 for the election year [Regulation 1.1301-1(c)(1)]. However, a farmer is not required to have been engaged in farming or fishing in all of the base years to make the election [Regulation 1.1301-1(e)(1)].To revoke an election, you merely need to file an amended return for the election year within the statute of limitations

[Regulation 1.1301-1(c)(2)]. The instructions to Schedule J (Form 1040) will instruct you how to calculate the amount of tax under income averaging.

It is important to note, if your client's farming or fishing EFI includes both ordinary income and capital gains, your client must use tax rates specific to each separate base year to compute the tax on each type of income. Additionally, the method of income averaging has no effect in the amount of income from employment under the Federal Insurance Contributions Act (FICA) or the Federal Unemployment Tax Act (FUTA) [Regulation 1.1301-1(f)(3)].

Tax Strategy #3 – Hiring Family Members

Have your farming clients consider hiring family members. Your client may deduct a reasonable allowance for wages and other compensation as a business expenses [Section 162(a)(1)]. However, in doing so, your client may lose a dependency exemption if the family member is being claimed as a dependent by your farming client [Section 152 (c) & (d)]. If your client hires family members, who are children, pay close attention to the child labor laws. However, hiring family members can offer certain tax advantages.

Hiring family members, especially children, can allow your farming client to legally shift income from a higher tax rate taxpayer (your client) to a lower rate taxpayer (your client's child) thus reducing the family's overall tax burden. Generally speaking, wages paid to family members are subject to employment taxes but there are exceptions to wages paid to your client's child, spouse or parent. Payments for the services of your client's child in the farming business are not subject to social security or Medicare tax [Section 3121(b)(3)]. Payments for the services of your client's child under the age of 21 employed by your client in any activity other than a trade or business, such as household services, are also not subject to social security or Medicare tax [Section 3121(b)(4)]. It is important to note that if your farming client's child works for the client's farming business in which the farming business is organized as a corporation, partnership or an estate or trust, then the child is subject to employment taxes. The logic is that the child works for the corporation, partnership, estate or trust and not employed by your farming client as an individual. For example, Farmer X hires his 16-year-old son to work in his farming business. Farmer X is organized as a sole proprietorship. Farmer X would not be liable for Farmer X's portion of the social security and Medicare tax on his son's wages and he would not withhold for his son's portion.

Payments made for the services of your client's spouse in the course of the farming business are not subject to the Federal Unemployment Tax Act (FUTA) [Section 3306(c)(5)] but subject to the social security and Medicare tax. Payments made to your client's parents, regardless of the trade or business is also not subject to FUTA [Section 3306(c)(5)] but are subject to the social security and Medicare tax.

Tax Strategy #4 – Backfill Dry Wells

The cost of drilling water wells for irrigation purposes, which include the cost of drilling tests holes, the cost of construction and any other costs of well improvements, are a capital expenditure under Section 265 and cannot be deducted as soil and water conservation expenditures [Regulation 1.175-2(b)]. Therefore, the cost of water wells for irrigation purposes must be recovered through depreciation.

If a water well becomes dry with no chance of future use, have your farming client consider backfilling the well but only if the well will no longer be used. If your client backfills the well before the well has been fully depreciated, your farming client has a loss under Section 165. A loss incurred in a business from the sudden termination of the usefulness of non-fully depreciated property in which the property is permanently discarded from future use shall be allowed as a deduction [Regulation 1.165-2(a)]. Backfilling or sealing a well excavation or casing so that all future economic benefits from the well are terminated constitutes a loss from abandonment.

Tax Strategy #5 – Limit Your Client's Prepaid Expenses

If your farming client is a cash basis taxpayer and has prepaid farm expenses, then those prepaid farm expenses may be limited in amount in the period the payment is made. The general rule is that prepaid farm supplies can only be deducted up to 50% of all Schedule F expenses, excluding prepaid farm supplies. Prepaid farm supplies on hand at year-end due to fire, storm or casualty are not subject to the 50% limit rule [Section 264(c)]. Prepaid farm supplies include amounts paid for feed, seed, fertilizer or other similar farm supplies and not consumed in the year of purchase [Section 464(a)]. In case of poultry farmers, prepaid farm supplies include poultry (including egg-laying hens and chicks) bought for use or resale in the farm business [Section 464(b)]. Any prepaid farm supplies in excess of 50% of all farm expenses (excluding prepaid farm supplies) are considered excess prepaid farm supplies [Section 464(d)(3)(A)] and are deductible in a subsequent period of consumption. For example, Farmer A, a calendar cash basis taxpayer, has $30,000 of prepaid farm supplies on December 31, 2015. Total farm expenses, excluding prepaid farm supplies, was $50,000 for Farmer A in 2015. Farmer A could only deduct $25,000 [50% * $50,000] of the prepaid farm supplies. The remaining $5,000 [$30,000 - $25,000] of prepaid farm supplies would be deductible in a subsequent period in which the supplies are consumed.

The 50% limit does not apply if your client is a qualified farm-related taxpayer [Section 464(d)]. A farm-related taxpayer means any taxpayer (1) whose residence is on a farm, or (2) who has a principal occupation of farming, or (3) who is a family member of a taxpayer described in the previous two conditions [Section 464(d)(2)(B)]. A qualified farm-related taxpayer is a farm-related taxpayer (1) whose aggregate prepaid farm supplies for the preceding three taxable years is less than 50% of the aggregate deductible farming expenses (excluding prepaid farm supplies) for the same preceding three years, or (2) who has excess prepaid farm supplies for the taxable year by reason of any change in business operation directly attributable to extraordinary circumstances [Section 464(d)(2)]. For example, if Farmer Y has $30,000 of aggregate prepaid farming supplies over the preceding three years and $80,000 of aggregate deductible farming expenses (excluding prepaid farm supplies), then the first condition is met.

The goal is to have your client classified as a qualifying farm-related taxpayer thereby allowing your client to deduct all prepaid farm supplies in the current period. Since your client will not continually experience extraordinary circumstances to explain excess prepaid farm supplies (condition #2 for qualifying farm-related taxpayer), your client must avoid excess prepaid farm supplies on an ongoing basis. By doing so, your client can instead use the cash from foregone prepaid farm supplies on short term investments (e.g. money market funds) until the farm supplies are needed.

Special rules exist for prepaid feed for livestock. Your farming client cannot currently deduct the cost of livestock feed consumed in a subsequent period unless all three of the following conditions exist: (1) the payment is for the purchase of feed and not a deposit, (2) the prepayment has a business purpose and was not done for tax avoidance purposes, and (3) deducting the prepayment does not materially distort your client's income [Revenue Ruling 79-229, 1979-2 C.B. 210]. If all three conditions exist, your farming client can deduct the prepaid feed cost but it is still subject to the 50% limitation of Section 464. If not all three of the conditions exist, your farming client can only deduct the prepaid feed expenses in the year the feed is consumed.

Tax Strategy #6 – Excess Farm Losses

If a farming business, except those organized as a C corporation, receives any applicable subsidy for any taxable year, then any excess farm loss for that farming enterprise cannot be deducted for that taxable year [Section 461(j)(1)]. An applicable subsidy means (1) any direct or counter-cyclical payment under Title I of the Food, Conservation, and Energy Act of 2008, or any payment elected to be received in lieu of such payment under Title I, or (2) any Commodity Credit Corporation loan [Section 461(j)(3)].

An excess farm loss is determined by taking the excess of total deductions for the tax year of the farming business, over the total gross income from the tax year from the farming business, plus the greater of: (1) $300,000 ($150,000 for a married taxpayer filing a separate return), or (2) the excess (if any) of the total gross income from the farming business for the prior five years over the total deductions from the farming business for the prior five years [Section 461(j)(4)]. For example, Farmer A (filing married jointly) has total deductions of $1,000,000 and total gross income of $600,000, assuming Farmer A has no farming income or deductions in the previous five years, Farmer A has $100,000 [($600,000 –$1,000,000) + $300,000)] excess farming loss. In other words, if no farming income exists in the previous five years, any loss greater than $300,000 is excess. Another example using the five prior years, Farmer B (filing married jointly) has $1,000,000 of aggregate net income from his farming business in Years 1 through 5. In Year 6, Farmer B has $4,000,000 of gross income and $9,000,000 of farming deductions resulting in a $5,000,000 farming loss in Year 6. Farmer B has $4,000,000 [($4,000,000 – $9,000,000) + $1,000,000)] excess farm loss in Year 6. In this scenario, the $1,000,000 of prior five-year aggregate income is greater than $300,000.

Excess farm losses cannot be deducted in the year incurred but must be carried forward to the next taxable year and cannot be carried back [Section 461(j)(2)]. Farming losses from casualty losses or losses due to disease or drought are disregarded for purposes of determining excess losses [Section 461(j) (4) (D)].

Farming losses, in general, should be avoided if possible, especially excess losses. If the farming family has other income in excess or at least equal to the non-excessive farming loss, then the full farming loss can be deducted. If the non-excessive farming loss exceeds the farming family's other income, then an individual net operating losses (NOL) must be determined by adjusting the loss for other items. For example, the net operating loss must be adjusted for personal and dependent deductions, non-business deductions in excess of non-business income, and capital losses in excess of capital gain, etc. [Regulation 1.172-3(a)]. If the recalculation results in taxable income, no NOL exists and this tax benefit may be lost. Therefore, in order to reduce farming losses, your cash basis farming client should consider accelerating the recognition of income and delay making expenditures. Also, consider electing regular depreciation in lieu of immediate expensing under Section 179 for current acquisitions of farming equipment.

Tax Strategy #7 – Depreciation on Idle Farm Property

Your farming client should continue claiming depreciation on idle farm property. Section 167 allows for a reasonable allowance for wear and tear of property used in a trade, business or for the production of income. Depreciation begins when the asset is placed in service and shall end when the asset is retired from service [Regulation 1.167(a)-10(b)]. Further, "placed in service" means when the asset is first placed in a condition of readiness and availability for a specifically assigned function [Regulation 1.167(a)-11(e)(1)(i)]. Therefore, the asset must only be ready and available for use; the asset is not required to be in continual use. Depreciation would end when the asset is retired from use [Regulation 1.167(a)-10(b)].

For example, a citrus farmer acquires and places into service portable furnaces to keep the citrus fruit warm in periods of frost. The citrus farmer can continue to depreciate these portable furnaces even in a year in which the winter does not produce frost and the furnaces are not used.

Tax Strategy #8 – Losses from Declared Disaster Areas

Of course, this strategy cannot be used on a regular and continual basis like the other strategies. A federally declared disaster by the President must occur in the area of your client's farm. If a disaster is declared, your client may be eligible for federal assistance under the Robert T. Stafford Disaster Relief and Emergency Assistance Act. Special rules apply when deducting losses from federally declared disasters.

Generally speaking, a casualty loss is deducted in the year of the loss; however, if your farming client has a deductible loss in a federally declared disaster, your farming client can elect to deduct the loss in the year immediately preceding the year in which the disaster occurred [Section 165(i)(1)]. This election must be made by the later of the following: (1) the due date (without extensions) for the return for the tax year in which the disaster actually occurred; or (2) the due date (with extensions) for the return of the tax year immediately preceding the disaster year [Regulation 1.165-11(e)]. An election can be made by filing a return, an amended return or a claim for refund clearly showing that the election has been made [Regulation 1.165-11(e)].

If your farming client had sufficient taxable income in the previous tax year, then filing an amended tax return for that year might result in a cash refund. If your client needs cash to recover from the disaster loss, then consider having your client make the election and file an amended return.

Tax Strategy #9 – Estimated Tax Payments

Generally speaking, individuals who are required to pay estimated taxes must pay those taxes in four annual installments. For calendar year individuals, the due dates for these payments are April 15, June 15, September 15, and January 15 of the following taxable year [Section 6654(c)]. In addition, generally speaking, the amount of the required payment shall be 25 percent of the required annual payment [Section 6654(d)]. For calendar year corporations, the due dates are April 15, June 15, September 15 and December 15 with the required payments also equaling 25% of the annual payment [Section 6655(c) and (d)].

However, there are special rules for individuals who are qualified farmers. For those individuals, who are not qualified farmers, the regular estimated tax rules apply. A qualified farmer is an individual whose gross income from farming for the taxable year is at least two-thirds of that individual's total gross income from all sources, or whose gross income from farming shown on the individual's return for the preceding year was at least two-thirds of the total gross income from all sources. Gross income from farming for cash basis farmers includes: (1) the amount of proceeds received from the sale of livestock and produce which was raised, (2) the proceeds from the sale of livestock or other items purchased, (3) amounts received from breeding fees, rent from livestock teams, machinery or land, and other incidental farm income, (4) all subsidy and conservation payments received and (5) gross income from all other sources [Regulation 1.61-4(a)].

Gross income from farming for accrual basis farmers includes: (1) the sales price of all livestock and other products held for sale and sold during the year, (2) the inventory value of livestock and products on hand and not sold at the end of the year, (3) all miscellaneous items of income, such as breeding fees, rent from teams, machinery, or land, or other incidental farm income, (4) any subsidy or conservation payments which must be considered as income, (5) gross income from all other sources, (6) the inventory value of the livestock and products on hand and not sold at the beginning of the year, and (7) the cost of any livestock or products purchased during the year (except livestock held for draft, dairy or breeding purposes, unless included in inventory) [Regulation 1.16-4(b)].

If an individual is a qualified farmer, then only one estimated payment must be made by March 1 of the following year (the first day of the third month after yearend). If it appears that your farming client will not have at least two-thirds of gross income from farming sources and therefore not qualify under the special rule, then have your client consider delaying the recognition of non-farm income if possible. Finally, the IRS may waive the penalty for failure to make the one estimated tax payment on a timely basis. The taxpayer (farmer) will need to show an erroneous Form 1095-A which reported an incorrect amount of the health insurance subsidy and, as a result, the taxpayer missed the deadline to file and pay all tax [Notice 2015-22].

Tax Strategy #10 – Granting Easements

Easements can be granted for many reasons including aviation purposes, beach and landlocked parcel access purposes, utilities purposes, such as electrical lines or water transportation purposes, and conservation involving the limitation of development of the land. Payments for easements can take many forms. The landowner granting the easement can receive a single or multiple payments. Multiple payments can be limited to a certain period or can extend for an indefinite period. Payments can be made for actual land purchases (fee simple sale), for temporary access (rent), for a continuing right-of way (easement), for the diminishment of value (severance), or for the loss or damage to a crop. The tax treatment of these payments depends on the specifics of the easement contract.

A payment(s) for an actual farmland purchase is considered capital income and gain or loss is determined by deducting the allocated basis of the parcel, considered 1231 property, from the sale proceeds [Section 1001(a)]. Generally speaking, payment(s) limiting the right of use for a time specific are considered leases and the lease payments from this type of contract are considered rent taxed as ordinary income [Wineberg v. Commissioner, T.C. Memo 1961-336]. However, lease terms, at least 30 years in duration, are treated as an interest in the real property and are considered like-kind to the real property [Regulation 1.1031(a)-1(c)]

An easement is the right to use real property, owned by another, for a specific purpose. Sometimes easements are granted to prevent the use of real property. Since easements are considered property rights, it is also considered a capital asset and Section 1231 property. Easement payment(s) are first applied to the allocated basis (not to be reduced below zero) of the easement property. If the easement payment(s) exceed the allocated basis of the easement property, then the landowner has recognized gain [Revenue Ruling 68-291, 1968-1 C.B. 351 and Revenue Ruling 77-414, 1977-2 C.B. 299]. For example, Farmer X owns 1,000 acres of farmland, with a tax basis of $1 million. A regional utility company acquires the rights under an easement for the use of 100 acres to run an electrical transmission line. If the utility company makes cumulative easement payments of $125,000, then Farmer X has a $25,000 ($125,000 less $100,000 allocated basis) cumulative capital gain. If multiple payments totaling $125,000 occurred over multiple tax years, then Farmer X would recognize the capital gain according to the rules of Section 453.

If your farming client is prohibited from using the land under easement or if your farming client expects to experience a gain and wants to defer it, consider having your client perform a Section 1031 or Section 1033 transaction. Under certain circumstance, if your farming client is prohibited or is unable to farm the land under easement, then your client can expect to lose farming income. To preserve farming income, it might be in your client's interest to engage in a Section 1031 transaction or to replace seized property under Section 1033 if the property is seized under eminent domain. Several revenue rulings support exchanges under Sections 1031 or 1033 for the exchange of agricultural and scenic conservation easements [Revenue Ruling 69-240, 1969-1 C.B. 199; Revenue Ruling 72-433, 1972-2 C.B. 470; Revenue Ruling 72-549, 1972-2 C.B. 472; Revenue Ruling 76-69, 1976-1 C.B. 219]. Additionally, two private letter rulings support the position that agricultural conservation easements qualify as like-kind with a fee-simple interest in replacement property [PLR 9215049, 1/15/92 and PLR 9232030, 5/12/92].

Tax Strategy #11 – Domestic Production Activities Deduction (DPAD)

Your farming client may qualify for the domestic production activities deduction. To qualify, a taxpayer must have qualified production activities income. Qualified production activities income means the amount equal to the excess (if any) of the taxpayer's domestic production gross receipts for the taxable year over the sum of the cost of goods and other expenses, losses or deductions (excluding the DPAD) attributable to such gross receipts [Section 199 (c)(1)]. Gross receipts means receipts from the sale of qualified production property produced in whole or in significant part within the U.S. [Regulation 1.199-3(g)(1)].

If your farming client qualifies, a deduction is allowed against gross income equal to nine percent of the lesser of: (1) your client's qualified production activities income for the taxable year, or (2) taxable income, for the taxable year [Section 199(a)]. The deduction amount is further limited to 50 percent of the W-2 wages paid [Section 199(b)(1)]. W-2 wages means the sum of the amounts described in paragraphs (3) and (8) of Section 6051(a) paid by your client [Section 199(b)(2)].

Tax Strategy #12 – Business Use of Farming Home

Your farming client may be able to deduct expenses for the business use of the farm home if part of the home is used regularly and exclusively for the administration or management of the farming business and no other fixed location is available to conduct the administration and management activities [Section 280A(c)(1)]. The deductions for the business use of the home are reported on Form 8829 and are limited, in amount, in two ways. The first limitation is based upon the percentage of the home used for business. Home expenses must be allocated to both the business and personal use of the home. The instructions to Form 8829 states the taxpayer "can use square feet or any other reasonable method if it accurately figures the business percentage." The most common method of determining the business use percentage would be to divide the square footage of the business area by the square footage of the entire home. The deductible expenses for the home are limited to that percentage.

For example, Farmer X uses a 200 sq. foot room out of a 2,000 sq. foot home. He incurs the following annual home expenses:

Mortgage Interest	$3,000
Property Taxes	$1,400
Utilities	$800
Property Insurance	$900
Home Security System	$500
Total	$6,600

The business use percentage is 10% [200 square feet ÷ 2,000 square feet]. Farmer X would be able to claim $660 ($6,600 * 10%) of these home expenses. In addition to the $660 amount, Farmer X would also be able to claim depreciation but only on that portion of the home used as a home office.

Expenses for the business use of the home are also limited to the excess of gross income derived from the business less the sum of (1) the deductions related to the business part of the home use even if your client did not use the home for business (e.g. deductible mortgage interest, real estate taxes, etc.) and (2) the farm expenses other than the expenses relating to the business use of the home [Section 280A(c) (5)]. In other words, deductions for the business use of the home cannot take a taxpayer into a business loss. For example, Farmer X has $300,000 gross income from farming, $285,000 of farming expenses not related to the business use of the home and $12,000 of mortgage interest and real estate taxes. Farmer X can only deduct, at most, $3,000 [$300,000 – ($285,000 + $12,000)] of expenses related to the business use of the home.

Tax Strategy #13 – Section 179 Deduction

The Section 179 deduction is a common and popular method for reducing current taxable income. This deduction has been around since the enactment of the Small Business Tax Revision Act of 1958 [P.L. 85-866]. Under the original legislation, the maximum amount for immediate expensing was $10,000; however, the amount has increased over the years. Currently, a taxpayer can immediately expense up to a maximum amount of $500,000 [Section 179(b)(1)] on qualifying property placed in service [Regulation 1.179-4(a)].

There are limitations to the maximum deduction. The first limitation is subject to the total value of all qualifying property placed in service in the same taxable year. Currently, if the taxpayer places into service qualifying property exceeding $2,000,000 [Section 179(b)(2)], the maximum deduction of $500,000 is reduced dollar for dollar on the excess. For example, Farmer X acquires qualifying property, totaling $2,100,000. Farmer X has exceeded the $2,000,000 threshold by $100,000 [$2,100,000 - $2,000,000]; therefore, the maximum Section 179 deduction Farmer X can take is $400,000 [$500,000 - $100,000].

The second limitation is based upon business income. The Section 179 deduction cannot exceed the taxpayer's aggregate amount of taxable income of the taxpayer for such taxable year [Section 179(b)(3)]. In other words, the Section 179 deduction cannot take the taxpayer into a net operating loss (NOL). For example, Farmer Y acquires $900,000 of qualifying assets. He also has farming income of $350,000 before the Section 179 deduction. Farmer Y is not subject to the first limitation because he did not exceed the $2,000,000 of qualifying assets placed in service during the current year; however, Farmer Y is subject to the second limitation of business income. In this situation, Farmer Y's maximum Section 179 deduction is $350,000, the amount of his farming income. Despite this limitation, Farmer Y would be able to carryover the $150,000 [$500,000 - $350,000] disallowed deduction to a subsequent year [Regulation 1.179-3(a)].

There are a couple of additional issues that with the Section 179 deduction. First, only certain types of real property will qualify for this deduction. The real property must be qualified real property which consists of (1) qualified leasehold improvement property described in Section 168 (e)(6), (2) qualified restaurant property described in Section 168(e)(7), and (3) qualified retail improvement property described in Section 168(e)(8) [Section 179(f)(2)]. Additionally, there are special rules regarding sport utility vehicles. The maximum Section 179 deduction on sport utility vehicles cannot exceed $25,000 [Section 179(b)(5)(A)]. The term sport utility vehicle means any 4-wheel vehicle which (1) is primarily designed to carry passengers over public streets, roads or highways, (2) is not subject to Section 280F and (3) is rated at no more than 14,000 pounds gross vehicle weight [Section 179(b)(5)(B)].

CONCLUSION

Tax law has several special rules applying to the farming industry. Some of these rules work in favor of the farmer. Our intention is to remind others of the existence of these favorable laws. For example, qualified farmers are only required to make one estimated tax payment per year if tax is due; whereas, other taxpayers, who are required to make estimated tax payments for tax due, may be required to make four annual installments.

Another intention is to make others aware of tax laws that are not necessarily favorable to farmers. These rules must be taken into account for year-end planning purposes. For example, cash basis farmers may be limited in the amount of prepaid farm supplies they may deduct. Finally, the tax strategies offered in this article are to be applied under the specific facts and circumstances discussed. Each tax strategy must be examined under the facts and circumstances for potential risk areas surrounding the U.S. farmer.

We provide thirteen strategies in which the U.S. farmer can either reduce current tax liability or preserve future tax benefits. These strategies include (but are not limited to) accelerating MACRS depreciation on irrigation systems and other costs associated with the pre-production of certain crops; maximizing the current deduction of prepaid expenses and reducing the number of required estimated tax payments. We also point out potential risk areas associated with these strategies and offer suggestions on ways to avert the risk.

The obvious limitation of this paper is that these strategies are limited in use to the U.S. farmer and most strategies offered are not applicable to other industries. However, use of family members in the business or the Section 179 deduction is among the few strategies that can be used by other U.S. taxpayers. Another

limitation is that the strategies offered only apply to the facts and circumstances presented within each strategy; therefore, the U.S. farmer may need to alter the facts and circumstances prior to the implementation of the strategy. In certain cases, changing the facts and circumstances may be impractical or impossible.

Finally, future research can take many directions. One possibility is that more U.S. farmer tax strategies can be offered. U.S. tax law contains other special provisions for the U.S. farmer that were not discussed here. Another possibly is to provide tax strategies for other U.S. industries such as insurance, banking, etc. Still, another possibility is to examine if the strategies discussed here are already being utilized by the U.S. farmer assuming the data becomes available.

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GOING CONCERN AND AUDIT OPINION OF NIGERIAN BANKING INDUSTRY

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ABSTRACT

This paper investigates the relationship between going concern and audit opinion of banks in Nigeria using financial ratio between 2007 and 2012. The study employed secondary source data collection obtained from published financial statements of selected banks and the Factbooks of Nigerian Stock Exchange. Multivariate regressions were employed to determine the effect of financial ratios used as going concern indices such as deposit to total asset (proxy for liquidity), return on capital employed (profitability measure) solvency, operating cashflow to total liabilities and growth on audit opinion. The result reveal that solvency, liquidity (DPA) and profitability (ROCE) have significant relationships with audit opinion. Furthermore, the study showed that going concern could be a signal of financial distress as it reveals the status and capability of banks to continue in operation. Finally, the study recommends the Central Bank of Nigeria should put in place policies that can enhance financial strength and stability of banks. The Nigerian Financial Reporting Council and other regulatory bodies, in line with best practices, should try to organize training and workshops to improve financial skills and expertise of auditors for quality reporting in Nigeria banking industry.

JEL: M4

KEYWORDS: Audit, Going Concern, Solvency, Money Deposit Bank

INTRODUCTION

The financial crisis and demise of some banks in Nigeria between 2007 and 2012 was a serious issue that questioned the integrity and competence of auditors because most of these banks were issued unqualified opinion prior to the year of their extinction. This financial turbulence played a significant role in the downturn of economic activities, damage the reputation of some renowned auditors in Nigeria associated with this unholy practices, damage the confidence of investors and other users of financial statement who lost their fortune in the incidence. The crisis was blamed on auditors who were expected to certify the credibility of financial statements that it gives the true and fair view of the financial position of an organization but failed in their responsibilities, these auditors were caught in the web of unethical practices that made their safeguard to be considered worthless since it neither corrected the anomaly in the financial statement nor improve the quality of audit but worsened the situation of things in the country. The issue of banks going to extinction after being certified to be financially worthy raises question concerning the accuracy of auditors going concern opinion and this need to be address before the situation gets out of hand. There is gap in the literature as regards assessing the accuracy of going concern's ability of financial institution in Nigeria and this work is carried out to bridge the gap. This study analyzed the factors that influence auditors' decision to issue qualified opinion to banks that shows the signal of distress in order to improve the quality of audit. Chen et-al (2005) argued that the extent at which the auditor is willing to issue qualified opinion often provides some indication of audit quality. Auditors by the International Standard on Auditing are saddled with the responsibilities of

considering the appropriateness of management assertion of going concern assumption in financial statement prepared by them.

This assurance adds credibility to financial statements, lowers information risk, and facilitates capital formation, adding value to the entire capital market system (Elliot and Jacobson 1998; Carmichael 1999). In lieu of these responsibilities, auditor when carrying out their work are expected to gather enough information from their client, look for some conditions or event that may cast significant doubt on the ability of a firm to continue as a going concern, then auditor should obtain information about the plans and consider whether it is likely that the adverse effects be mitigated for a reasonable period of time and that such plan can be effectively implemented. But if the auditor still has substantial doubt about the entity's ability to continue as a going-concern, the auditor should consider the adequacy of management's disclosures in the financial statements and the auditor must modify his/her opinion to include an explanatory paragraph outlining the reasons for concern.

Bank failure started 1930, but became worse in 2004 when the numbers of banks reduced drastically from 89 to 24, the liquidity problem witnessed by banks forced Central Bank of Nigeria (CBN) to raise the minimum balance to 25billion ($167million) some banks were taken off by others while other merged together to form new banks. Nigeria lost huge amount of money to banking sector fraud which was estimated to be a total of N6billion ($42.9m) Bakre, 2007. (This Day Paper, 16th October 2008) reported that CBN audited the activities of the remaining 24 banks quoted on Nigerian Stock Exchange and discovered that they were also insolvent and already showing symptoms of distressed so CBN considered bailout option for them as was practiced by other advanced countries like UK, US to save them out of financial mess. But in 2009 the activities of these banks showed that they were still not financially stable and because of this CBN released N420 billion ($2.8billion) to five banks that failed their audit test. These banks include Afribank, Intercontinental, Oceanic, Finland and Union bank. CBN further released the sum of N200billion ($1.33billion) to four other banks which are Spring, Equitorial, Trust and Wema bank to remain going concern and sacked their former managers for poor managing of the banks (Sahara reporter, Oct 8, 2010, This Day, 12 Dec, 2009, Nigeria Tribune, Dec 8, 2009).

Many studies have been carried out on going concern using financial ratios as determinant, most especially in foreign countries. Erly S. And Elok T. P. (2012) Puji (2007) assessed going concern opinion using financial and non-financial information and concluded that financial information has no significance with going concern but non- financial measured with prior opinion and auditor reputation have significant effect on going concern. In the work of Davoudi (2007) Marteen etal (2008) Hao etal (2011) Oni and Desi (2006) their results indicated that financial ratios are important measure of going concern opinion. Research done in Nigeria did not actually address the factors that influence auditors decision to issue going concern but addressed the role of auditor in banks financial distress, (Jibrin and Blessing [2014], Otusanya and Lauwo [2010]) they concluded that auditor lacked their claimed expertise to conduct an independent audit and objective reporting of corporate affairs and also that audit model is fundamentally flawed and cannot deliver independent or searching audit. Oladipupo and Izendomi [2011] work on propensity of qualified audit reports and auditors' independence reported that there is positive insignificant relationship between auditor's independence and nature of report issued. Onwuchekwa, Erah and Izendomi [2012] argued that mandatory audit rotation do not in any way improve the quality of audit. Because of the dearth of work on going concern and in a bid to bridge this gap and add to existing literature, it may therefore be pertinent to investigate factors that influence the auditors' issuance of qualified going concern opinion in Nigerian Banking industry. Apart from the above introductory section, the rest of this study has been divided into three sections. In section two, we discuss the literature review of the study. Section three explains the data, methodology and results. The study is concluded in section four.

LITERATURE REVIEW ON GOING CONCERN AND AUDIT OPINION

The literature is replete with studies on going concern and types of opinion issued by the auditor after examining the financial statement prepared by management of an organization. Sugiono Poulus (2015), in his work on the comparative analysis of precision prediction of liquidity static, dynamic liquidity and altman Z-score related to the provision of audit opinion going concern carried out on 373 manufacturing companies publicly listed on the Indonesia Stock Exchange in 2010-2012, using explanatory research by cross sectional and discriminant analysis concluded that the most influential financial ratios are Quick Assets to Total Assets, Total Liabilities to Total Assets, and Net Worth to Total Liabilities. The results of this study proved that the model of liquidity, especially static liquidity could be used as a valuable tool in assessing the company's going concern status. Erly S. And Elok T. P. (2012) carried out research on the effect of financial ratios, prior audit opinion and growth on the auditor's going concern, the result of their work indicates that the variable ratio of corporate finance (liquidity ratios, profitability ratios and solvency ratios and growth) do not have a significant effect on the provision of audit opinion by the auditor going concern. Hao, Zhang, Wang, Yang, and Zhao (2011) in their work affirmed that financial ratios like current ratios, casflow, return on capital employed and high leverage have significant effect on going concern opinion and concluded that auditors are likely to issue going concern opinion to firms with low liquidity, poor performance, less cash inflows and high leverage. Martens, Bruynseels, Baesens, Willekens and Vanthienes (2008) in their work predicting going concern opinion with data mining on United States listed companies concluded that profitability ratios are an important determinant of going concern decision making. Their decision model furthermore indicates that a company is more likely to receive a going concern modified audit report if it has lower total assets, lower current ratio, decreasing working capital to total assets, and increasing total liabilities to total assets.

Davoudi (2007) Reviewed Effectiveness of Cash Flows from Operating Activities for Evaluating the Going Concern of the Listed Companies in Tehran Stock Exchange. He concluded that the most important financial ratio of significant relationship with going concern of the firms is the cash flows from operating activities to average assets ratio.

Alireza Safari (2002) reviews the financial ratios and going concern of entities. Results of the research suggest that there is a significant relationship between financial ratios and going concern. (Faghani N. M 2002) empirically examined "The Relationship between Financial Ratios and Bankruptcy Prediction of Listed Companies in the Stock Exchange" and come to the conclusion that there is a significant relationship between key financial ratios and bankruptcy prediction.

Puji Rahiyu (2007) investigates the usefulness of financial and non-financial information's for assessing going-concern to predict the issuance of going-concern opinion on private commercial banks listed in JSX (Jakarta Stock Exchanges) and SSX (Surabaya Stock Exchanges) for the year 2000 to 2005. They used Binary Logistic Regression as a tool for analyzing financial information proxied by financial ratios of Liquidity, Profitability, and Solvency. Liquidity measured by Quick Ratio (QR) and Banking Ratio (BR), Profitability measured by Return on Assets (ROA), Solvency measured by Capital Adequacy Ratio (CAR). The results show that financial variables (Liquidity, Profitability, and Solvency) are not effective for assessing going-concern to predict the issuances of going-concern opinion. Both of Descriptive Statistics and Logistic Regression show that all the financial variables are not significant.

Oni and Desi (2006) conducted study in Indonesia on Analysis of determinants of going concern and audit report of manufacturing company; he tested its relationship with financial ratios and two new variables, the audit committee and size of audit firm. The financial ratios used in this study as an indicator are current ratio, net income before tax/net sales ratio, total debt to total equity ratio, cash flow to total debt ratio, which each of them are represent liquidity ratio, profitability ratio, solvency ratio, and cash flow ratio. They concluded based on analysis result and discussion that Liquidity, Profitability,

Operational cash flow, and the existence of audit committee of a company has no significant effect against the issuance of going concern audit opinion by the auditor. Whereas solvency has a significant effect and size of audit firm has sufficiently significant effect against the issuance of going concern audit opinion by the auditor.

DATA AND METHODOLOGY

Panel data gathered from annual reports of selected quoted banks in Nigeria was used for this study. The data were obtained from audited financial statements and Factbooks of Nigerian Stock Exchange of the sampled fifteen (15) banks out of the 22 listed banks in Nigeria with 90 observations taken from 2007-2012. This study used data collected from secondary sources on relevant variables such as AO, DPA, SOL, ROCE, OCFA and GRT. This study employed the use of Binary Logistic regression since the dependent variable (AO) is dichotomous in nature. The functional relationship of going concern and audit opinion is given below

$$AO_{it} = \beta_0 + \beta_1 DPA_t + \beta_2 ROCE_{it} + \beta_3 OCFA_{it} + \beta_4 GRA_{it} + \beta_5 SOL + \mu_{it} \ldots\ldots\ldots\ldots eqn\ (1)$$

Where:

AO = Audit Opinions will be equal to 1 if a company receives audit opinion and 0 otherwise. The audit opinions in this study are all types of audit opinions that address the going concern problem faced by the company, either qualified with explanatory paragraph, disclaimer or adverse opinion.
The independent variables are:

DPA = Deposit to Total Asset (Customer deposit / Total Asset)

ROCE = Return on capital employed (Net profit / Total Assets – Current Liabilities)

GR = Growth = (Current year total asset - prior year total asset) / Prior year total asset

SO = Solvency = Total liabilities / Total assets

OCF = Operating Cash flow = Cashflow from operations / Total Liabilities

DISCUSSION OF RESULTS

This section reveals the analysis of effect of going concern on audit opinion of Nigerian banks. The results of the analysis of the regression estimated to evaluate the influence of the going concern on audit opinion are shown in Table 1, 2 and 3 The data in Table 1 present the average indicators. The mean value of DPA, ROCE, SOL, OCFA and GRT are 0.5378, 0.1373, 0.7988, 0.0401 and 0.2664 respectively.

This indicates that banks liquidity is not bad during the period of analysis; this is expected in the banking industry. Banks profitability is good but the rate of variability is high as shown by the standard deviation of 1.660. The result indicate that average of growth, operating cashflow and solvency is low and also the rate of their variability.

Table 1: Descriptive Statistics of Going Concern and Audit Opinion

	DPA	SOL	ROCE	OCFA	GRT_2	AUD_O
Mean	0.5378	0.1373	0.7988	0.0401	0.2664	0.3111
Median	0.6894	0.1483	0.0739	0.0348	0.2130	0.0000
Maximum	0.8793	0.2916	7.819	0.3661	2.175	1.000
Minimum	-0.1782	-0.3187	-0.3585	-0.2779	-0.9991	0.0000
Std. Dev.	0.3006	0.0963	1.660	0.0990	0.5415	0.4655
Skewness	-0.9983	-2.0909	2.380	0.0529	0.3906	0.8160
Kurtosis	2.448	10.395	8.281	5.491	4.956	1.666
Jarque-Bera	16.091	270.65	189.54	23.306	16.632	16.663
Probability	0.0003	0.0000	0.0000	0.0000	0.0002	0.0002
Sum	48.402	12.361	71.895	3.607	23.977	28.000
Sum Sq. Dev.	8.041	0.8252	245.32	0.8722	26.091	19.289
Observations	90	90	90	90	90	90

This table shows the descriptive statistics of independent variables used for this study, row 2 shows the mean of all the variables, row three their median, row four their maximum value, row six the standard deviation of each variables and the last row shows the total number of observations. Source: Authors computation 2015

The five regressors were subjected to pairwise correlation to ascertain if any of the stimulus variables explains another. The result reported in table 2 showed that there is no multicollinearity among the regressors. Hence, the five regressors can be included in the model.

Table 2: Correlation

	DPA	SOL	ROCE	OCFA	GRT_2
DPA	1.000				
	(0.0000)				
SOL	0.0650	1.000			
	(0.5426)	(0.0000)			
ROCE	0.1816	-0.3631	1.000		
	(0.0867)	(0.0004)	(0.0000)		
OCFA	0.0984	-0.1117	0.0793	1.000	
	(0.3563)	(0.2944)	(0.4577)	(0.0000)	
GRT_2	0.1102	-0.0912	-0.0657	0.2032	1.000
	(0.3011)	(0.3925)	(0.5386)	(0.0547)	(0.0000)

This table shows the result of pairwise correlation of stimulus variables. From the results the upper figure in each cell represent the pairwise correlation of the regressors and the figure in the bracket is the corresponding probability of the correlation, the result indicates that there is no problem of multicollinearity among the variables. Source: Authors Computation 2015

Table 3 presents the results of logistic regression of going concern and audit opinion of Nigerian banks. The result shows that DPA, ROCE and SOL are determinants of going concern. These regressors are negatively significant at 95% level of confidence. The decision model furthermore indicates that a company is more likely to receive a going concern modified audit report if it has lower deposit to total asset, decreasing return on capital employed and less solvent. This result supported the work of Nina Sormunen (2012), Oni and Desi (2003), Hao, Zhang, Wang, Yang and Zhao (2011) that a company with low liquidity, poor performance and high leverage will be issued going concern opinion.

Table 3: Logistic Regression Estimates of Equation Audit Opinion = β_0 + β_1 (Deposit to Total Asset) +β_2 (Return on Capital Employed) +β_3 (Operating Cashflow + β_4 (Growth) +β_5 (Solvency)

Variables	Coefficient	z-Statistic	P-value
Constant	2.046	2.490	0.0128
DPA	-1.7432	-2.1341	0.0328**
ROCE	-0.7024	-2.5668	0.0103***
SOL	-10.7586	-2.7148	0.0066***
OCFA	3.088	1.078	0.2808
GRT	-0.9245	-1.7543	0.0794
R2 =0.2026			
LR= 22.61			
Prob LR = 0.004			

*This table shows the regression statistics of going concern and audit opinion of sampled banks, column two indicate the coefficient of dependent and independent variables, column three shows the kind of relationship that exit between the dependent and independent variables while the last column shows the level of significance of the variables. *** and ** reveals that variable is significant at 1%, and 5% respectively*
Source: Authors Computation 2015

CONCLUSION

The study investigates the relationship between going concern and audit opinion of quoted banks in Nigeria during a six years period. The results reveal that there is a significant relationship between going concern and audit opinion. The results suggest that banks in Nigeria have good liquidity and profitability level but their level of solvency, growth and cashflow is very low. Thus, the results from the study indicate that the relationship between going concern and audit opinion was observed to be highly positively significant meaning that most accounting improprieties and collapse in Nigeria in the past few years have all had a link with going concern related problems.

This could mean that going concern can actually offer a solution to the problem that financial statements pose. This study has its own limitation because it is only carried out on financial institutions and the result cannot be used to generalize what happened in other sectors like manufacturing and service oriented firms.

Also, it only makes use of financial ratios while non-financial ratios that may explain the situations better were not included. The result indicated that going concern had a positive significant effect on audit opinion and that banks that have good liquidity, profitability level, solvent, have good growth level and cashflow are less likely to receive going concern, But banks that accumulated debt, incurred losses repeatedly, have liquidity problem are more likely to receive qualified going concern opinion or wind up. Finally, the study recommends that the Central Bank of Nigeria should put in place policy that can enhance financial strength and stability of banks.

The Nigerian Financial reporting Council and other regulatory bodies in line with best practices should try to organize training and workshop to improve financial skills and expertise of auditor for quality reporting in Nigeria banking industry. More work are still needed to be carry out on this topic but researchers may look at other sectors as different from financial institutions and also make use of both financial and non-financial variables.

APPENDIX

List of Banks Used for the Study

NAME	YEAR
Fidelity Bank	2007-2012
Union Bank	2007-2012
Ecobank	2007-2012
Zenith Bank	2007-2012
Ibtc Stanbic Bank	2007-2012
Skye Bank	2007-2012
First Bank	2007-2012
Guaranty Trust Bank	2007-2012
Diamond Bank	2007-2012
Unity Bank	2007-2012
Access Bank	2007-2012
Sterling Bank	2007-2012
First City Monument Bank	2007-2012
Wema Bank	2007-2012
United Bank for Africa	2007-2012

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FISCAL MANAGEMENT PRACTICES AND THEIR IMPACT ON CORPORATE GROUPS' FISCAL PERFORMANCE

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ABSTRACT

This article analyses the impact of fiscal management practices on the fiscal performance of all the groups of companies whose parent company is listed on the Tunisian Stock Exchange over a period spanning from 2007 to 2011. Our regression results indicate that Tunisian firms use several practices to reduce their tax liabilities. We specifically conclude that the number of intra-group transactions and tax relief are significantly associated with tax avoidance. Transaction cost theory is utilized to identify the relationship between fiscal management practices and fiscal performance. In general, the theory focuses on minimizing transaction costs. It is important to consider transactions between related parties that have different taxation rates offering considerable opportunities of fiscal management practices. So, transfer pricing decisions can involve multiple objectives: the maximization of global profit and the minimization of global taxes.

INTRODUCTION

Taxation is one of the prevailing factors that can affect the financial position of the group. Corporate tax avoidance is an integral part of firms capital management strategies (Rego, 2003). The fiscal management practices used by members of corporate groups can lead to their tax debt the reduction, which helps to enhance their fiscal performance. Taylor and Richardson (2012) claims that corporate groups use several fiscal management practices to reduce their effective tax rate, particularly transfer pricing and the use of intra-group debt. Specifically, we find that thin capitalization, transfer pricing, income shifting, multinationality, and tax haven utilization are significantly associated with tax avoidance. Corporate tax management for companies is deeply rooted in corporate culture in many economies (Rego, 2003 and Slemrod, 2001). Indeed, corporate taxes represent a major expense item for the firm, management could be motivated to develop strategies to reduce payable the amount of corporate taxes to meet the firm's capital needs (Richardson et *al*., 2015). The practice involves taking advantage of gaps or loopholes in tax legislation to reduce significantly corporate tax (Braithwaite, 2005).

This study is relevant to Tunisia. Firstly, because of its emerging economy. Organizing into groups has become an inescapable economic reality. The number of corporate groups increased by 158% between 1998 and 2011, as 1487 groups were created during this period according to the Central Bank of Tunisia. In addition, the Tunisian legislator confers several effective corporate tax rates. So, differential tax rates may lead a firm to pursue tax avoidance strategies. Fiscal management practices naturally have a strong impact on the group's fiscal performance and therefore should be analyzed in a more detailed way and more

particularly the indirect transfer of commercial or financial benefits. Publicly listed Tunisian firms make use of opportunities, methods, and tools in relation to thin capitalization, transfer pricing, income shifting, multinational operations to avoid paying significant corporate taxes like the Australian companies (Taylor and Richardson, 2012). Therefore, our main focus in this article will be to study the impact of different fiscal management practices in corporate groups on their fiscal performance.This study will shed light on two findings; it contributes in several ways to the existing literature. Theoretically, this is the first study that identifies fiscal management practices in corporate groups in the Tunisian context. Empirically, we find that tax relief along with transfer pricing are significantly associated with corporate tax avoidance. This study provides some valuable insights into tax avoidance in the Tunisian context that should be useful to policymakers, investors and regulators around the world. This paper is organized as follows: the section below describes the literature. Next, we will discuss the data and methodology used in the study followed by the results. The last section includes a summative reading of the preceding sections.

LITERATURE REVIEW

Slemrod (2001) claims that corporate groups use a set of inter-related and globally orientated tax planning methods to minimize corporate taxes. Differential tax rates may lead a firm to pursue tax avoidance strategies (Taylor and Richardson, 2012). It is obvious that corporate groups tend to minimize transaction cost, including tax cost. This especially depends on how profits and losses are spread amongst the parent company and its subsidiaries. To be efficient, the group must try by all means to reduce costs including tax costs. This section introduces the theory of transaction costs that seems adequate to detect the relationship between fiscal management and fiscal performance. This relationship is developed through three research hypotheses forecasting the type of correlation between intra-group transactions, intra-group debt and financial relief on one side, and the effective tax rate on the other one. The pursuit of the firm value maximization is done through an effort to optimize or minimize the tax cost (Mairesse, 2005). Taxes are certainly a basic element in the decision-marking of companies. Also, Policymakers generally try to manage the tax aspect related to each transaction. Extant research (Chen et al., 2010 and Frank et al., 2009) suggests that tax avoidance represents the downward management of taxable income through tax planning activities. It more specifically includes tax planning activities considered to as aggressive seen that they are designed to actively reduce taxable income by exploiting uncertainties or variability in the interpretation of the tax law (Richardson et al., 2015).The shift income between jurisdictions is a method which is more encouraged than the shift between differentially taxed entities within the same jurisdiction. However, advisory materials apply planning suggestions that shift income between entities facing different tax rates within the same jurisdiction (Scholes et al., 2002).

According to the theory of transaction costs, any contract generates costs and to restore the balance between the parties (corporate groups) it is necessary to carry out arbitration that will lead to compromise situations (Mairesse, 2005). To reduce transaction costs and increase the value of the group, managers try to engage in transactions that maximize the value of the group at the end of their period. This especially depends on how profits and losses are spread amongst the parent company and its subsidiaries. The type of goods or services offered may influence the taxation location of the transaction, and thus the final effective tax rate of the multinational entity and any foreign subsidiaries (Yancey and Cravens, 1998). Optimal tax planning for a corporate group would include a strategy to use transfer pricing in order to conduct operations with low taxable incomes in high tax jurisdictions and create high taxable income in lower tax jurisdictions. Firms might change production volumes in different countries depending on the allowed transfer price (Halperin and Srinidhi 1996).

Transaction costs may be a function of the traded assets monetary value or the number of undertaken transactions (Leape, J-I, 1987). To minimize costs, a balanced reduction between all of the applicable subject taxes along with the additional constraints require a tax planning framework which recognizes legal methods coordination (Yancey and Cravens, 1998).

Leitch and Barrett (1992) assert that a multinational firm exists to exploit a variety of advantages which occur due to differentials in ownership, location, and internationalization factors across country boundaries. Indeed, a corporate group with a large number of affiliated member firms has incentives to shift income across its member firms to reduce overall group taxes by taking advantage of the differential tax rates. For example, a corporate group utilizes pricing transfer to reach a congruent goal for a subsidiary and the parent management company. The result will be the assistance in evaluating subsidiary's performance, maximizing profits, and minimizing taxes (Borkowski, 1997).

Multinational corporations may select a variety of organizational forms in order to conduct transactions with the distributed units in other countries. This choice has legal as well as tax implications for the combined entity. If foreign units are organized as subsidiaries, the parent company may be allowed to defer income recognition from the subsidiary to the parent (Yancey and Cravens, 1998). In addition, Sekely and Collins (1988) show how the firm capital structure choice is influenced by the country location. Financing through debt or equity will have different tax effects. The latters will be related to interest deductibility and equity contributions. The type of offered goods or services may influence the taxation location of the transaction, and thus the eventual effective tax rate of the entity and subsidiaries. The fiscal performance could be affected by several factors that can significantly reduce the effective tax rate of the group (Usmen, 2012).These factors are usually related to the indirect transfer of profits to the intra-group debt, and the direct transfer benefits via the reinvestment of earnings between the corporate group member companies.

Key Factors Associated with the Indirect Transfer of Profits

The corporate group resorts to the transfer of benefits to minimize the overall charge of the group due to the difference in tax rates and the ambiguity when setting the transfer price. The size of the group and the financial position of its various company members can in turn influence the choice of some fiscal management practices. The ambiguity in the determination of a method for calculating the transfer pricing is also a favorable ground for intra-group tax management. Indeed, the optimization of the group results necessarily involves a choice of method for fixing the most relevant transfer prices to the situation. This allows both to increase profits and maximize the subsidiaries taxable income. First of all, corporate groups can take advantage of the national and international fiscal disparities by choosing the most profitable income and expense taxation system in the subsidiaries of the same group (Lamorlette and Rassat, 1997), also taking advantage of the tax differences between its members. Multinational corporations have structured their business in a way to avoid taxes in every jurisdiction where they operate (Salihi et al., 2015). Tax differentiation provides corporate groups with important opportunities to transfer their benefits. The greater the difference, the higher their interest to do it (Chan and Lo, 2004). Moreover, Jacob (1996) claims a positive correlation between the differential tax and the importance of income transfer; Brem and Tucha (2006) assert that corporate groups deport 10% to 20% of their income to regions benefiting of lower taxes.

Then, the size of the group and the financial situation of the various companies have an influence on the choice of the different fiscal management practices. Rego (2003) found that large groups are more involved in activities and intra-group transactions than smaller ones. Large groups tend to make more intra-group transactions, both in numbers and in amounts, which allows them to manipulate transfer pricing and take advantage of the tax benefits relating to the location. According to Scholes et al. (1992), the international transfer of income is mainly used by large groups such as Apple, Google, Microsoft that localize their profits in low-tax jurisdictions and increase their deductible expenses by the payment of royalties in high-tax jurisdictions in order to reduce their global taxable income (Duhigg and Kocieniwski, 2012). The indirect transfer of profits may also be affected by the financial situation of the group subsidiaries. When both profitable and unprofitable subsidiaries coexist, the transfer motive is important in order to reduce the overall burden of the group. For example, two related companies can reduce their tax base by transferring the income of a profitable company to the indebted company (Gramlich et al., 2004). It is recognized that sound management requires the management of deficits in a

better way (Sivieude et al., 2012). The fiscal deficit management can be done by distributing the financial loss of the unprofitable company to the profitable companies in the group.

Tax relief through the indirect transfer of profits within the group depends on the volume of sales within the group. The higher the volume of transactions, the more the corporate group may tend to use transfer pricing to reduce the overall effective tax rate. Jacob (1996) studies the relationship between the level of tax to be paid and the volume of transactions between companies of the same group. He claims that corporate groups that have a larger volume of intra-group transactions, with different taxation rates, find it easier to transfer income through the transfer pricing policy.

We deduce a first hypothesis: H1: The practice of tax management (the importance of intra-group transactions) has a negative impact on the effective tax rate.

Main Factors Associated with the Use of Debt

The use of debt results from both under-capitalization and the multinational environment. Dyreng et al. (2007) deduce that successful long-term fiscal management is closely associated with high debt for US companies. Gupta and Newberry (1997) also found a negative and significant co-relation between the effective tax rate and the leverage effect resulting from the deductibility of interest charge. Graham and Harvey (2001) also believe that the deductibility of interest on the debt is a very important factor that determines the structure of the group's capital. Scholes and Wolfson (1996), show that there is a significant relationship between the change in the tax rate and the financing decision of corporate groups.

Very often corporate groups use debt financing to optimize their tax management. Even when there is no need for real funding, they tend to place the loan in a group company whose results are positive in order to minimize the corporation tax amount. This undercapitalization device, which is widely used by businesses, allows them to have higher financial costs and lower corporate taxes (Sivieude et al. , 2012). The excessive use of debt financing in the form of thinly capitalized structures by subsidiary firms located in higher tax jurisdictions constitutes an important international corporate tax avoidance technique used by multinational firms (Shackelford &Shevlin, 2001). Desai et *al.* (2006) find that the 10% increase in the tax rate of a subsidiary in a group based abroad automatically increases the debt ratio of the subsidiary by 2.8%. To test the impact of intra-group debt on fiscal performance, it is necessary to assess its volume. The higher the volume of debt, the more the corporate group members tend to use domestic debt to reduce the overall effective tax rate. Our second hypothesis is as follows: H2: Fiscal management practice (the importance of intra-group debt) has a negative impact on the effective tax rate.

Key Factors Associated to the Direct Transfer of Benefits

Tax management can be done through the incentives provided by the tax legislation. These incentives can take the form of exemptions or tax reliefs. In the presence of a real and diverse tax benefit system, the mastery of fiscal management, which permits to benefit from all the planned contingencies, becomes, in its turn, more and more necessary for companies which are members of a group (Aissi, 2009, Menchaoui and Omri, 2012). In Tunisia, a tax relief method may be achieved through the reinvestment of capital in companies, according to the arrangements of the code of incentives for investments and the tax code on personal income and profits. The financial, oil and mining sectors can't benefit from this tax relief. There are also specific advantages for the subscription of capital in venture capital investment companies. Capital subscription or increase in the capital of the company itself or in the other companies of the group offers the possibility to fully or partially deduct the reinvested profits. It is necessary to empirically check the impact of a direct transfer of an inter-company profit on fiscal performance, particularly to measure the impact of the reinvestment of intercompany profit (tax relief) on the effective tax rate. The third hypothesis follows: H3: Fiscal management practice (Tax relief) has a negative impact on the effective tax rate.

DATA AND METHODOLOGY

The sample is composed of corporate groups whose parent companies are listed on the Tunis Stock Exchange of Securities and required to disclose to the public their consolidated financial statements. This study includes all groups whose mother company is quoted on the Tunisian Stock Exchange of Securities (SES) like the studies by (Aissi, 2009 and Jarboui, 2008). Table 1 provides summary data about the sample composition.

Table 1: Number of Groups of Companies

Type of Parent Company	2007	2008	2009	2010	2011
Non Financial	17	19	20	21	21
Financial	13	13	14	15	15
Total	30	32	34	36	36

This table shows the number of groups of companies whose parent company is listed on the SES, a total of 168 observations

The data for this study were collected through the consolidated financial statements, financial statements of the parent companies, and the special reports of the auditors for a period of five years (2007 to 2011). The collected data set out to establish and test Hypotheses 1and 2. The data for Hypothesis 3 have been collected through a questionnaire sent to the managing directors, accounting or financial managers of the different parent companies listed on the Tunis Stock Exchange of Securities. The questionnaire was distributed in March 2013 and included two major questions: 1- what is the effective tax rate for each company groups, 2- what are the other company groups that can benefit from tax relief. The response rate to this questionnaire is 94.4%; 34 officials from the different parent companies replied to the questionnaire on a total of 36 groups of companies. In order to test the impact of different fiscal management practices of corporate groups on fiscal performance, a linear regression analysis was done. In this analysis model, the tax group performance depends on several factors such as the number of transactions within the group, the amount of intra-group debt and the reinvestment of profits through tax relief. At this level, it is necessary to define the dependent, independent, and control variables and present their respective measurements.

Dependent Variable

The corporate group should find tax optimization for the member companies; the company that belongs to the group is likely to be confronted with the notion of tax optimization for the group rather than tax optimization on an individual basis. Under these conditions, the company adopts the best solution for the group. A solution that does not necessarily correspond to the optimal tax solution for itself (Chadefaux and Rossignol, 2006). Indeed, the corporate group uses fiscal instruments in an appropriate manner and in order to know all the possible legal options without breaking the law. The term corporate tax avoidance lacks universal definition as it might connote "different things to different people (Hanlon and Heitzman, 2010). The fact that there is consequential tax effects for every transaction of a company, meant to increase its profit, could account for such lack of universal definition. Given this, there have been several definitions of corporate tax avoidance put forward by researchers in recent times (Annuar et al., 2014).Thus, the terms such as tax management; tax planning; tax sheltering; and tax aggressiveness are interchangeably used with tax avoidance in the literature" (Chen et al. 2010; Lanis& Richardson, 2012). Here, we define fiscal performance as a reduction in the effective tax rate.

Therefore, the concept of fiscal performance can be measured thanks to the effective tax rate. This ratio is used to determine whether the corporate group has used all possible levers to reduce its taxable income. It also measures the extent of risk and the quality of the adopted tax strategy. Effective tax rate management as a tool reflecting the tax impact of business decisions represents a financial indicator that measures the ability of the company to optimize its tax burden (Chadefaux and Rossignol, 2006). Several authors apply this rate to assess the effectiveness of the company fiscal management such as Roesler and Getz (2004)

Rego (2003). The effect of internal flows in the group is very significant for that rate. The very calculation of the ratio remains a problem. Some authors, such as Gupta and Newberry (1997) do not incorporate the deferred tax in the numerator. Rego (2003) explains this choice by the fact that the charges due to the payment during the year better reflect the actual tax burden. Others prefer to integrate it to take into account all the taxes related to all the operations that can generate savings or tax liabilities on the short and long terms (Chadefaux and Rossignol, 2006). Given the Tunisian context and its specificities, only some groups use the concept of deferred tax in the preparation of their consolidated financial statements. The effective tax rate will be measured by the consolidated tax / consolidated pre-tax profit.

<u>Independent Variables</u>

The independent variables in the model below correspond to the various fiscal groups management practices in relation to the Tunisian context. Indeed, the auditors must mention in their special reports the regulated agreements (articles 475 and 200 of the Commercial Companies Code) indicating the intra-group transactions concluded under abnormal conditions. The variables of the model are: the number of intra-group transactions, the volume of intra-group debt and tax relief. Intra-group transactions (IGT) represent a space of collaboration where these groups often realize various types of transactions between the companies they are composed of. There is not an exhaustive list of transactions that could be realized. The scope of these transactions is huge as far as it relates to selling goods, supplying services, royalties and financial relations. These transactions are the basis of the groups 'activities and thus can become a privileged vehicle to transfer profits through transfer pricing manipulation (Lamorlette and Rassat, 1997).

Taylor and Richardson (2012) develop a proxy measure of non-compliance with the transfer pricing rules based on eight different items. A transfer pricing index was constructed based on the sum of the eight items divided by eight. These items were chosen as representative of aggressive transfer pricing activity as they all involve intra-entity transfers. Collecting such information does not seem possible in the Tunisian context. Through the intra-group transactions, the value of revenues may differ from that of the real revenues (increased or decreased revenue values) and the expenses normally paid may not be those that are actually spent. Therefore, the higher the number of intra-group transactions, the stronger the fiscal management through transfer pricing. Intra-group transactions are measured by transaction number such as purchases, sales operations, capital acquisitions, leases, royalties, services of the billing expenses between companies of the group, and staff mobility between subsidiaries (transactions relating to non-current operations concluded under deemed abnormal conditions by the auditor, article 457 of the Commercial Companies Code) eliminating abnormal transactions relating to intercompany debt (metric variable between 0 and N).

According to Richardson et al. (2013), intra-group debt is significantly associated with the effective tax rate. The more indebted the group is the greater its ability to reduce the effective tax rate. However, if the intercompany debt between related companies does not affect the financial performance of the group as a whole, in fiscal matters it is not the case since there are differences in tax rates between host countries (Chadefaux and Rossignol, 2006). Walsh and Ryan (1997) claims that British companies that lend to their subsidiaries, particularly in countries with higher tax rates, can optimize their overall tax burden. Rego (2003) also shows that the level of debt is negatively associated with the effective tax rate for US companies. Therefore, a parent company of a group is encouraged to re-fund its subsidiaries through debt according to the fiscal situation of each company. In this case, the company will be able to deduct the interest expense from a fiscal base that is subject to a higher rate. Given the specificity of the Tunisian context, the variable included in the model below will be again approximate. The more debts are granted between the parent company and other group subsidiaries, the more developed the tax management seems to be, especially since the companies can be subject to different tax rates. Therefore, the effect of intra-group debt flows will probably be significantly related to the effective tax rate. Only intra-group debt considered by the auditor as abnormal will be retained. The intra-group debt will be measured by the number of intra-group abnormal

debt transactions (metric variable between 0 and N). In the Tunisian context, a member in a group of companies offers a range of tax benefits regulated by the Code of incentives for investments and the tax code on personal income and profits. Reinvestment of profits in companies that are located in regional development areas or totally-exporting companies is one of the most important reinvestments. This tax relief reduces the taxable income of the group. It will be measured by the number of group companies that have received tax relief (metric variable from 0 to N).

Control Variables

Our study includes several control variables relating to the size of the group, the number of businesses that form it, its capital intensity, the stock intensity, return on net assets, the level of foreign debt, industry ,and year. The variable relative to multinational companies of the various subsidiaries of the sample group was not selected because of its weakness in this case (0.05% of the companies are located abroad). Previous research has found conflicting results regarding the size of the group. Gupta and Newberry (1997) claim significant negative effect between the size of the company and the effective tax rate, in contrast with Zimmerman (1983), who finds a significant positive association between the size of the firm and the rate of effective tax. According to Richardson et al. (2012), large companies are likely to be aggressive for tax purposes which leads to a lower effective tax rate. The very measure of size may differ; it may be the natural logarithm of the turnover or, as in Zimmerman (1983), the annual distribution of sales (turnover) .The size will be measured by the natural logarithm of total assets, such as in Richardson et al., (2012). Rego (2003) reports that groups with a large number of companies must have a more effective tax rate than smaller groups. According to Tran (1998), the larger groups benefit more from tax incitements than the smaller ones. In the model below, the number of companies will be taken as a control variable to check if there are significant effects between this variable and the effective tax rate.

Level of debt can be achieved through variable controls because we expect that firms with higher debt-to-equity ratios are more efficient at minimizing corporate taxes (Lanis &Richardson, 2012, Rego, 2003).The higher the debt ratio, the stronger the ability of the group to reduce its income taxes. The deductible interest expense acquired outside the group minimizes the overall charges. On the contrary, Harris and Fenny (2003) find a positive relationship between the level of debt and the effective tax rate. Mill et al., (1998) adopt total liabilities divided total assets as a measure of debt ratio. Lanis and Richardson (2012) are inclined to measure the level of debt by the natural logarithm of the long-term debt divided into total consolidated assets. The external debt level is measured by the external long-term debt of the group divided into total consolidated assets. Capital intensity and stock intensity can be included as control variables. On the one hand, capital intensity is negatively associated with the effective tax rate due to amortization charges (Stickney and McGee, 1982). On the other hand, according to Taylor and Richardson (2012), corporate groups that have a higher stock intensity resort less to fiscal management than the ones with capital intensity. The stock intensity variable will be therefore positively related to tax rates.   The stock intensity variable will not be used for entities within the financial sector. The two variables will be measured as follows: net tangible assets of the group divided into active N-1 and crude Stock divided into active N-1. The ROA (return on assets) variable is included in the model to control the operational performance and the variability of the group's performance. Lanis and Richardson (2011) found a positive association between ROA and the effective tax rate. An increase in ROA necessarily leads to an increase of the effective tax rate (Gupta and Newberry, 1997). The variable will be measured as follows: ROA = Consolidated results before taxes divided total consolidated assets.

The sector is a variable that has a dichotomy with which fiscal management practices may fluctuate (Omer et al., 1993). The different sectors that exist in the Tunisian context are: the industrial sector, the commercial sector, the services sector and the financial sector. We note: SEC = 1, if the parent company belongs to the financial sector, 0 if otherwise.

<u>Base Regression Model</u>

This model aims at observing the impact of different tax practices in corporate groups, such as the number of intra-group transactions, the debt volume of intra-group transactions, and tax relief, on the fiscal financial performance of the group measured by the rate of effective tax. The linear regression model is defined as below:

$$ETR_{it} = \alpha_0 + \alpha_1 IGT_{it} + \alpha_2 IGD_{it} + \alpha_3 TRE_{it} + \alpha_4 GSI_{it} + \alpha_5 NFG_{it} + \alpha_6 LDE_{it} + \alpha_7 CIN_{it} + \alpha_8 SIN_{it} + \alpha_9 ROA_{it} + \alpha_{10} SEC_{it} + \varepsilon_{it} \tag{1}$$

RESULTS AND DISCUSSION

In this study, it is useful to distinguish between quantitative variables and qualitative ones. In the following part of this study; I will elaborate the description of quantitative / qualitative variables and regression results. The analysis of descriptive statistics is an essential preliminary stage to any quantitative study; they can give an overall general condition through the min, max, average and median. Table 2 provides descriptive statistics for the dependent variable and independent variables of interest.

Table 2: Descriptive Statistics of the Dependent Variable and the Variables of Interest

Variables	ETR	IGT	IGD	TRE
Average	18.03%	7.82	0.91	2.06
Max	97.83%	42	8	20
Min	0.02%	0	0	0
Median	17.56%	4	0	1

With ETR=effective tax rate, IGT=intra-group transactions, IGD= intra-group debt, TRE= tax relief. *The following table provides descriptive statistics for quantitative variables, the dependent variable: the Effective Tax Rate (ETR), the variables of interest: Intra-Group Transactions (IGT), Intra-Group Debt (IGD), and Tax Relief (TRE).*

The Table above shows that Tunisian corporate groups pay an average Effective Tax Rate equal to 18.03%, a lower rate than the statutory rate of 35% for financial companies, companies operating in the telecommunication networks, and petroleum companies, 10% for agricultural companies and 30% for other types of companies (article 49 of the Tax Code on Companies states that the tax rate of 30% is reduced to 25% of 30 December of the finance law for the year 2014). The maximum Effective Tax Rate for corporate groups is 97.83%; this rate, which is much higher than the 35%, might be due to a tax adjustment of the group. The minimum rate is 0.02% and is due to tax benefits. The median is 17.56%, which is very close to the average rate. Tunisian corporate groups are averaging 8 Intra-Group Transactions such as purchase and sale operations, capital acquisitions, leases, royalties, services of the billing expenses between companies of the group, and staff mobility between subsidiaries. The number of Intra-Group Transactions varies from 0 to 42 according to the sample, with a median value which remains relatively low at about 4 transactions. Corporate Tunisian groups clearly and quite surprisingly give little importance to borrowing and Intra-Group Debt. Indeed, the average debt among corporate groups is about one single loan between the various subsidiaries.

The maximum number of debts is 8, and the minimum and median numbers are close to 0. Intra-Group Debt comes in the form of loans or the issue of treasury bills between corporate group and contributions in partners' current accounts. In general, under this descriptive analysis of the sample, Intra-Group Transactions appear more frequent than the transactions related to internal debt. Corporate companies that benefited from Tax Relief are 2 on average, with a maximum of 20 companies and a minimum of 0 per corporate group. Most corporate group companies actually reinvest their profits in other companies in order to take advantage of tax relief, for example in totally exporting companies, companies located in regional

development areas or investment companies with venture capital. Table 3 shows descriptive statistics for the control variables.

Table 3: Descriptive Statistics for Control Variables

Variables	CIN	SIN	NFG	ROA	LDE	GSI
Average	17.48%	18.86%	12.19	7.31%	27.66%	19.66
Max	80.85%	106.88%	98	90.09%	90.68%	22.80
Min	0.00%	0.00%	2	0.05%	0.00%	13.24
Median	3.95%	14.39%	8	3.74%	20.51%	19.15

With CIN=capital intensity, SIN=stock intensity, NFG=number of firms in the group, ROA=return of assets, LDE= level of debt, GSI= group size. *This table presents the descriptive statistics for control variables: Capital Intensity (CIN), Stock Intensity (SIN), Number of Firms in the Group (NFG), Return On Assets (ROA), Level of Debt (LDE), and Group Size (GSI).*

This Table reports that a Capital Intensity Variable (CIN) and Stock Intensity (SIN) have respective averages of 17.48% and 18.86% and a median of 3.95% for (CIN) and 14.39% for (SIN). An economic sector is generally considered low with a capital ratio of 10%, medium with a capital ratio of 50%, and capital-intensive if the ratio is higher. The results of this study show that in the Tunisian context, the industries of these companies have a low Capital Intensity, especially in Tunisia, a country that does not have a naval or car industry and where most groups work in the textile and food areas. The Stock Intensity ratio is also low on average. The Table also shows that a Tunisian group has an average of 12 subsidiaries; the maximum number is 98 in the sample. It is reasonable to assume that the greater the number of subsidiaries, the more internal transactions in the firm thus allowing more room to manage down the effective tax rate. Tunisian group companies have an average ROA equal to 7.31%. The rate varies from 0.05% to 90.09%; the median is 3.74%. The average debt ratio is 27.66% and the maximum value is 90.68%. Finally, the average group size is 19.66 with a value between 13.24 and 22.80. The median is a value close to the average, 19.15. Table 4 shows descriptive statistics for the discrete control variables.

Table 4: Descriptive Statistics of Discrete Control Variables

Binary Variable	V1 (Variable Is Set to 0)		V2 (Variable Is Set to 1)	
	Number	Percentages	Number	Percentages
COM	141	89.24%	17	10.76%
IND	93	58.86%	65	41.14%
SER	146	92.41%	12	7.59%
FIN	93	58.86%	65	41.14%

With COM= commercial, IND= industrial, SER= services and FIN= financial This table shows descriptive statistics for qualitative variable ,related to commercial, industrial, services and financial.

This Table shows that industrial and financial parent societies represent more than 82.24% of the whole studied sample. They represent the majority of the group member companies listed on the Tunis Stock Exchange Securities. These companies are numbered 65 in each of the two sectors, representing 41,14% by sector. The sample is also composed of 17 groups of commercial parent societies (10.76%) and 12 companies in the service sector (7.59%). Table 5 shows the results.

Table 5: Results of the Model Estimations

Explanatory variables	Predicted Signs	Coefficients	Significance
IGT	-	-0.0059***	0.001
IGD	-	0.0230	0.145
TRE	-	-0.0207***	0.000
CIN	-	0.0629	0.476
SIN	+	0.0606	0.557
NFG	+	0.0052***	0.000
ROA	+	-0.2330***	0.000
LDE	+ /-	0.0040	0.930
FSE	+ /-	0.0584	0.497
GSI	+ /-	0.0062	0.544
CSE	+ /-	0.1380	0.100
ISE	+ /-	0.0907	0.226
SES	+ /-	0.0156	0.725
Constant = 0.0213599			
R-squared = 0.2005			
Z= -0.11			

*With***Significant correlations 1% and ** 5%. IGT = Intra-Group Transactions IGD= Intra-Group Debts, TRE= Tax Relief, CIN= Capital Intensity, SIN= Stock Intensity, NFG=Number of Firms in the Group, ROA= Return On Assets, LDE =Level of Debt, FSE= Financial Sector, GSI= Group Size, CSE= Commercial Sector, ISE= Industrial Sector, SES= Service Sector. Table 5 reports the regression results for our base regression model.*

Table 5 reports our regression results. We find an interaction effect between Effective Tax Rate and Intra-Group Transactions on one side and tax relief on the other side. So, two hypotheses have been validated: H1: the practice of tax management (the importance of intra-group transactions) has a negative impact on the Effective Tax Rate and H3: the practice of tax management (Tax Relief) has a negative effect on the Effective Tax Rate. Thus, our regression results show that firms are likely to employ a variety of tax avoidance practices to avoid the payment of corporate taxes, including transfer pricing, and tax relief: the variables relative to the number of intra-group transactions and tax relief are inversely proportional to the effective tax rate.This result seems to be consistent with the assumptions of the theoretical framework, and are therefore confirmed. Tunisian groups commonly use tax management practices such as Intra-Group Transactions and Tax Relief to minimize their Effective Tax Rate. The use of tax relief is explained by the fact that the Tunisian legislation wants to provide a particular advantage to encourage investment. Indeed, Tunisian corporate groups invest in other companies in order to increase tax saving. Furthermore, a significant number of Intra-Group Transactions leave open doors for companies to display advantageous transaction prices from which they would derive a tax benefit since there is a tax disparity between subsidiaries. This confirms the findings of Taylor and Richardson (2012) which claim that thin capitalization, transfer pricing, income-shifting, multinationality and tax haven utilization are significantly associated with tax avoidance. Indeed, based on the magnitude and significance levels of the regression coefficients, the use of thin capitalization and transfer pricing is the primary driver of tax avoidance. However, in the Tunisian context, our results do not reveal a significant relationship between the number of transactions related to the debt and effective tax rate. Hypothesis 2 in the presented theoretical framework (the practice of fiscal management through the importance of intra-group debt has a negative impact on the effective tax rate) is thus not validated.

The descriptive statistical analysis reveals that the average intra-group debt is about one loan between the various subsidiaries. It is normal that the results show no significant correlation between ETR and IGD. Tunisian groups don't shift debt and related deductions to higher tax rate. These results show that, in order to avoid corporate taxes, groups use transfer pricing and tax relief. At the level of control variables, capital intensity, stock intensity or the size of the group, the level of debt and the difference between sectors show no significant effects on the effective tax rate. On the contrary, a significant and negative effect appears between ROA and the effective tax rate. These results contradict the findings of Lanis and Richardson

(2011), which positively associate the ROA and the effective tax rate. The negative relationship between ROA and ETR may be explained as follows: while anticipating soaring results, the groups are more motivated to mobilize tax management techniques than to reduce the tax base. On the contrary, when anticipating declining profits, the groups are less likely to resort to such practices.

CONCLUSION

This paper examines the corporate tax avoidance practices of publicly listed Tunisian corporate groups. Based on a hand-collected sample of 36 publicly listed Tunisian groups over the 2007–2011 period, we find that Tunisian listed groups use a number of corporate tax avoidance practices to reduce their corporate tax liabilities. The approach used in the Tunisian context is particularly innovative since such studies are uncommon by their very nature. Several recent academic studies have examined the practices and methods used by companies to reduce their tax burdens. Taylor and Richardson (2012) in particular, have attempted to examine the impact of the capital structure, the transfer price, the scale of multinational operations, and the installation of the corporate group subsidiaries in tax havens on the effective tax rate. We find that thin capitalization, transfer pricing, income-shifting, multinationality and tax haven utilization are significantly associated with tax avoidance.

Throughout this article, we tried to shed the light on intra-group tax management practices aiming to reduce the tax burden of the group. We have concluded that intra-group transactions and tax relief are significantly associated with effective tax rate. This practice is explicitly introduced and encouraged by the government as an incentive for investment. It can thus be considered as more legitimate and less aggressive than the other fiscal management practices that aim at tax optimization. This study is subject to several limitations. First, the sample is drawn from publicly listed Tunisian corporate groups since we couldn't include unlisted group companies to our sample because of data unavailability. Second, a numerical measure (instead of a binary one) of tax relief and more precise measurements of variables such as transfer price and intra-group debt may lead to further findings. In conclusion, future in-depth studies could provide analysis of the particular effect of tax management on various corporate performance indicators like reduced cost of capital, increased investment etc.

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USAGE AND PERCEPTIONS OF FRAUD DETECTION AND PREVENTIVE METHODS: EVIDENCE FROM MAURITIUS

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ABSTRACT

The aim of this study is to assess the extent to which junior auditors, senior auditors and professional accountants use fraud prevention and detection methods, and their opinions regarding the effectiveness of these methods in the Mauritian context. A questionnaire was designed and sent to ten most reputed companies including the Big 4 firms. 120 junior auditors, senior auditors and professional accountants responded successfully. The results shows that the techniques mostly adopted to combat fraud are bank reconciliation, staff rotation, cash reviews and password protection. However, virus protection, discovery sampling, reference checks on employees and vendor contract reviews were not often used. In contrast to other prior studies, methods which were frequently used on overall were the ones which have highest mean effectiveness ratings. This study sheds light on the least and most frequent fraud detection and prevention methods used in Mauritius by accounting practitioners. Organization should concentrate on creating an integrated strategy to combat and control any kind of potential risks instead of dealing with each issue separately. Also, organizations should weight up the significant intangible benefits against direct costs of combating fraud. Moreover, organizations should make sure that each abide to the policies and are well aware of the consequences of any malpractice. Finally, this study adds to the existing literature on perceptions of fraud detection methods. To the authors' prior knowledge, this is the first formal study in the Mauritian context.

INTRODUCTION

Fraud is defined differently depending on the context. The most common way of definition is derived as a false representation, act of dishonesty or an intentional step of deceit with the aim to gain an unfair advantage. As stated by Thomas and Gibson (2003), despite the fact that larger firms are more exposed to financial crimes and frauds, the smaller enterprises are also attained by such malpractices where the impact is however more serious as the damage is not easily recovered due to lack of finance and other constraints. Being involved in fraudulent activities may prove to be very costly for an organization in terms of the firm's image, the employee's motivation and may even worsen the relationship with different external stakeholders. Therefore, many organizations take different initiatives to eliminate the risks of fraud which are not necessary effective as they have a tendency to handle each case individually instead of implementing a long run strategy to combat the overall problem. The failure of internal auditing system to prevent such malpractice has led to the use a more effective system known as the forensic accounting.

According to the KPMG's fraud survey (2003), more companies have been lately confronting incidents of fraud than in previous years. This view concurs with PWC (2009) report which further added that the global economic accounting fraud has become more alarming. As such, measures have to be adapted to combat fraud and new antifraud initiatives and programs.

Based on by Bierstaker et al (2006),"The growth in fraud cases indicates that a strong need exists for research approaches that better enable auditors and investigators to prevent". Given the importance of this topic, there have not been till now any relevant formal study in Mauritius. To this end, this study looks at the different methods adopted in fraud detection and preventive methods in the organizations along with its effectiveness.

The remainder of this paper is organized as follows. The next section reviews prior research related to fraud detection and prevention methods. Thereafter, we discuss on the design, sample and research methods used in this study.The fourth section analyzes the data collected while the last section concludes the study.

LITERATURE REVIEW

Fraud is the act of cheat or misleading others in order to gain an advantage, which is categorized in two ways known as the misappropriation of assets where the physical assets of an organization is stolen or used for personal use and the fraudulent financial report where information is manipulated. Based on ACFE report (2012), approximately $3.5 trillion around the world were lost out of fraud, misuse of assets and corruptions. Added to this, a survey designed by KPMG (1998), for CEO and CFO determined that 5000 reputed US companies loss on average $116 000 per fraudulent incident while it is estimated that around $600 billion are lost annually by US companies in fraud or theft. The most cited case of fraud is the case of Enron (2001) and the case of WorldCom (2001). Sherman (1999) hence claimed that due to these increase in worldwide scandals, awareness of fraud has been propagated and that auditors have been assigned the duties to investigate and report any suspicious activity, which however is not the situation despite the implementation of Sarbanes Oxley Act (2002) which as per Andersen (2004), focus mainly on punishment and accountability rather than insisting on ways to prevent frauds. The forensic accounting has therefore been introduced to prevent such malpractices and as stated by Bhasin (2007), the accountants are required to have adequate skills beyond the numerical transactions. The illegal acts determine the evidences and have the ability to handle any accounting crime.

There are indeed a number of studies carried in different countries to look at the views and impact of fraud.For instance, Modogu (2013), in a study of financial fraud and forensic accounting in Nigeria emphasizes on the rising level of fraudulent activities, which is nowadays considered to be normal in the environment. The research hence proposed to look at the effectiveness of forensic accounting in controlling fraud and what are the measures required to improve the situation. A survey was designed and circulated 143 auditors, preparers and users of financial statements. The responses proved that the majority of the candidates agreed with the effectiveness of forensic accounting in controlling fraud and improving the reporting system but that the accountants is bound to be vigilant in order to resolve the problems. It was also recommended that different association and the government should engage themselves to propagate awareness of forensic accounting and encourage the formulation and specialization in this particular field. Another study by Bierstakerat al. (2006) emphasizes on the accountant's perception with regards to fraud detection and prevention methods in the US. The project was based on a survey which was circulated to accountants, internal auditors and certified fraud examiners where 86 individuals successfully responded. The result proved that virus and password protection, firewalls, internal control were the most effective methods adopted to combat fraud, while forensic accountants, digital analysis, staff rotation, data mining and employment contracts are rated as

the least effective. It is hence recommended that the accountants should explore the usefulness of the techniques and methods defined to better monitor and control frauds.

Techniques Used by to Combat Fraud

As stated by Bierstaker et al (2006), there are various common methods utilized by external auditors to combat fraud and some are as follows.

Staff rotation: Staff rotation is the process of rotating the employees regularly. This technique help in reducing the risks as the delegated tasks will be assigned to someone else at an interval. The staffs would hence hesitate to commit an illegal act reducing the risk of fraud as the employees are conscious that there is a higher probability that the fraud and he culprit is exposed.

Inventory observation: Inventory is generally dealt with in large volumes giving rise to the exposure of risks, as many employees can have access and may case a fraudulent act. Inventor observation is hence very important as it validates the quantity received and each movement of the inventory is recorded to be observed to detect any misuse of the asset.

Bank reconciliation: This method looks at matching the cash balance of the bank with the statements of the company. If the two balances are not equal, investigation is made to determine the reason which might be a cause of fraud or an arithmetical error. As such the reason of the mismatch is find out. The reconciliation should however be made by an independent person not having the responsibility of book keeping to avoid a bias result to cover their mistakes.

Fraud reporting policy: It is important for any organization to create and respect a specified policy concerning fraud known as the fraud policy. This policy is not included in other policies such as code of ethics and of corporate governance so as to clearly guide the employees of their actions and its consequence on the firm's performance. The organization should however make sure that each employee is aware of the composition of the policy and have understood the guidelines defined.

Employee reference checks: This method is about the employer considering the background and the previous employment of the person to be employed. The references are contacted so as to avoid employing a dishonest person and to have feedback about the person. It is better the employer calls the previous organization itself to ask for the reference to have information instead of calling the reference directly as it may be a misrepresentation.

Vendor Contracts: It is also a good measure to regularly review contracts and agreements made with the different stakeholders. This will help the employees and others to be aware of their rights and the consequences of their acts, which would finally reduce the exposure to bribery, enjoying undeserved personal benefits or other kinds of fraud.

Cash reviews: The cash reviews is about checking and ensuring the amount being transacted is accurate. This process therefore requires the authorization of two executives simply to ensure no employee is being treated more favorably than others. The amount being transferred is hence checked twice as a preventive measure.

Virus protection: Cybercrimes has been increasing along with the modern way of doing business online. The situation thus requires more precaution and an increase in the security level to avoid hacking and other such malpractices. If an unknown user is detected who is trying to collect information, a firewall software can hence be set to control the overall access and preventing the possibility to transmit information while the firewall hardware make the IP address invisible to other parties which reduces the potential risks.

Financial ratios: The enterprise usually observes the trend of their ratios which may also be predicted. A sudden unexpected change may be caused by a fraudulent activity. The accountants of the firms should hence conduct an analytical review where a depth investigation of the financial statements is carried out to detect the source and find remedial actions. Different ratios are calculated to analyze different assets and liabilities.

Discovery sample: Discovery sampling is the technique where a sample population is targeted and observed the trend so as to find out if it includes any sign of fraudulent activity. Even if a minor situation of fraud is noted, the process is interrupted for further investigation to determine the source and the culprit.

Password protection: Furthermore, since more frauds are being committed through the use of internet, more protection is required in the e-commerce sector. The principle preventive act is hence the process of integrating the password approval which despite being an ancient defense is still the most effective tool in detecting and combating fraud. Modern ways of inputting password is by using biometric information to identify the respective user such as fingerprint or even voiceprints. The auditors should also make sure that only their respective employees have access to the network and that their identity and transactions are recorded.

Forensic accounting: Despite the existence of these techniques, fraudulent activities are still prevailing giving reason to adopt the forensic accounting as it consists of in depth investigations to unveil the criminal activities and the culprit. Considering the methods adopted by forensic accountant, the first method is the interview technique which as defined by Bronner (2011), is the process of making the suspect confesses his offence. The culprit is questioned and all the minor reaction is observed. The next factor is data mining techniques stated by Clayton et al (2006), where the accountants study the trends of transactions and if suspicion occurs due to a curious activity, an investigation is carried out. There is also a specified software known as metadata used to record details of computer files which shows detail of a transaction and the user modifying the record. Finally as per the view of Smith (2005), financial fraud is linked to the use of computers and as defined by Gavish (2007) and Dixon (2007), computer forensic is an effective tool to prevent such malpractices as it is the process of detecting and to prevent crimes which is recorded digitally.

However previous research such as Ernst & Young (2003), proved that despite being a very effective method, only around 20% of organizations around the world adopted forensic accounting to combat fraud. Also, according to Sonkushre (2012), the process of forensic accounting involves analysis of the statements of the organizations which is subject to violation of confidentiality, despite being against the rules and that the computer system required for the forensic accounting is expensive which a matter of concern for an organization.

DATA AND METHODOLOGY

The purpose of this study is to consider the extent to which the fraud prevention and detection methods are used by accountants and auditors in Mauritius. Questionnaires were designed to determine to know what are the techniques and measures considered in order to combat financial fraud. The questionnaire was designed following mainly the study of Bierstaker et al (2006). In order to meet the objectives set, both primary and secondary data collection methods were adopted as information were also collected from articles, past research papers and websites. Questions were set both ordinal and nominal types where the data collected were ultimately analyzed and represented using the software SPSS package.

The survey was conducted during 2015 and questionnaires were physically distributed to 10 reputed companies including the Big 4 firms obtained from Financial Reporting Council Online. The targeted

number of respondents was initially set at 200. However, only 120 employees mainly senior auditors, junior auditors and professional accountants responded successfully to the questions.

RESULTS

This section analyses the data collected. The demographic factors are determined and the techniques adopted to prevent fraud along with its effectiveness are evaluated.

Demographics Factors

As shown by Table 1, there are in all 120 participants and about 73% of them are from the age group of 21-30, followed by the age group of 31-40 with a percentage of 16.7. It was also noted that 64 respondents had only an undergraduate degree as qualifications while 28 had a postgraduate or ACCA qualifications. Although a quite high number of respondents had limited working experience (less than 1 year experience), there were more than 50% of the respondent who had more than one year experience. Overall, participants are dissimilar in terms of their years of experience, certifications held and age groups.

Table 1: Demographic Profile of Respondents

		Frequency	Percent
Age group	up to 20 years	6	5.0
	21 to 30	88	73.3
	31 to 40	20	16.7
	41 and above	6	5.0
Qualifications	Undergraduate	64	53.3
	Postgraduate	28	23.3
	Other-ACCA	28	23.3
Years of experience	Less than 1 year	44	36.7
	1-5 years	50	41.7
	6-10 years	19	15.8
	Above 10years	7	5.8

This table shows the respondents' personal characteristics from the survey.

Tools and Techniques Adopted by Traditional Auditors

Participants were asked to indicate the different methods used by their companies to detect and combat fraud. These measures were reference checks on employees, virus protection, vendor contract reviews, financial ratios, discovery sampling, staff rotation, fraud reporting policy, password protection, inventory observation, bank reconciliations and Cash reviews. In addition, respondents were asked to consider the effectiveness of these anti-fraud detection procedures used in their companies on a scale from 1 (completely effective) to 5 (completely ineffective). The results obtained are shown in Table 2 and the items are ranked in terms of their usage.

The most commonly (more than 80% usage) used methods to prevent fraud is bank reconciliation, staff rotation, cash reviews and password protection while the least methods which are used are virus

protection, discovery sampling, reference checks on employees and vendor contract reviews. The results are in sharp contrast with Bierstaker at al. (2006) where virus protection was the most commonly used method in the US. One could infer that most companies do not adequately make use of these fraud detection and preventive methods in Mauritius due to the fact that these methods might be perceived to bring additional high administrative costs. With regards to the effectiveness of the fraud detection methods, there seems to be a general consensus that most the methods are quite effective with all mean score being less than 3. The most effective methods to combat fraud seem to be the cash reviews, bank reconciliation and password protection. It seems that on overall, the most effective methods are being mainly used in Mauritius given that there is more than 70% usage for the top six most effective methods.

Table 2: Usage and Effectiveness of the Techniques to Combat Fraud

Techniques of Combating Fraud	% of Usage	Mean Effectiveness	Effective Ranking
Bank reconciliations	89.20%	2	2
Staff rotation	89%	2.267	6
Cash reviews	86.70%	1.942	1
Password protection	84.20%	2.15	3
Inventory observation	76%	2.15	4
Financial ratios	75%	2.4	7
Fraud reporting policy	73.20%	2.267	5
Vendor contract reviews	67.50%	2.417	9
Reference checks on employees	62.50%	2.433	11
Discovery sampling	61.70%	2.41	8
Virus protection	57.50%	2.425	10

This table shows the respondents' views on the usage and effectiveness of the techniques to combat fraud.

Demographic Factors, Usage and Effectiveness of the Techniques to Combat Fraud

Analysis is conducted to assess on whether the perception on the degree of effectiveness and usage of those anti-fraud methods are dependent on the different profile of the respondents. The aim is to validate whether there is a general consensus on the perceptions of the fraud detection and preventive methods. The Pearson Chi Square tests have been conducted to determine whether the effectiveness and usage of the techniques is associated with the demographic profile of the respondents. As illustrated by Table 3 and 4, the significant value was determined for each factor with respect to the age groups, qualifications and years of experience of the respondents. From Table 3, one can observe that there is no association between age groups and the perception on the usage of anti-fraud methods. With the exception of fraud reporting policy, there are no association between the level of qualifications and the techniques of combating fraud. Similarly, accountants with varying years of experience seem not to influence the usage of anti-fraud policy except for cash reviews.

With regards to the effectiveness as shown in Table 4, the age group has no association at all with any techniques to combat fraud implying that the effectiveness is define the same way for the different accountant of different age groups. Based on the qualifications of the accountants, only the password protection is associated as the methods in combating fraud with a significant value less than 5%. As such, respondent with different qualifications react differently to this specified method. Based on the respondents' years of experience, perceptions seem consistent overall except for the financial ratios technique. On overall, with very few exceptions, there seems to be a general agreement and perceptions on the use and effectiveness of anti-fraud measures, irrespective of the profile of the respondents.

Table 3: Demographic Profile and Usage of the Techniques to Combat Fraud

Techniques of Combating Fraud	Age Group		Qualifications		Years of Experience	
	Chi-Square	Sig.	Chi-Square	Sig.	Chi-Square	Sig.
Staff rotation	12.656	0.395	13.361	0.100	18.356	0.303
Inventory observation	12.705	0.176	5.990	0.424	14.384	0.277
Bank reconciliations	9.189	0.420	9.108	0.168	12.913	0.375
Fraud reporting policy	5.093	0.826	16.680	0.011**	17.958	0.117
Reference checks on employees	9.800	0.634	5.879	0.661	18.361	0.303
Vendor contract reviews	3.531	0.939	6.563	0.363	8.480	0.747
Cash reviews	11.814	0.224	3.398	0.757	19.331	0.081*
Virus protection	12.864	0.379	6.524	0.589	8.926	0.916
Financial ratios	4.345	0.887	1.589	0.953	13.095	0.362
Discovery sampling	5.319	0.806	8.043	0.235	11.808	0.461
Password protection	5.146	0.821	3.576	0.734	12.674	0.393

*This table shows the relationship between the usage of the techniques to combat fraud and the demographic profile of the respondents. *, ** and *** indicate significance at the ten, five and one percent levels respectively.*

Table 4: Demographic Profile and Effectiveness of the Techniques to Combat Fraud

Techniques of Combating Fraud	Age Group		Qualifications		Years of Experience	
	Chi-Square	Sig.	Chi-Square	Sig.	Chi-Square	Sig.
Staff rotation	4.937[a]	0.960	7.427[a]	0.491	12.835[a]	0.381
Inventory observation	12.561[a]	0.183	6.266[a]	0.394	6.036[a]	0.736
Bank reconciliations	6.103[a]	0.730	4.608[a]	0.595	5.565[a]	0.783
Fraud reporting policy	**19.879[a]**	**0.069***	9.268[a]	0.320	16.682[a]	0.162
Reference checks on employees	8.001[a]	0.785	8.996[a]	0.343	10.650[a]	0.559
Vendor contract reviews	4.854[a]	0.847	3.953[a]	0.683	5.159[a]	0.820
Cash reviews	6.677[a]	0.671	1.933[a]	0.926	13.723[a]	0.133
Virus protection	15.239[a]	0.229	6.679[a]	0.572	11.747[a]	0.466
Financial ratios	9.478[a]	0.662	6.295[a]	0.614	**35.709[a]**	**0.000***
Discovery sampling	14.275[a]	0.283	5.142[a]	0.742	10.715[a]	0.553
Password protection	5.752[a]	0.928	**16.958[a]**	**0.031****	7.962[a]	0.788

*This table shows the relationship between the effectiveness of the techniques to combat fraud and the demographic profile of the respondents. *, ** and *** indicate significance at the ten, five and one percent levels respectively.*

Firm Size and Anti-Fraud Methods

From the previous discussion, the data was collected based on 120 surveyed participants working in 10 reputed firms which included the big four companies in Mauritius. Based on Bierstaker et al. (2006), "it was expected that firms with greater revenues would have more resources to devote to technology and fraud prevention, thus accountants' use of these methods should be greater at larger firms". To this end, the usage of anti fraud methods was analyzed based on the firm's size. The results are shown in Table 5.

Table 5: Firm Size and Usage of the Techniques to Combat Fraud

Techniques of Combating Fraud	% of Usage Overall	% of Usage Big 4 Firms	% of Usage Other Firms
Bank reconciliations	89.20%	83.33%	92.31%
Staff rotation	89%	90.48%	84.62%
Cash reviews	86.70%	88.10%	82.05%
Password protection	84.20%	78.57%	73.08%
Inventory observation	76%	69.05%	76.92%
Financial ratios	75%	80.95%	69.23%
Fraud reporting policy	73.20%	69.05%	66.67%
Vendor contract reviews	67.50%	59.52%	65.38%
Reference checks on employees	62.50%	69.05%	58.97%
Discovery sampling	61.70%	71.43%	56.41%
Virus protection	57.50%	66.67%	52.56%

This table shows the relationship between the usage of the techniques to combat fraud and firm size.

One clear pattern which is observed is that the most preferred methods from accountants seems to be bank reconciliation, staff rotation and cash reviews irrespective of firm's size. However, virus protection seems to be a much more common practice use from big 4 firms. Essentially, these results are consistent with the fact that smaller companies are reluctant to invest in anti-fraud technology because of concerns about cost. Smaller firms have also a tendency to do reference checks on employees. According to Thomas and Gibson (2003), anti-fraud measures are much more needed for smaller entities since fraud may be costlier to them.

CONCLUDING COMMENTS

This study emphasizes on the use and effectiveness of different techniques adopted by companies to reduce the scope of fraud and malpractices within an organization. As per the findings, the techniques mostly adopted to combat fraud are bank reconciliation, staff rotation, cash reviews and password protection. However, virus protection, discovery sampling, reference checks on employees and vendor contract reviews are less often used. With regards to the effectiveness of these methods, the results suggest that the most perceived effective methods on overall seem to the ones which are frequently used. It was also found that virus protection is most frequently used in larger firms rather than smaller ones. Also, smaller firms seem to have less recourse on reference checks on their employees. An implication of this finding could be the smaller firms should be more aware of the relative higher impact of fraud than larger ones. Organizations should weight up the significant intangible benefits against direct costs of combating fraud. Besides, organizations should make sure that each abide to the policies and are well aware of the consequences of any malpractice. Furthermore, this study sheds light on the least frequent fraud detection and prevention methods used in Mauritius by accounting practitioners. To this end, management could consider investing on these methods which are under utilized to enhance the effectiveness of their anti-fraud methods. To this end, organization should focus on creating an integrated strategy to combat and control any kind of potential risks instead of dealing with each issue separately. Furthermore, there could be different possible future research in terms of extending this study by either taking into account views from other types of practitioners or considering other firms in different sectors. Finally, one must recognize that the above study contains one main limitations in terms of the small sample size. However, the data is consistent based on the reliability tests undertaken.

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EMPIRICAL ANALYSIS OF REAL CREDIT RISK DATA

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ABSTRACT

One important issue related to credit risk is the analysis of rating transitions and default rates. This consists of examining changes in the rating that international organizations give to firms that agree to be inspected. In this paper real credit risk data from the historical Standard & Poor's database are used to calculate the actual cumulative default rate. I calculate the indicator considering both the starting rating class assigned to the firms and the elapsed time in the state before the default. The first part the paper points out that essentials of the credit rating and presents some descriptive statistics of the S&P historical database. Next, the paper shows the cumulative default rates of the financial instruments recorded by means an empirical model. The model considers two fundamental facts that standard reports do not contain. First, I consider the time elapsed in a given class before a rating change. I also consider the rating assessment named NR (No Rating) which represents the biggest class of ratings in the database.

JEL: G11; G21; C11; C33

KEYWORDS: Standard and Poor's Rating Data, Empirical Model; Default Rate; Rating Transitions

INTRODUCTION

This paper deals with computing the Cumulative Default Rate (CDR) through the analysis of rating transitions and considering the time elapsed within a rating class. CDR is one of the most important indicators of credit risk. The computation of CDR is performed by using the biggest database in the world containing real data on credit risk: the historical file from Standard and Poor's company. The paper analyzes the rating history of 298,125 financial instruments that were rated by Standard and poor's in the time horizon January 1, 1981 to December 31, 2008. There are a growing number of people who consider it useful to assign a score to credit. As a result, the number of individuals, businesses and public institutions that have borrowed money from investors rather than banks gets bigger. Moreover, the universe of investors and market players trying to increase their capital by investing in the stock exchange, because of the return earned from good investments, grows ever more. Financial institutions such as banks and insurance companies take a credit risk by granting loans. They also carry debt of other companies or the central governments. Conversely, commercial companies normally assume a credit risk negotiating products in exchange for payment. Therefore, a risk measure of default rates of the financial instruments issued by companies and institutions is compulsory. Literature about modeling methods for credit scoring is wide and plenty, ranging from logistic regression, classification trees, linear programming, neural networks and stochastic processes. Also, banks and rating agencies continuously publish default rates in a huge number of technical reports.

The analysis performed in this paper adds to the existing body of literature by considering the backward time into CDR calculation. Indeed, the CDR evolution depends not only on the starting rating class assigned to the financial instruments analyzed but also on the elapsed time in a given rating class before the default. In addition, it treats in a special way the rating withdrawals that, because of their large number, deserve special attention. The remainder of the paper is organized as follows. The next section describes the essentials of credit rating and the relevant literature. Next I discuss the data and how the database used is organized. Then I explain the empirical model used. The results are presented and

discussed in the following section. The paper closes with some ending comments and some suggestion for further research.

LITERATURE REVIEW

Credit risk traces its origin back to 1860 when the authors Poor and Varnum (1860) underlined the lack of quality information available to investors and publicized details of corporate operations. Only in 1975 did the United States Securities and Exchange Commission (SEC) fix a set of rules to paper. John Moody in 1909 proposed a method for credit quality evaluation and the first credit ratings were published in 1916 by Poor's Publishing Company. Afterwards, the work of US Securities and Exchange Commission (1975) integrated the Security Exchange Act of 1934 (the law governing the secondary trading of stocks, bonds and obligations). It set rules about bank and broker-dealer net capital requirements and established that the safety of securities held by entities must reflect in their credit ratings. Domestic and foreign agencies identified as nationally recognized statistical rating organizations (NRSRO) can assign credit ratings.

The works of Basel Capital Accord (2001) reinforced the trend to identify rating agencies. Later, the SEC issued several rules aimed at assigning a proper role of ratings in the securities laws and at identifying formal procedures for labelling and surveying the activities of NRSRO. In particular, see the Sarbanes-Oxley Act (2002), the Credit Rating Agency Reform Act (2006) and the Updates Credit Rating Agency Reform Act (2007, 2008). The latter specifically deals with the rationale for Residential Mortgage-Backed Securities and Collateralized Debt Obligations. These are linked to subprime residential mortgage-backed securities, overall recognized as the first cause of the worldwide financial crisis. Additional details are available on the Website www.sec.gov/divisions/marketreg/ratingagency. Currently ten organizations are designated as NRSRO (five from United States, two from Canada and three from Japan). Moody's and Standard & Poor's are the oldest, most widely respected, and by far the largest among them. They cover about 80% of the global assessment of ratings. More details on the problem of credit risk in general and on the credit risk modeling can be explored, for example, in books by Bluhm et al. (2002), Chacko et al. (2006), Lando (2004), Trueck and Rachev (2009) or in the Websites www.standardandpoors.com and www.moodys.com.

Measures of credit risk are useful because it simplifies the issues of securities and allows purchasers of bonds to identify a qualified measure of the relative credit risk. The higher the measure, the lower the interest rate the issuer must pay to attract investors. In contrast, an issuer with a bad credit risk score must pay a higher interest rate to offset the greater risk assumed by investors. The argument to measure and to manage credit risk by using the history of transitions from one rating to another has been thoroughly studied in literature. The interested reader can refer, for example, to books by Arvanitis and Gregory (2001), Ammam (2002), Duffie and Singleton (2003), Bluhm and Overbeck (2007) or to papers by Finger (2000), Nickell et al. (2000), Bangia et al. (2002), Hu et al. (2002), Christensen et al. (2004), Perry et al. (2008) and Nickerson (2016). In particular Hamilton and Cantor (2006) exposed the Moody's corporate default rate calculation method and discuss the difference between adjusted and not adjusted CDR for rating withdrawals. To acquire more details about other mathematical models for the credit score such as logistic regression, classification trees, linear programming and neural networks the interested reader can refer to Zmijewski (1984), Tucker (1996), Atiya (1997), Hand and Henley (1997) or Vojtek and Kočenda (2006).

DATA DESCRIPTION

This section provides a detailed description of the data used, of the variables involved and other fundamental information. Since the file used for CDR calculation contains a huge number of data points, I manipulate the data as described below. Used data are taken from the S&P rated universe. The database refers to files about entity ratings history, instrument ratings history and issue/maturity ratings history.

The histories of the rating at our disposal cover the period 1922-2008. For statistical reasons, the empirical computation of default rates considers the time horizon from January 1, 1981 to December 31, 2008. This section provides a description of the main variables in the database. Moreover, it provides the values the variables can assume. Let us present the basic terms used by S&P. The term entity (or issuer) includes any issuer or enterprise able to sell pieces of paper that have any monetary value, such as stocks or bonds. The terms *instrument* and *issue/maturity* (or issues) include any individual debt issue by the entities at a particular time and refers to specific maturities and/or programs. The difference between the second and third data file mentioned concerns different numbers and types of respective market identifiers. To calculate the CDR the database has been managed first by merging the files about instrument ratings history and issue/maturity ratings history and then considering the following variables:

The *entity identifier* and the *instrument identifier*. The latter connects with the issuer. It is possible to link one file to other because there are many intersections between them. That means S&P rates not only issuers and stocks/bonds individually but also structured securities and their corporate counterparts as well. The *sector* variable defines the belonging of each record to Global Issuers, Structured Finance, Public Finance and Managed Funds. A record is the basic information needed to carry out the empirical model employed in this paper. Each record, that is each piece of information, represents a first rating assessment or a rating check, at the respective dates, made for the entities and the debt instruments considered. For the Public Finance sector, notice that only United States public companies are included in the database. The *subsector* variable describes the belonging of the entity or the instrument to Corporations, Insurance companies, Financial Institutions, Utilities, Governments (local or regional), Public Finance (U.S.), Servicer Evaluations and Sovereigns. These are usually collectively refereed to with the general term *corporate*. The sub sector variable may also assume six other values that represent a wide range of structured debt issuance with various characteristics. They mainly include consumer debt such as residential mortgage, credit cards, auto, student loan-backed securities and commercial assets such as commercial mortgages, as well repacking of corporate and structured debt securities. Such securities are usually associated with the term *structured finance*. The *region* variable describes the belonging of entities or instruments to Asia-Pacific, Australia/New Zealand, Canada, Emerging Markets, Europe/Middle East/Africa, Latin America or United States. Table 1 shows the total number of entities and instruments long term rated by S&P, depending on their geographical collocation.

Table 1: Number of Entities and Instruments by Region

Regions	Asia	Auszn	Canada	Emerging	Euromidaf	Latin America	USA
Entities	1,378	600	634	2,336	5,177	1,138	14,200
Instruments	14,476	11,902	13,241	19,278	61,631	13,180	155,640

This table shows the number of entities and financial instruments that have a long term rating assessment by Standard and Poor's depending on their geographical collocation.

The total number of rated entities equals 24,928 and that of financial instruments equals 298,125. All records without a long term rating were deleted from the dataset. The number of financial instruments, in all regions, is much larger than that of the entities. So, to keep statistical significance, only instruments are considered in computing the CDR. The *rating* variable represents the long-term credit rating assessed by S&P to entities and instruments. Credit ratings express an opinion of an agency specialized in evaluating credit risk about the ability and willingness of an entity to meet its financial obligations in full and on time. Moreover, they express an opinion about the credit quality of a single debt instrument. The issue credit rating considers the creditworthiness of guarantors, insurers, or other forms of credit improvement on the obligation and takes into account also the currency in which the contract is issued. The *date* variable considers the respective dates (day, month and year) in which the long-term credit ratings have been assessed or audited by S&P. Different rating agencies use different rating systems. Table 2 shows the general summary of the opinions reflected by S&P ratings and the related symbols.

Table 2: Basic S&P Long Term Rating Scale

Rating	Synthetic Meaning
AAA	Extremely strong capacity to meet financial commitments.
AA	Very strong capacity to meet financial commitments
A	Strong capacity to meet financial commitments, but somewhat susceptible to adverse economic conditions and changes in circumstances
BBB	Adequate capacity to meet financial commitments, but more subject to adverse economic conditions
BB	Less vulnerable in the near-term but faces major ongoing uncertainties to adverse business, financial and economic conditions
B	More vulnerable to adverse business, financial and economic conditions but currently has the capacity to meet financial commitments
CCC	Currently vulnerable and dependent on favorable business, financial and economic conditions to meet financial commitments
CC	Currently highly vulnerable
C	A bankruptcy petition has been filed or similar action taken, but payments of financial commitments are continued
D	Payment default on financial commitments

This table summarizes the synthetic meaning the opinions of Standard and Poor's about the long-term credit quality of an individual debt instrument. These opinions are classified in decreasing order of credit quality. Symbol AAA represents the highest rating and symbol D the default. Finer long term rating scales can be used. S&P adds notches by introducing for almost all symbols a plus "+" and a minus "-"with the intention to show the relative standing within the major rating categories

The term *investment grade* refers to issuers and issues ranked BBB and above. This term defines entities and instruments with relative high levels of creditworthiness and credit quality. Conversely *non-investment grade* or *speculative* refers to financial instruments for which the issuer has the ability to repay but faces significant misgivings that could change the credit risk. The related ratings are BB or lower. This higher risk of default is offset by a possible larger gain.

One of the most visited rating from an entity or a financial instrument during its rating history is the NR key. An *issuer* or an *issue* designated NR is not rated. In other words, at some point during the rating history, its rating is withdrawn and is removed from consideration. Nevertheless, it is monitored with the aim of capturing a potential default. Ratings are withdrawn when an entity's entire debt is paid off or when the programs are terminated and the relevant liabilities expire or when the issuer leaves the public bond market. The withdrawal can also happen in the process of mergers and takeovers. In addition, withdrawal can happen due to not cooperativeness, especially when a company is in financial difficulties and does not provide all information needed to evaluate the credit rating. Finally, an entity or a financial instrument with NR assessment may mean that no score was asked or that there is little information to make an assessment or that S&P does not intend to classify it for political reasons. The variables used for empirical calculation of the default frequencies and of CDR are: *instrument identifier, rating* and *date*. In other words, the information used for the calculations that follow are the *id* of the instrument, its first long term rating assessment, the matching date and all the other assessments or checks of the long-term rating (NR included) at the respective dates of the same instrument.

Empirical Model

To properly consider rating transitions evolution, it is necessary to introduce the backward time $b(t)$, which is the time elapsed in a given state. Agencies regularly produce reports based on credit risk data that they own. They include: all types of transition matrices, default rates, conditional and unconditional default probabilities and so on. But unfortunately, all these credit risk indicators do not consider the lapsed time within the same rating class before the default. This time is called backward time: $b(t)= t\text{-}b$, where b represents the time since the entrance in a given rating class. In other words, the backward time represents the time occurred since the last transition. In the reminder of the paper, to keep statistical significance, data are aggregated and the variables collected. To carry out an empirical analysis the following have been considered: instrument id; long-term rating; assessment date. To make the analysis

more readable, as usual, rating classes from CCC to C have been merged, and then the following rating values have been considered:

$$E' = \{AAA,\ AA,\ A,\ BBB,\ BB,\ B, CCC,\ D,\ NR\} \tag{1}$$

As noted earlier, given that a NR rating can be generated for both positive and negative reasons, the model proposed provides for a division of the NR class into two subclasses denoted NR1 and NR2, as in D'Amico et al. (2010). In the analysis, a financial instrument takes the value NR1 when NR had come from AAA, AA, A or BBB, while it takes NR2 when NR had come from BB, B, CCC or D. The space set considered here is the following:

$$E = \{AAA,\ AA,\ A,\ BBB,\ BB,\ B, CCC\text{-}C,\ NR1,\ D,\ NR2\} \tag{2}$$

In the following a one-quarter timescale is considered. Since data are recorded as month/day/year, the following time transformation is required:

$$t = \left\lceil \frac{4d}{365} \right\rceil \tag{3}$$

where d is a measure in days, $\lceil x \rceil$ represents the lowest integer greater than x and t is the matching quarterly measure.

According to Altman (1989), for each rating category, a pool of issuers having the same starting rating status is formed. Then the eventual defaults of the issuers on a quarterly timescale are observed. In correspondence of each time, a fraction of the pool has defaulted and represents the marginal default rate in that interval. The cumulative default rate is calculated using the relation

$$CDR_i(t;b) = 1 - \prod_{s=1}^{t} \left(1 - \hat{\lambda}_i(s;b)\right),\ i \in \{AAA, AA, A, BBB, BB, B, CCC-C\} \tag{4}$$

where $\hat{\lambda}_i(b;t)$ is given by the ratio between the number of defaults at time t and the number of survivals at time t-1. Both are calculated conditionally on the occupancy at the current time of the rating class i with a duration in this state equal to b:

$$\hat{\lambda}_i(t;b) = \left(\frac{nr\ of\ defaulted\ at\ time\ t}{nr\ of\ survivals\ at\ time\ t-1} \Big| b \right),\ i \in \{AAA, AA, A, BBB, BB, B, CCC-C\} \tag{5}$$

The value of b is computed considering the number of trimesters from the first assessment up to the first rating change with the formula:

$$b = \left\lceil \frac{d_{fc} - d_{fa}}{365/4} \right\rceil - 1 \tag{6}$$

where d_{fc} is a measure in days the first change of rating from class i and d_{fa} a measure in days the first assessment in the rating class i.

RESULTS AND DISCUSSIONS

This section summarizes results of the calculations in the following graphs. Additional results are available from the author. Figure 1 shows default frequencies of the financial instruments defaulted from the rating AAA and remaining within the state for 0, 3 and 6 trimesters respectively. The time horizon equals 50 trimesters. The entrance in the default state includes the entrance in the "bad no rating class", that is in the NR2 rating, as above explained.

Figure 1: Default Frequencies from Rating AAA
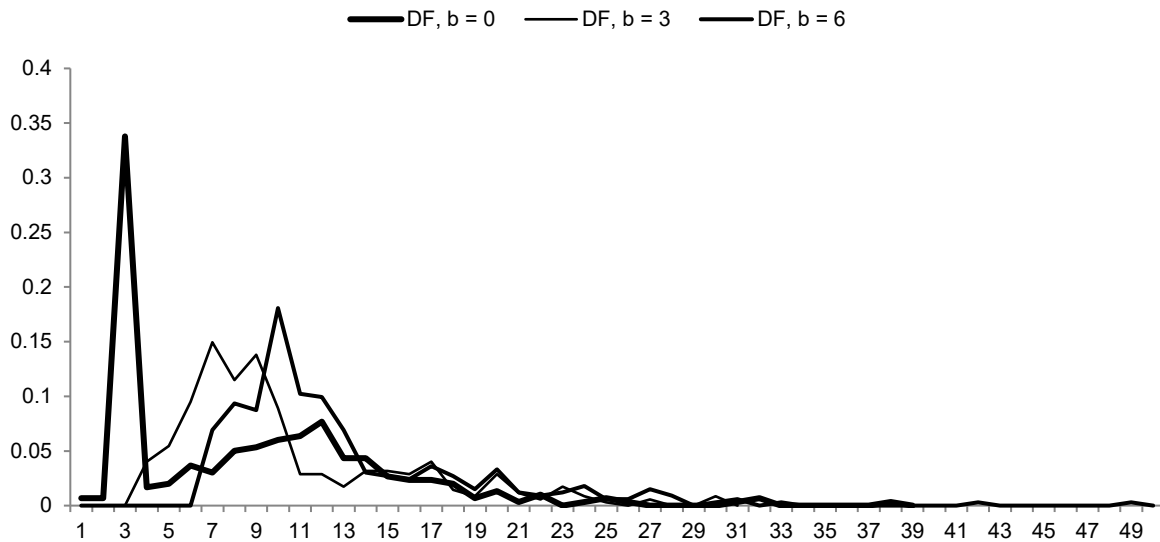
This figure shows Default Frequencies (y-axis) on a time horizon of 50 trimesters- (x-axis) of the financial instruments defaulted from AAA and remaining within the state for 0, 3 and 6 trimesters respectively.

The highest frequencies occur for the financial instruments with entered rating AAA in the same trimester, in which default occurred, as the bold line shows. After the fifteenth trimester, the three lines are close. On the contrary, between the fourth and fifteenth trimester, the frequencies of the instruments defaulted three or six trimesters after the entrance in AAA are higher than those of the instruments defaulted in the same trimester. Figure 2 shows the Cumulative Default Rate of the financial instruments defaulted from AAA and remaining within the state for 0, 3 and 6 trimesters respectively. The time horizon equals 12 trimesters.

In the first part of the time horizon, up to the ninth trimester, the CDR values of the financial instruments starting from AAA and defaulted in the same trimester (small dotted line) dominate those which defaulted three or six trimesters after they got AAA. After the ninth trimester the highest CDR values occur for the instruments that remaining in AAA for 6 trimesters before defaulting (pointed-dotted line). Figure 3 shows default frequencies of the financial instruments defaulted from the rating BBB and remaining within the state for 0, 3 and 6 trimesters respectively. The time horizon equals 68 trimesters.

Figure 2: Cumulative Default Rate from Rating AAA
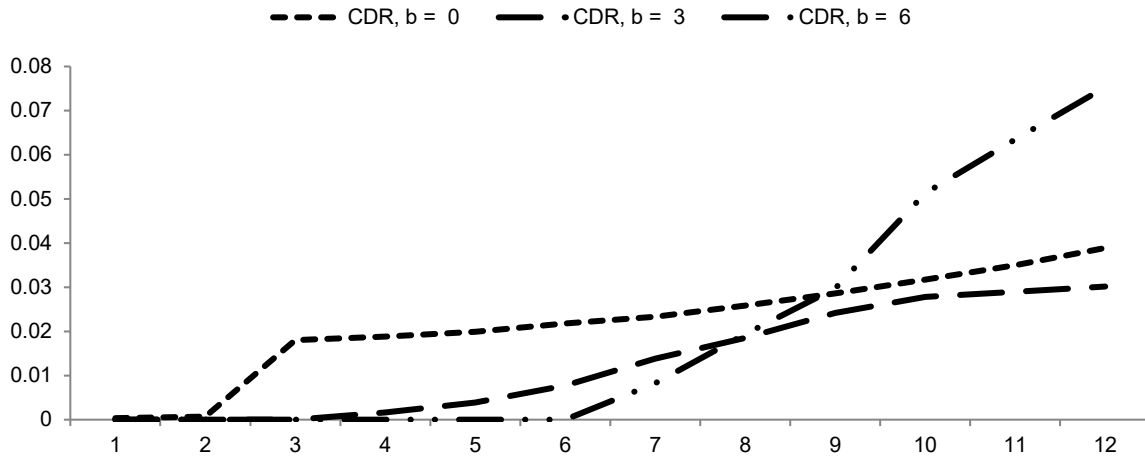
This figure shows the Cumulative Default Rate (y-axis) on a time horizon of 12 trimesters (x-axis) of the financial instruments defaulted from AAA and remaining within the state for 0, 3 and 6 trimesters respectively.

Figure 3: Default Frequencies from rating BBB
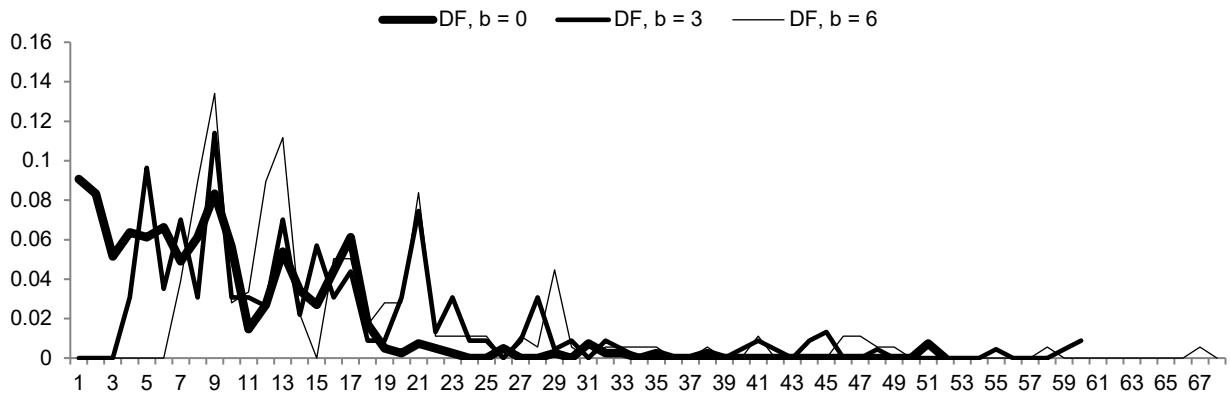
This figure shows the Default Frequencies (y-axis) on a time horizon of 68 trimesters (x-axis) of the financial instruments defaulted from BBB and remaining within the state for 0, 3 and 6 trimesters respectively.

In this case the highest frequencies occur for the financial instruments which entered rating BBB six semesters before (thin line), although the differences are smaller. Throughout the time horizon the three lines are close. Notice the bold line after the nineteenth trimester rapidly gets close to zero. Figure 4 shows the Cumulative Default Rate of the financial instruments defaulted from BBB and remaining within the state for 0, 3 and 6 trimesters respectively. The time horizon equals 12 trimesters.

Figure 4: Cumulative Default Rate from Rating BBB
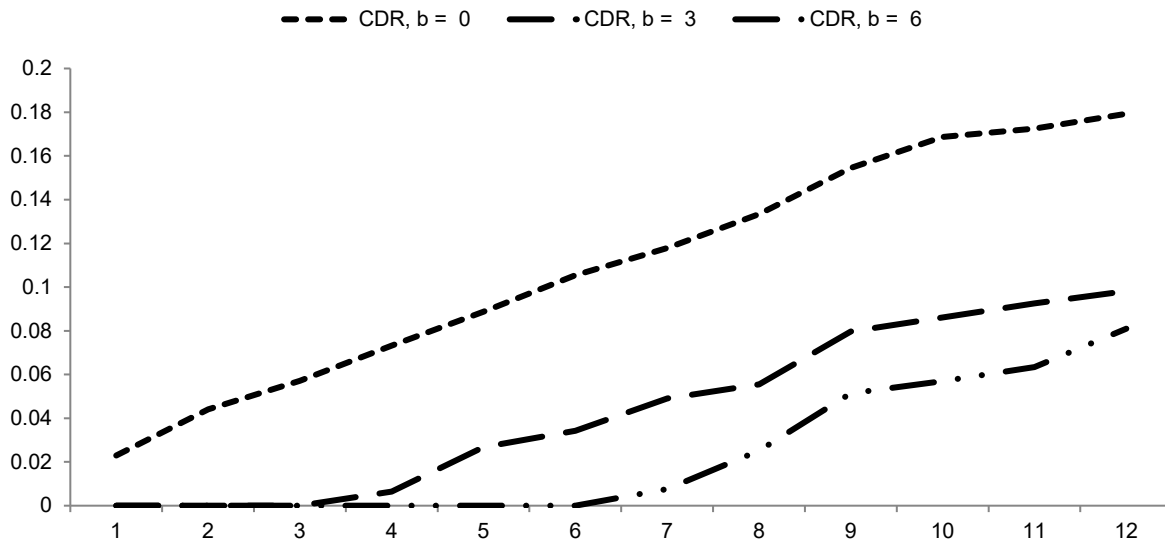
Figure shows the Cumulative Default Rate (y-axis) on a time horizon of 12 trimesters (x-axis) of the financial instruments defaulted from BBB and remaining within the state for 0, 3 and 6 trimesters respectively.

Throughout the time horizon the CDR values of the financial instruments defaulted in the same trimester in which it got BBB (small dotted line) dominate all the others. Figure 5 shows the default frequencies of financial instruments defaulted from the class CCC-C and remaining within the state for 0, 3 and 6 trimesters respectively. The time horizon equals 37 trimesters. The three lines show a peak in the early part of the time horizon and rapidly get close to zero.

Figure 5: Default Frequencies from Rating CCC-C
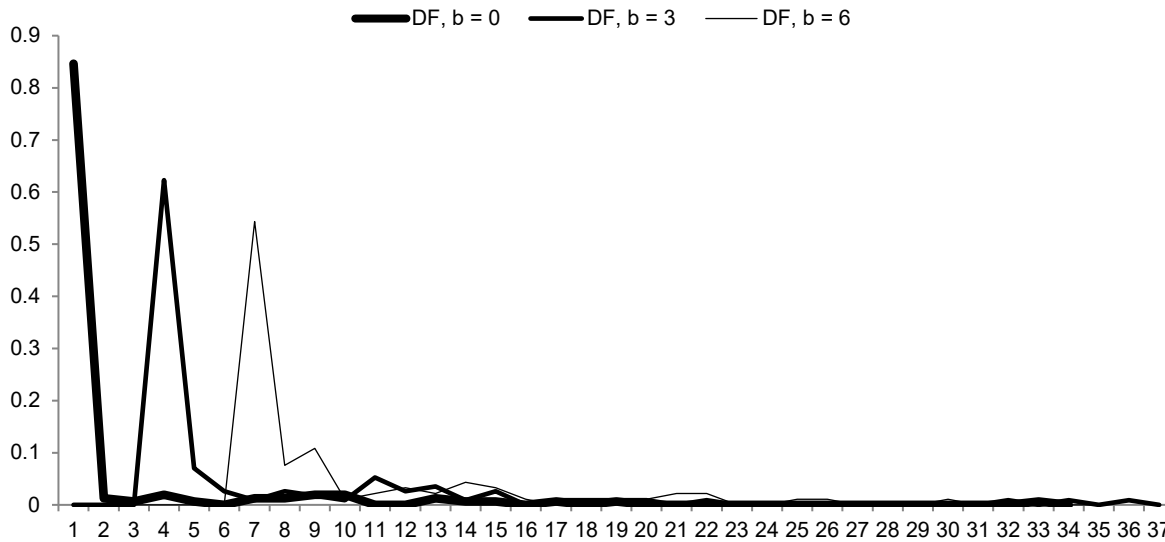
This figure shows the Default Frequencies (y-axis) on a time horizon of 38 trimesters (x-axis) of the financial instruments defaulted from CCC-C and remaining within the state for 0, 3 and 6 trimesters respectively.

Figure 6 shows the Cumulative Default Rate of the financial instruments defaulted from CCC-C and remaining within the state for 0, 3 and 6 trimesters respectively. The time horizon is equals 12 trimesters.

Figure 6: Cumulative Default Rate from Rating CCC-C
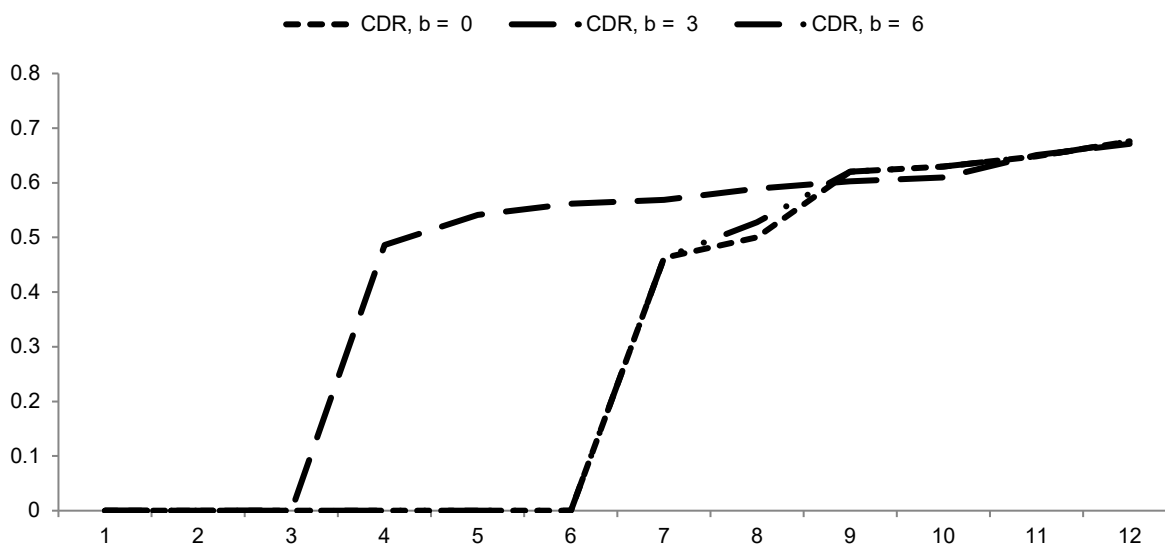
This figure shows the Cumulative Default Rate (y-axis) on a time horizon of 12 trimesters (x-axis) for financial instruments defaulted from CCC-C and remaining within the state for 0, 3 and 6 trimesters respectively.

The curves have a trend almost similar except the CDR of instruments starting from CCC-C and defaulted in the same trimester (small dotted line) appears shifted towards the previous three quarters. The conclusion is that both Default Frequencies and Cumulative Default Rates frequencies are strongly dependent on the backward values.

CONCLUSION

There are a growing number of people who consider it useful to assign a score to credit. As a result, the number of individuals, businesses and public institutions that have borrowed money from investors rather than banks gets bigger. Moreover, the universe of investors and market players trying to increase their capital by investing in the stock exchange, because of the return earned from good investments, grows ever more. I strongly recommend an accurate analysis of the default frequencies and of the cumulative default rates, both considering the backward time values. This article fills the gap in the literature by examining the quoted credit risk indicators considering how much time the financial instruments remains in a given rating class before the default, that is considering the backward time values. I performed the calculations by using real credit risk data from the S&P historical database. I calculated the CDR through the ratio between the number of defaults at time t and the number of survivals at time t-1. I evaluated both conditionally on the occupancy at the current time of a given rating class with duration in this state equal to the interval time from first assessment up to first rating change.

The results show the CDR is strongly dependent on backward time values. The limitation of the paper concerns the way the credit risk indicators were computed. To keeping statistical significance, I did this by considering all types of debt instruments including corporate and structured finance securities at the same time. Future research might consider separately the defaults of structured finance and corporate instruments. But, unfortunately, the number of such securities distinctly considered would have been insufficient from a statistical standpoint. Also, the analysis considers instruments rated up to December 31, 2008. Much has economically occurred since December 31, 2008. Unfortunately, from 2008 onwards real data are no longer available to me because of a close of the contract with S&P Company.

I would like to highlight the force of the paper because the method I suggested has proved to be successful. Further research will examine the behavior of some stochastic processes such Markov (Jarrow et al, 1997; Israel et al, 2001; Hu et al, 2002) or their generalization such semi-Markov (Vasileiou and Vassiliou, 2013; D'Amico et al, 2014) in following how rating changes deviate by making use of real data. I will compare with the results shown here. In a follow-up paper, I will set up the same data set by using the named stochastic processes to evaluate what better fits the real data.

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