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STOCK PRICES AND DEMAND FOR MONEY: EVIDENCE FROM NIGERIA

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ABSTRACT

This paper investigates the relationship between stock prices and the real money demand for Nigeria using unit root test and the cointegration with structural break. There are five important results for narrow and broad money in Nigeria. First, there is cointegration between narrow and broad money and their determinants, income, interest rate, exchange rate and real stock prices. Second, stock prices are an important determinant since cointegration fails if real stock prices are left out. Third, economic and financial reforms did affect the stability of demand for money in Nigeria over the period 1986:1-2012:4. Fourth, the long run income elasticity is not significantly different from unity with the inclusion of real stock prices. Finally, the results show structural breakpoints and they look to match clearly with corresponding critical financial, economic and political incidents.

JEL : E41, E44, C12

KEYWORDS: Money Demand, Structural Break, Cointegration, Nigeria

INTRODUCTION

Over the years, several studies have examined various related issues on money demand function (MDF) both in the developed and developing countries. The extensive and ever increasing stream of empirical research on MDF has to do with its importance in the design and implementation of an optimal monetary policy (Sriram 2001, Niyimbanira 2009, and Bahmani-Oskooee and Gelan 2009). For example, income elasticity of money demand gives us the long-term consistent rate of monetary expansion while interest elasticity of money demand helps in calculating the welfare cost of long-term inflation. Asides, the stability of MDF is fundamental to the choice of appropriate monetary policy actions in any economy. Though a wealth of studies has established a long term relationship between real balances and income, yet there remains uncertainty regarding long-run demand elasticity. This is particularly critical to developing countries like Nigeria that has undergone significant systemic changes since 1986. In addition, the role of stock market in determining money demand has not been assessed in the case of Nigeria in spite of the phenomenal growth of the stock market since 1986.

As pointed by Friedman (1988), stock prices have two kinds of impacts on money demand, a positive wealth effect and negative substitution effect. A wealth effect occurs in three different scenarios. First, a rise in stock prices leads to additional wealth which may be stored in money. Two, an increase in stock prices reflects an increase in the expected return from risky assets relative to safe asset. The resulting increase in relative risk may induce economic agents with given risk aversion /preference to hold larger amounts of safer assets such as money in their portfolio. Third, a higher level of stock prices may imply a rise in the volume of financial transactions, which may result in an increase in money demand to facilitate these transactions. On the other hand, the negative substitution effect of stock returns in money demand implies that as stock prices rise, the economic agents may preferably hold larger equities to other component of the portfolio, as the equities became more attractive or profitable (Thorton 1998, Choudhry 1996). Studies have documented both the negative and positive effects of stock prices on demand for

money for many developed and industrialized economies (Hsing, 2008, Baharumshah, *et al*. 2009, Serletis, 1993). However, for sub Saharan Africa, not many studies except Dube (2013) have attempted empirical verification of this issue in spite the various capital market reforms in the region. Hence, it is intriguing to investigate whether or not stock prices matter for demand for money function using Nigeria as a case study. Moreover, the issue of stability of the MDF, particularly in the developing economies, has come to the front burner following the plethora of financial reforms instituted since 1980s.

It is argued that the implementation of these reforms might have made MDF unstable thereby affecting the effectiveness of monetary policy in these countries. This issue is particularly important for Sub-Saharan Africa countries like Nigeria considering the fact that unstable money demand caused by financial reforms in the late 1970s actually induced many central banks in developed countries to switch from money targeting to the interest rate as monetary policy instrument. This is empirical issue that needs to be investigated. Therefore, the objective of this paper is threefold. One, ascertain the integrating properties of real money balances (broad and narrow), income, interest rate, exchange rate and stock prices in Nigeria. Second, examine the size and direction of the effect of stock prices on the demand for money. Three, determine the stability of the parameters of the long run money demand function by applying the unit root tests and cointegration tests with structural break. The rest of the paper is organized as follows: section 2 provides a brief summary of empirical studies on money demand and its stability. Section 3 contains the methodology and the data. In section 4, we present the empirical results and the final section contains the concluding remarks.

LITERATURE REVIEW

Studies abound on the demand for money and its stability. These studies include Mckinnon, et al. (1984), Arango and Nadiri (1981), Bahmani-Oskooee and Pourhaydrain (1990), Rao and Kumar (2009), Biscari et al. (2010), and Zuo and Park (2011) among others. However, for brevity we only provide a capsule summary of the empirical studies on the role of stock market on money demand and its stability. The study by Choudhry (1996) examined the role of stock market on money demand for US and Canada. The results show the stock market performance of these two countries has a significant role in the long run real M1 and M2 demand functions. In the same way, Thorton (1998) show that real stock prices have a significant and positive effect on the long run demand for narrow money balances in Germany. Biggs (2003) and Cassola and Morana (2004) provide evidence of significant long run elasticities with respect to the stock market price index but with opposite sign. Kontolemis (2002) and Bruggerman *et al*. (2003) conclude that stock prices do not matter for money demand in the long run, but may be useful in forecasting exercises. The study by Bruggeman *et al*. (2003) do not find stock market volatility as a significant factor explaining money demand relation. However, Carstensen (2006) reveal a significant long run impact of stock market volatility on money demand in the euro area. The study found that money demand model that incorporates stock market volatility and equity returns exhibits structural stability.

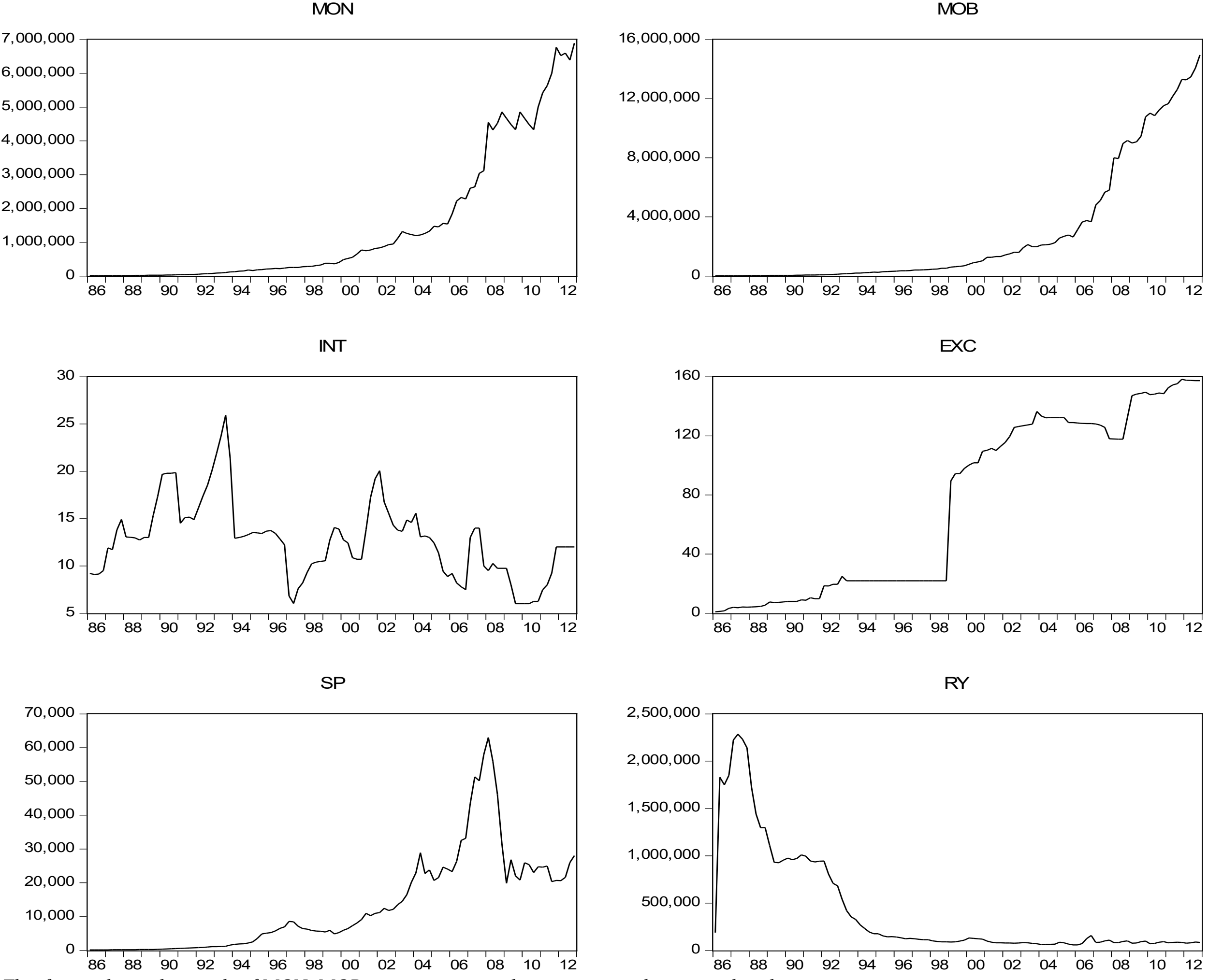
With reference to Nigeria, several studies have examined the stability of the money demand function. These include Arize (1984), Darrat (1986), Adejugbe (1988), Amadi, (1999), Nwaobi, 2002, Fielding (1994), Anoruo (2002), Akinlo (2005), Owoye and Onafowora (2007), Nwafor *et al* (2007), Ajewole (1989), Chukwu *et al*. (2010) and Kumar *et al.* (2013). In general, controversy remains in the literature on the stability or otherwise of the both the narrow and broad money. For example, study by Anoruo (2002) found broad money demand function was stable during the period 1986-2000. In the same way, Akinlo (2005) and Owoye and Onafowora (2007) found the broad money demand function was stable in Nigeria. However, the study by Kumar *et al*. (2013) found that the narrow money demand function was stable over the period 1960-2008. One major lacuna in all the existing empirical studies on money demand especially in Nigeria is that they failed to consider the role of stock prices. There is the need to address this gap in the literature.

DATA AND METHODOLOGY

Data

The study covers the period 1986:1 to 2012:4. Quarterly data for narrow money (MON) defined as currency plus demand deposits held by households and enterprises; broad money (MOB) defined as MON plus quasi money, real income (ry) defined as nominal GDP deflated by the consumer price index, exchange rate (exc) defined as units of domestic currency per unit of U.S. dollar and interest rate (int) were used. All quarterly series of the variables were obtained from Central Bank of Nigeria, Statistical Bulletin 2012 and 2013 editions. The plots of the variables are as shown in Figure 1.

Figure 1**:** The Plots of MON, MOB, Interest Rate, Exchange Rate, Stock Price and Real Income



This figure shows the trends of MON, MOB, interest rate, exchange rate, stock price and real income.

Model Specification

Most previous studies are based on the following general specification of the standard semi-logarithmic specification of the long-run money demand function:

$$\frac{M^d}{P} = f(Y_{t,}\, i) \quad (1)$$

where the demand for real balances $m/_p$ is a function of the chosen scale variable (Y) to represent economic activity and the opportunity cost of holding money (i). M stands for selected monetary aggregates in nominal term and p for the price level. However, in this work, we specify the demand for money function for Nigeria to include exchange rate and stock prices as:

$$ln\left(\frac{m}{p}\right)_t = \emptyset_0 + \emptyset_1 ln(ry)_t + \emptyset_2 int_t + \emptyset_3 e_t + \emptyset_4 ln(sp)_t + \in_t \quad (2)$$

where M/P is the real money stock, ry is logged real income measured as real income $\left(GDP/_{CPI}\right)$, int is the rate of interest, exc is the exchange rate and sp is real stock prices. $\in_t$ is the residual term, assumed to be a white noise process. Usually, real GDP (ry) represents the real income and, therefore, the transactions volume in the economy. The opportunity cost of holding money is proxied with nominal interest rate. In the same way, as contended by Friedman (1988), since stock prices measures the wealth effect, the stock prices should be measured in real rather than in nominal term.

The expectation is that the income elasticity of money demand be positive ($\emptyset_1 > 0$). More precisely, the quantity theory of money proposes a value of 1 for $\emptyset_1$, whereas the Baumol-Tobin model predicts a magnitude of 0.5 for $\emptyset_1$. The interest rate (int) is the rate of return at which economic agents prefer holding some alternative (financial or physical) assets as against money. Consequently, the anticipated sign for the semi-elasticity for interest rate is negative ($Ø_2 < 0$). The exchange rate is incorporated based on the literature on currency substitution, which suggests that portfolio shifts between domestic and foreign money can be captured by the exchange rate. The sign of the elasticity of exchange rate is ambiguous ($0 < Ø_3 < 0$) depending on the strengths of the substitution and income effects. There is a positive currency substitution effect when a stronger domestic currency (exchange rate appreciation) increases domestic money demand. On the contrary, a real exchange rate appreciation is associated with a negative shock to economic activity which could lower domestic money demand. Finally, the stock price is incorporated following the argument of Friedman (1988) as earlier discussed in the introduction. The expected sign is ambiguous ($0 < Ø_4 < 0$), depending on the relative strengths of the income and substitution effects. However, if $Ø_4 = 0$, it means that there is no role for stock market as a determinant of demand for money in Nigeria.

Method

The study adopts co-integration with structural break tests. However, before applying this approach, the integration properties of individual series need to be investigated to detect whether the series contains unit roots. To this end, the standard augmented Dickey Fuller (ADF) and Kwaiatkowski-Phillips-Schmidt-Shin (KPSS) (1992) are adopted. Specifically, we apply Dickey and Fuller's (1981) three model tests. The model follows the determining rule of Doldado *et al*. (1990) to establish the appropriate model. Moreover, in selecting the lag length, the paper adopts the modified Akaike Information Criterion (MAIC) suggested by NG and Perron (2001). This is done to avoid possible bias if the lag length is pre-determined without any rigorous determination approach. However, conventional ADF and KPSS tests may nevertheless be suspect, by not taking into account that the structural breaks could lead to a wrong decision when the null hypothesis is not rejected (Lee and Chien, 2008). As pointed out by Hendy (1996), a structural break relates to an intermittent shock with a permanent effect on the series. The obverse can occur where the break manifests at the beginning of the sample (Leybourne *et al*. 1998). Taking into consideration this possible shift in regime in the unit root tests, Zivot and Andrews (1992) developed a new category of tests that account for a structural break. The three models of the ZA tests are as expressed in equations 4-6.

Model A:

$$\Delta Y_t = \mu_1{}^A + \gamma_1{}^A t + \mu_2{}^A DU_t(\lambda) + \alpha^A Y_{t-1} + \sum_{j=1}^{k-1} \beta_j \, \Delta Y_{t-j} + \epsilon_t \quad (3)$$

Model B:

$$\Delta Y_t = \mu_1{}^B + \gamma_1{}^B t + \gamma_2{}^B tDT_t{}^*(\lambda) + \alpha^B Y_{t-1} + \sum_{j=1}^{k-1} \beta_j \, \Delta Y_{t-j} + \epsilon_t \quad (4)$$

Model C

$$\Delta y_t = \mu_1{}^C + Y_1{}^C t + \mu_2{}^C Du_t(\lambda) + Y_2{}^C DT_t{}^*(\lambda) + \alpha^C Y_{t-1} + \sum_{j=1}^{k-1} \beta_j \, \Delta Y_{t-j} + \epsilon_t \quad (5)$$

where $DU_t(\lambda)$ is a dummy variable which is equal to 1 and $DT_t{}^*(\lambda)$ = t – Tλ, 0 otherwise. In addition, λ = T_B/T, and T_B denotes a possible break point, where T is the sample size. The breakpoint is searched over the range of the sample (0.15T, 0.85T), and it can be estimated endogenously. Essentially, while model A permits a change in the level of the series, model B allows for a change in the shape of the trend of the series. Model C on the other hand, combines both changes in the level and the trend. In selecting the optimal length for ZA unit root test, we adopt the findings from the ADF tests.

EMPIRICAL RESULTS

Unit Root Test

The results of unit root tests using Augmented Dickey Fuller (ADF) and KPSS (1992) are as shown in Table 1. Overall, the tests show that all variables (including stock prices) possess a unit root in terms of level while they are all first difference stationary.

Table 1: The Results of Unit Root Tests

Test of Variables	ADF Statistics		KPSS Statistics	
Level	**No Trend**	**Trend**	**No Trend**	**Trend**
mob	0.023	-1.701	1.779	0.464
mon	-0.342	-1.829	1.822	0.408
ry	-2.866	-1.374	1.776	0.47
int	-2.384	-3.14	0.68	0.109
exc	-0.504	-2.108	2.113	0.198
sp	-2.042	-1.255	2.082	0.421
First Difference				
Δmob	-3.872	-4.005	0.314	0.071
Δmon	-4.596	-4.621	0.192	0.062
Δry	-4.178	-4.716	0.136	0.139
Δint	-5.557	-5.539	0.059	0.046
Δexc	-4.537	-4.514	0.089	0.084
Δsp	-3.903	-4.215	0.37	0.054

Critical values for ADF are -3.495, -2.495 and -2.582 (constant only at level); -3.496, -2.890 and -2.582 (constant only at 1st difference); and -4.050, -3.454 and -3.153 (constant and linear both level and 1st difference) at 1%, 5% and 10% level of confidence. The critical values for KPSS test are 0.739, 0.463 and 0.347 (constant at level); 0.216, 0.146 and 0.119 (constant and linear at 1st difference) at 1%, 5% and 10% respectively. The appropriate lag length for each variable based on MAIC given by Ng and Perron (2001) was 4.

Therefore, following the literature, we treated all the variables that appeared in the model 1 as $I(1)$ process. However, to take into account the structural break that could lead to a wrong decision when the null hypothesis is not rejected; three models of ZA tests were conducted. The results of ZA test equations 3-5 are presented in Table 2 and depicted Figure 2 in Appendix 1. All series carry a unit root in the level and reject the null of non-stationarity in the first difference. This assists in ensuring that the $I(1)$ type series for all series are considered. The ZA test results indicate that the breakpoints occur in 2001:Q3 for

broad money (MOB), 1993:Q3 for narrow money (MON), 1993:Q3 for real income, 2006:Q3 for stock prices, 1993:Q4 for interest rate and 2004:Q1 for exchange rate.

Table 2: The Results of ZA Unit-Root Tests with Structural Break

	Levels	Breakpoint	First Difference	Breakpoint
MOB	-2.778(C)	2001:Q3	-4.643(C)	2008:Q2
MON	-3.376(C)	1999:Q3	-7.029(C)	2007:Q4
ry	-3.679(C)	1999:Q3	-7.998(B)	1991:Q2
sp	-4.904(C)	2006:Q3	-5.401(B)	2006:Q4
int	-5.393(B)	1993:Q4	-7.598(B)	1994 :Q2
exc	-2.219(C)	2004:Q1	-10.14(B)	1999 :Q1

Critical values for models B and C are -4.80, -4.42 and 4.11 for model s B and C respectively, from Zivot and Andrews (1992). The characters within the parenthesis indicate the appropriate model according to the results from the ADF test.

However, it is possible for a series of data to contain more than one structural break. Consequently, we further employ the Bai and Perron (BP) (1998, 2003) approach to test for multiple structural breaks at unknown points in the sample. Table 3 shows the number of breaks selected by the BP sequential tests. For all the variables, the sequential procedure selects five breaks. First, we look at the double maximum tests of UD_{max} and WD_{max} that reject the null of no break vs. an unknown number of changes given the upper bound of five breaks.

Table 3: Bai and Perron's Test Results for Structural Breaks

Variable	U Dmax	W Dmax	Sup F(1/0)	Sup F(2/1)	Sup F(3/2)	Sup F(4/3)	Sup F(3/4)	No of Breaks
Mob	425.1**	736.5**	81.02**	69.94 **	72.559**	82.71**	85.00**	5
Mon	302.6**	487.3**	53.54**	47.86**	54.013**	60.51**	56.25**	5
Sp	257.4**	412.5**	18.62**	208.0**	257.4**	239.9**	143.5**	5
Ry	229.2**	394.1**	32.69**	28.71**	218.7**	229.2**	137.6**	5
Int	103.7**	177.2**	20.74**	16.56**	17.65**	18.79**	20.45**	5
Exc	2624.2**	3864.3**	176.5**	386.5**	481.5**	524.8**	355.5**	5

*Table 3 shows the Bai and Perron Test results for structural breaks. ** indicate significance at the 5% level. The upper bound M is set to be 5 and the trimming percentage is chosen to be at 15% in all cases.*

These tests show clearly that breaks exist. Furthermore, the Sup F(l+1/l) statistics (l = 1, 2, …,5) indicate the presence of five breakpoints. BP results for the location of structural breaks show that breakpoints occur in 1990:Q1, 1994:Q3, 1998Q4, 2003:Q4 and 2008:Q1 for real money balance narrowly defined (MON) while the breakpoints for real money balances broadly defined (MOB) are: 1990:Q3, 1994:Q3, 1999:Q1, 2003:Q3 and 2007:Q4. The breakpoints occur for real income (ry), in 1990:Q3, 1994:Q3, 1998:Q3, 2002:Q3 and 2006:Q3 for stock prices, 1990:Q1, 1994:Q1, 2000:Q1, 2004:Q2 and 2009:Q1 for the interest rate. With respect to exchange rate, the breakpoints are 1990:Q3, 1994:Q3, 1999:Q1, 2003:Q4 and 2009:Q1. Based on the results of ZA and BP tests for structural breakpoints, it is possible to summarize the following dates of structural breakpoints and find critical economic, political and financial incidents that can match the structural breaks of the series. The break in 1990 can be attributed to the introduction of several financial institutions and Schemes toward the end of 1989 and early 1990 to deepen and broaden the financial sector. Such institutions and Schemes included the Nigerian Deposit Insurance Corporation (NDIC) and the National Economic Reconstruction Fund (NERFUND) and Unit Trust Scheme. Moreover, the promulgation by the government, of the Banks and Other Financial Institution Decree (BOFID) No. 25 of 1991 served to enhance the control of Central Bank of Nigeria over the financial system. In particular, it enhanced the control of CBN over financial institutions that were traditionally outside the control of the Bank. Specifically in 1990, parastatals were compelled to withdraw their funds with the commercials and merchant banks and lodge same with the CBN. This led to a substantial deceleration in the growth of the money supply (M1) at 30.8 per cent as against 43.6 per cent in previous year. The break in 1994 could be attributed to the political crisis that followed the annulment of the 1993 election in the country. Government fiscal operation was characterized by huge fiscal deficits financed through credit from the Central Bank, which led to rapid expansion of broad money. The 1998

break might be attributed to the policy reversal that occurred during the period. Government reverted by to the policy of exchange rate pegging as against the floating system that was in operation after the deregulation in mid 1986. Moreover, Central Bank of Nigeria liquidated distressed 26 banks which led to major policy reforms in the banking sub sector. Government introduced tighter controls on bank lending to the private sector The date 2000 first quarter marked the re-introduction of government policy that compelled government parastatals and agencies to withdraw their funds from commercial banks which had earlier been cancelled. The breaks in 2002 and 2003 could be attributed to the various tight monetary and credit policies introduced by the government to prevent bank collapse due to low capital base, dominance of few banks, insolvency and illiquidity, overdependence on public deposits and foreign exchange trading, poor asset quality and low depositors' confidence.

The next date is 2004. There was consolidation of the banks in Nigeria from 89 to 24. In 2006, Government implemented the policy of recapitalization. The commercial banks were compelled to maintain a minimum paid up capital of ₦25 billion as the previous ₦2 billion. This policy forced many banks to merge and consolidate leaving only 25 in operations. The break in the 2007 could be explained in terms of the global financial crises that arose from US house bubble and the attendant increased default rates on mortgage. The Central Bank initiated several far reaching monetary and fiscal policies to mitigate the spillover effects of the crises on the domestic economy. In the year 2009, Central Bank introduced some measures to address the critical situation in the banking sector. The Audit test by the CBN in 2009 showed that 10 out of the 24 existing banks in the country had inadequate capital and liquidity to support their level of their current operations and future growth. Therefore, two (2) of the banks were asked to re-capitalized while eight (8) were adjudged to be in a distressed situations. The Executive Management of the 8 banks were sacked and Government injected ₦620 billion (about US $4.03 billion) in the eight bank to keep them operation.

Cointegration Test

Having established that the series are $I(1)$, the next issue is to determine whether there exists a long run equilibrium relationship of money demand function. To achieve this, we adopt the two well known statistics: the maximum eigen-value (λ-max) and the trace statistics proposed by Johansen and Juselius (1990). Some points are worth mentioning before presenting the results. First, we determine the number of lags (k) by using the Akaike Information Criterion (AIC) and Schwarz Bayesian Criterion (SBC). They both suggest four lags for the VAR. Two, the estimation procedure assumes unrestricted intercepts with no trend in the VAR model. The results in Tables 4a and 4b present the trace statistics and λ-max statistics for real money balances broadly and narrowly defined respectively.

Table 4a: Johansen Test for Co-Integration

Panel A:		**Variables**	**Mob, ry**	**sp, int, exc**	
H_0	H_1	λ - Max	CV (0.05)	Trace test	C.V. (0.05)
r = 0	r = 1	34.52	33.88	77.99	69.82
r ≤ 1	r = 2	20.80	27.58	43.47	47.86
r ≤ 2	r = 3	10.13	21.13	22.67	29.80
r ≤ 3	r = 4	6.840	14.26	12.54	15.49
r ≤ 4	r = 5	3.390	3.840	3.390	3.840
Panel B					
Estimated Co-Integration Vector Normalized on MON					
lnmon	lnry	lnsp	int	exc	
-1.0000	1.611	0.953	-0.119	0.011	
	(0.249)***	(0.206)***	(0.029)***	(0.003)***	

*Lag length selected by AIC is four. *** and ** denote significant at 1% and 5% level respectively. λ-max and trace test are Johansen's maximum eigen value statistics for testing co-integration. Critical values (C.V.) are from Osterwald –Lenum (1992). The values in parenthesis are the error terms*

Table 4b: Johansen Test for Co-Integration

Panel A:		Variables	Mob, ry,	sp, int, exc	
H_0	H_1	λ - Max	CV (0.05)	Trace test	C.V. (0.05)
r = 0	r = 1	35.30	33.88	81.33	69.82
r ≤ 1	r = 2	22.22	27.58	46.03	47.86
r ≤ 2	r = 3	11.38	21.13	23.81	29.80
r ≤ 3	r = 4	6.460	14.26	12.43	15.49
r ≤ 4	r = 5	3.590	3.840	3.590	3.840
Panel B: Estimated Co-Integration Vector Normalized on MOB					
lnmob	**Lnry**	**lnsp**	**int**	**exc**	
-1.0000	1.342	0.783	-0.108	0.010	
	(0.219)***	(0.179)***	(0.026)***	(0.003)***	

*Var Lag selected by AIC and used is shown. ***and ** denote significant at 1% and 5% level respectively. λ-max and trace test are Johansen's maximum eigen value and trace eigen value statistics for testing co-integration. Critical values (C.V) are from Osterwald –Lenum (1992). The values in parenthesis are the error terms*

Both test statistics suggest that there exist one co-integrating vector, which implies that there exists a long run relationship amongst the variables. We normalize the co-integrating vector with respect to the real money balances (MOB and MON) and the co-integrating relations are as shown in panel B of Tables 4a and 4b respectively. The exclusion tests suggested by Johansen and Juselius (1990, p 194) accept the null hypothesis that all the variables enter into the long term relationship. All the variables are statistically significant at 1% level. The results show that income and interest rate carry their expected positive and negative signs respectively. The exchange rate and stock prices both have positive sign supporting the wealth effect in the literature. The standard hypothesis in demand for money research is whether MDF is homogenous to degree one with respect to price level. To verify this, we regressed MOB and MON respectively on a constant, real income, stock prices, interest rate, exchange rate and price level (log of consumer price index). A Wald test that the estimated long-run coefficient on the price level is unity yielded a value of χ^2 = 2.399 (p = 1.220) and χ^2 = 0.648 (p= 0.4207) for narrow (MON) and broad money (MOB), which are larger than the 5% level of significance. Consequently, we could not reject the null hypothesis of unitary price elasticity at reasonable significance levels.

The finding that the demand for money is homogenous to degree 1 with respect to price level means that either narrow or broad monetary measures could be used to determine the long run effect of the monetary policy (Hafer and Kutan 1994, Bahamrunshah *et al*. 2009). The results show that income elasticity for narrow money is unity (χ^2 = 30.94; p = 0.0000) likewise for broad money aggregate (χ^2 = 16.208; p = 0.0001). It is very important to note that the magnitude of the scale variable (1.611) for (broad money) and (1.342) for narrow money aggregates are still considered high compared with what was reported for developed and some Asia countries (see Mark and Sul 2003, Harb, 2004; Kumar et al 2010; Hafer and Jansen, 1991; Drake and Chrystal 1994; Haug and Lucas 1996 and Lim 1993). This simply suggests that the availability of alternative financial assets as money substitutes in household portfolio is still low in the country. However, these magnitude of scale variable for both narrow and broad money aggregates are quite close to values obtained by earlier studies for some newly industrialized economies such as China, Malaysia (see Deng and Liu 1999; Chen 1997; Arize and Malindretos 2000). There is therefore the need for more reforms in the financial sector to bring about greater competition and development of alternative financial assets that could serve as alternatives to money. We robust check the results by estimating the model with restricted trend. The results show no cointegration between money and its determinants. The coefficient still remained significant but the scale variable dropped to 1.171 and 1.039 for broad and narrow money respectively. In addition, the trend variable was significant.

Table 5 shows the sort-run dynamics of the error-correction model. The question that arises is how robust is the results to the exclusion of stock prices? The exclusion of stock prices leads to no co-integration between money and its determinants (results not reported for space consideration). This is in line with the findings of Wu, *et al*. (2005) and Baharumshah, *et al.* (2009). However, the coefficient of income declines to less than one for both real M1 (0.6014) and real M2 (0.6923) but remain significant with the exclusion of stock price. The coefficient of interest rate increases for both real M1 (0.1689) and real M2 (0.1891).

Table 5: Results for Error Correction Model

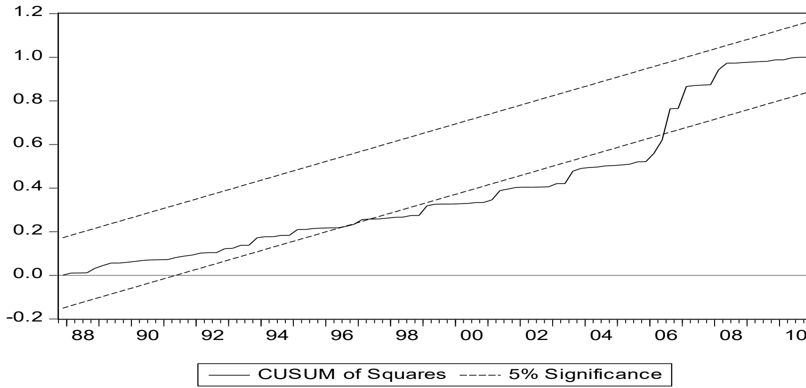
Variables	$\Delta log(MOB)$	$\Delta log(MON)$
$\Delta log(BM)_{-1}$	0.062	
	(0.56)	
$\Delta log(BM)_{-2}$	0.0113	
	(0.11)	
$\Delta log(BM)_{-3}$	-0.043	
	(-0.39)	
$\Delta log(BM)_{-4}$	0.102	
	(1.03)	
$\Delta log(NM)_{-1}$		0.061
		(0.61)
$\Delta log(NM)_{-2}$		-0.014
		(-0.14)
$\Delta log(NM)_{-3}$		-0.049
		(-0.49)
$\Delta log(NM)_{-4}$		0.1774
		(2.10)**
$\Delta log(RY)$	0.403	0.479
	(5.53)***	(6.14)***
$\Delta log(RY)_{-1}$	0.087	0.0002
	(0.97)	(0.00)
$\Delta log(RY)_{-2}$	-0.112	-0.068
	(-1.14)	(-0.65)
$\Delta log(RY_{-3}$	-0.049	-0.157
	(-0.52)	(-1.55)*
$\Delta log(RY)_{-4}$	-0.059	-0.077
	(-1.73)*	(-1.98)**
$\Delta log(SP)$	0.148	0.135
	(1.89)*	(1.59)*
$\Delta log(SP)_1$	-0.24	-0.051
	(-0.31)	(-0.62)
$\Delta log(SP)_2$	-0.072	-0.038
	(-0.91)	(-0.44)
$\Delta log(SP)_3$	-0.016	0.015
	(-0.20)	(0.18)
$\Delta log(SP)_4$	0.089	0.155
	(1.21)	(1.95)**
$\Delta log(INT)$	-0.001	-0.001
	(-0.19)	(-0.16)
$\Delta log(INT)_1$	0.005	0.001
	(0.80)	(0.09)
$\Delta log(INT)_2$	0.0001	0.003
	(0.01)	(0.46)
$\Delta log(INT)_3$	-0.0004	-0.005
	(-0.08)	(-0.82)
$\Delta log(INT)_4$	0.018	0.023
	(3.49)***	(4.00)***
$\Delta log(EXC)$	0.002	0.002
	(1.38)	(1.66)*
$\Delta log(EXC)_1$	-0.002	-0.002
	(-0.70)	(-1.29)
$\Delta log(EXC)_2$	-0.0004	-0.001
	(-0.40)	(-0.78)
$\Delta log(EXC)_3$	0.001	0.001
	(0.70)	(1.03)
$\Delta log(EXC)_4$	0.001	0.001
	(0.05)	(0.64)
Constant	-0.903	-0.957
	(-2.21)**	(-255)**
$EC)_{t-1}$	-0.052	-0.071
	(-2.31)**	(-2.63)**
R^2	0.54	0.55
Norm (2)	7.663[0.021]	3.636[0.162]
LM Test	0.211[0.900]	1.441[0.487]
ARCH(6)	4.864[0.561]	9.943[0.127]

*The number in parenthesis ( ) are t values while those in brackets [ ] are p- values . ***, ** and * denote significance at 1%, 5% and 10% level respectively. ARCH (m) is a mth order test for autoregressive conditional heteroskedasticity; Norm (2) test indicates whether the residuals are normally distributed and LM test for autocorrelation*

Two, by replacing stock price with stock market capitalization, the results show a single unique co-integrating vector between real MON, output, interest rate, market capitalization and exchange rate. However, no co-integration between broad money aggregates (MOB) and its determinants. In both cases, all the coefficients are significant at 1% level. The coefficient of scale variable declines to 0.8714 for real MOB and 0.7612 for real MON. This might suggest that portfolio holders perceive stocks as a major substitute to money. Given co-integration as revealed in tables 4a and 4b, we investigate short run dynamics that include information on both long run and short run parameters, where the former is captured through the error-correction term (ECT). Tables 5 columns 1 & 2 summarize the short run dynamics of the error correction model (ECM) for broad and narrow money respectively. The coefficient of the error correction term (ECT_{t-1}) for both narrow and broad monetary aggregates (MON) and (MOB) carry the correction sign (negative and relatively small). The results show that the adjustment to an exogenous shock is rather slow.

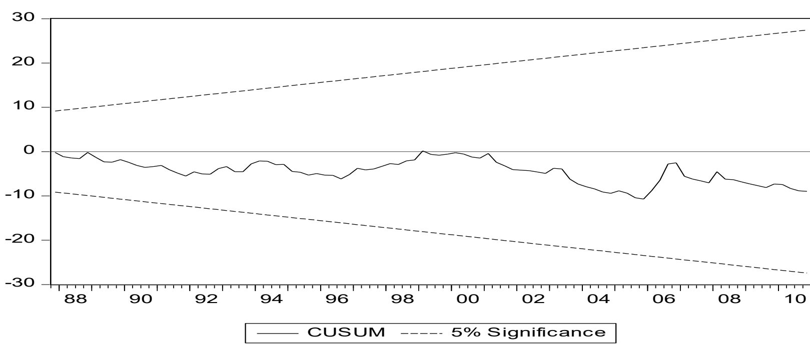
The coefficient of the ECT_{t-1} (0.054) reveals that approximately 5% of the previous quarter's discrepancy between the actual and equilibrium value of broad aggregates is corrected each quarter. The corresponding percentage for narrow money aggregate is 0.07. Essentially, co-integration amongst broad and narrow money aggregates and their determinants (stock prices inclusive) can be confirmed by the significance of the lagged error-correction term. Real income and stock prices current value have significant short term effect on money demand (narrow and broad). However, domestic interest rates, which appear to be an important variable for estimating long-run co-integrating vector, has a non significant short term effect on money demand. Exchange rate current value has positive short-term effect on money demand but significant only at 10% for narrow money demand. We proceed further to ascertain the stability of the long run coefficients that are used to form the error correction term in conjunction with the short run dynamics. For this purpose, we use the CUSUM and CUSUMSQ tests proposed by Brown, Dublin and Evans (1975).The tests are applied to the residuals of both narrow and broad money. The CUSUM test is based on cumulative sum of the recursive residuals. This option plots the cumulative sum together with the 5% critical lines. The test indicates parameter instability if the cumulative sum goes outside the area between the two critical lines. The same procedure is adopted to carry out the CUSUMQ, which is based on the squared recursive residuals. The graphical presentation of these two tests for the narrow and broad money is as shown in Figures 3(a-d). The CUSUM tests show evidence of stability of two money aggregates (Figures. 3b & 3c). However, the cumulative sum of squares shows evidence of parameter instability for both narrow and broad money (Figures (3a & 3d).

Figure 3a: CUSUM of Squares for Broad Money (MOB)



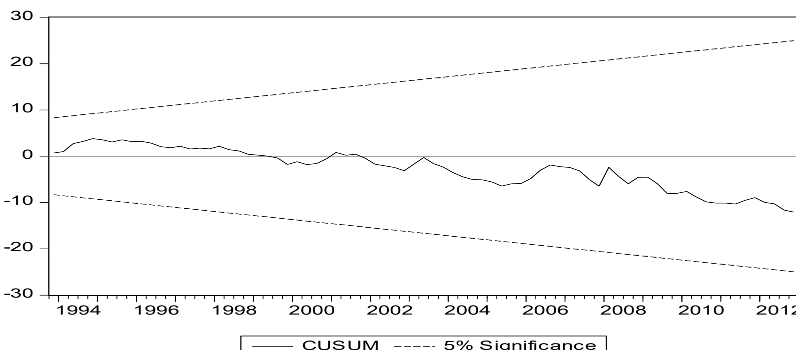
This figure shows the result of CUSUM of Squares for Broad Money (MOB)

Figure 3b: CUSUM Test for Broad Money (MOB)



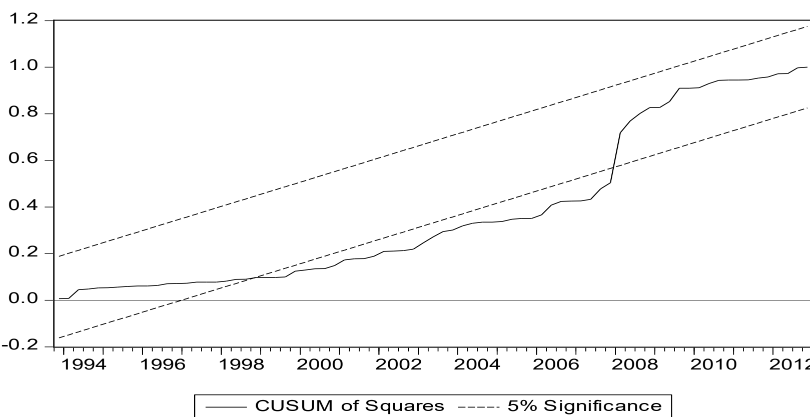
this figure shows the result OF CUSUM test for broad money (mob)

Figure 3c: CUSUM test for narrow Money (MON)



This figure shows the result of Cusum test for Narrow Money (MON)

Fig 3d: Cusum of Squares Test for Broad Money (MOB)



This figure shows the result of Cusum of Squares test for broad money (MOB)

<u>Structural Break Test</u>

However, the standard co-integration test may be inappropriate in the presence of structural breaks. Therefore, it is necessary to check the co-integration relationship for structural breaks. To accomplish this, the study adopts the Gregory and Hansen (1996) approach and test for co-integration between variables in the models with regime shifts. The Gregory and Hansen test is based on the notion of regime change and is a generalization of the usual residual based co-integration test. The GH test has a null

hypothesis of no co-integration and its alternative hypothesis suggest co-integration with one structural break. The co-integration between variables exists when the null hypothesis suggests co-integration with one structural break. Gregory and Hansen create three models as follows:

Level shift (C)

$$y_t = \delta_0 + \delta_1 \emptyset_t(\tau) + \alpha(X_t) + e_t \quad (6)$$

Level shift with trend

$$\left(C/_{T}\right) \quad y_t = \delta_0 + \delta_1 \emptyset_t(\tau) + \beta(t) + \alpha(X_t) + e_t \quad (7)$$

Regime shift with slope vector shift

$$\left(C/_{S}\right) \quad y_t = \delta_0 + \delta_1 \emptyset_t(\tau) + \alpha(X_t) + \beta X_t \emptyset_t(\tau) + e_t \quad (8)$$

Where the structural shift in each equation is shown by a dummy variable $\emptyset$ and defined as:

$$\emptyset_1 = \begin{cases} 0, if\ t \leq T_\tau \\ 1, if\ t > T_\tau \end{cases}$$

Here $\tau = {}^{T_B}/_{T}$ and TB represents a possible breakpoint. GH have developed versions of the co-integration ADF tests of Engle and Granger (1987), as well as the Z_t and Z_α tests of Philips-Quliaris (1990), whereby all of them are modified according to the alternative considered. Taking into account that the date of the change is unknown, GH compute the values of ADF* = $\inf_{\lambda\epsilon j}$ ADF, $Z_t^* = \inf_{\lambda\epsilon j} Z_t$ and $Z_\alpha^* = \inf_{\lambda\epsilon j} Z_\alpha$. This model is estimated recursively allowing the breakpoint τ to vary such that $[0.15T \leq \tau \leq 0.85T]$. The results of the GH test are as presented in table 6. The results of both narrow (MON) and broad (MOB) money aggregates show clear evidence of cointegration even when we allow for structural break. Both narrow and broad money demand function reveal a structural break in three models. This test, therefore, affirms the importance of a structural change in the co-integration vector and thus the need to consider it in the specification of the money demand function. This by implication means demand for money specification that envelopes the changing economic and financial incidents raise some critical questions on the long run relationship among the series (Lee and Chien, 2008). According to the three tests statistic criteria in the broad money aggregate function, the structural break years and quarters estimated are mainly 2006:Q2, Q3 and Q4, and 2008:Q1&Q2. In the case of narrow money aggregate function, the structural break years and quarters are namely; 2006:Q1, Q2 and 2007:Q1.

The structural break year 2006 quarters one to four can be attributed to the financial reforms implemented in the country. In an attempt to make the banking sector solid and sound, the Central Bank of Nigeria embarked on the policy of bank recapitalization. Banks were required to increase their minimum paid-up capital from ₦2 billion to ₦25 billion. The programme which started on January 1, 2006 led to the emergence of 25 banks from the existing 89 banks. Fourteen of the existing 89 banks that could not merge were liquidated. The ripple effects of this exercise made the Central bank to introduce many far reaching policies to stem the negative consequences of the distress in the banking sub sector on the economy. The breaks in 2007 and 2008 could be attributed to the global financial crises that started in 2007. The Central Bank of Nigeria instituted several exchange and interest rate policies to mitigate the effects of the economic meltdown in the domestic economy. These policies no doubt had significant effect on the demand for money.

Table 6: Gregory and Hansen (1996) Tests for Regime Shifts

	MOB		**MON**	
Model	Test Statistics	Breakpoint	Test Statistics	Breakpoint
ADF*				
C	-6.366**	2008 :Q1	-6.911**	2007 :Q1
C/T	-6.470**	2008 :Q1	-6.757**	2007 :Q1
C/S	-6.396**	2006 :Q3	-6.686**	2007 :Q1
Zt*				
C	-6.396**	2008 :Q1	-7.008**	2006 :Q1
C/T	-6.589**	2006 :Q4	-7.159**	2006 :Q1
C/S	-6.830**	2006 :Q2	-6.193**	2006 :Q2
Z*				
C	-60.66**	2008 :Q2	-67.82**	2006 :Q1
C/T	-62.52**	2006:Q4	-68.79**	2006 :Q1
C/S	-64.89**	2006:Q2	-56.65**	2007 :Q1

*Table 6 shows the results of Gregory and Hansen (1996) tests for regime shifts. :** significant at 5% level. The critical values are from Table 1 of GH (1996).*

Essentially, these tests provide evidence to support the fact that structural change is critical in co-integration vector. Consequently, it is necessary that it should be accounted for in the specification of money demand function. This finding is quite interesting as the endogenous estimation yields structure breaks that correspond to recognizable happenings both (financial and economic) in the economy. This, by implication, means that within the context of money demand, agents in the economy i.e. households and the government may respond differently when the economy is in a different regime. In short, money demand specification that does not take into consideration the various economic and financial events would cast doubt on the real money aggregate and its determinants.

CONCLUSIONS

This paper examines the role of stocks in the money function and tests for the stability of the function taking cognizance of the changing economic and financial incidents. The paper adopts co-integration approach that accounts for the possibility structural breaks with unknown timing. The results of the analysis show that stock prices have a significant substitute positive (effect) on long run narrow and broad money demand. The omission of stock prices could lead to serious misspecifications in the money demand function in both the short-and-long-run. The result shows that the demand for money is homogenous to degree 1 with respect to price level. The long-run demand for real money balances is negatively affected by the own rate of return for money. Exchange rate, however, has positive effect on the demand for money balances. The result of short run analysis shows that the adjustment process to an exogenous shock is rather slow given error correction coefficients of 0.054 and 0.07 for broad and narrow money aggregates respectively. The test, which allows for possibility of regime shifts, suggests a lack of stability in the demand for money given the data set from 1986:Q1 and 2012:Q4.

The ZA and BP tests revealed several structural break points and critical economic and financial incidents for matching with these break points.What policy conclusions can we draw from our empirical results? One, the results suggest that monetary policy aimed at stabilizing the domestic economy can generate only uncertainty if the effects of stock prices are not taken into consideration for the execution of monetary policy (Baharumshah, *et al*. 2009). Moreover, the finding that long run unitary income elasticity exists simply suggests that Friedman's rule is optimum in the case of Nigeria. This implies that money supply should grow at the same rate as output in order to attain the goal of price stability. The finding of structural breaks implies that while analyzing the demand for function of Nigeria, it is important to incorporate a structure change into the question. Finally, in both narrow and broad monetary aggregates, monetary income elasticity is far greater than interest rate elasticity. The policy inference from this is that in determining monetary policy, Central Bank of Nigeria should interrupt the quantity of money through real income as against changing the interest rate to be more efficient. The major limitation of this work is

that several variables including housing and land prices to model the wealth effect in money demand equation have not been incorporated. This is because data on many of these variables are not easily available in developing countries like Nigeria. There is, therefore, the need to source information on these variables in order to examine their roles in the money demand function in Nigeria.

Appendix 1

Figure 2a: Plot of Zivot-Andrews Unit Root Tests for BOM

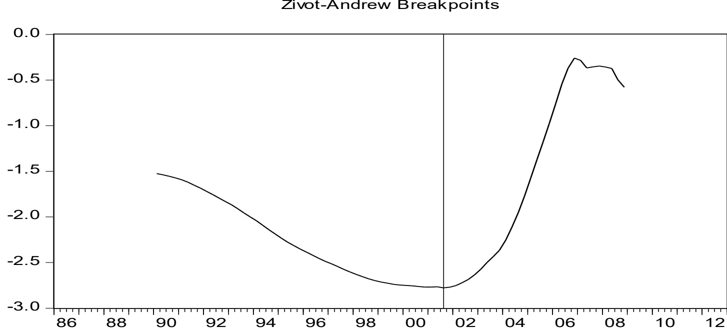


Figure 2b: Plot of Zivot-Andrews Unit Root Tests for MON

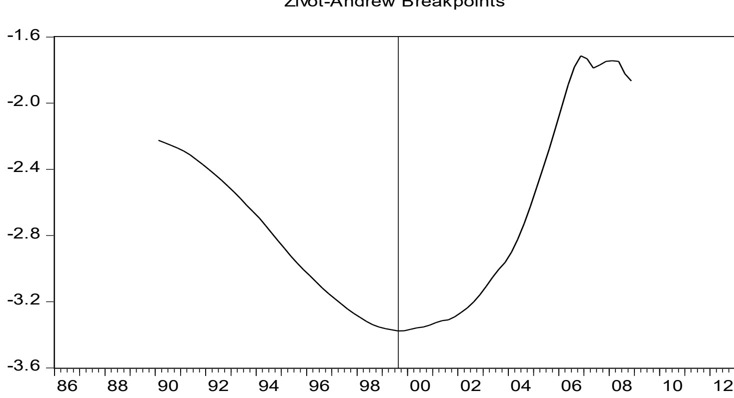


Figure 2c: Plot of Zivot-Andrews Unit Root Tests for SP

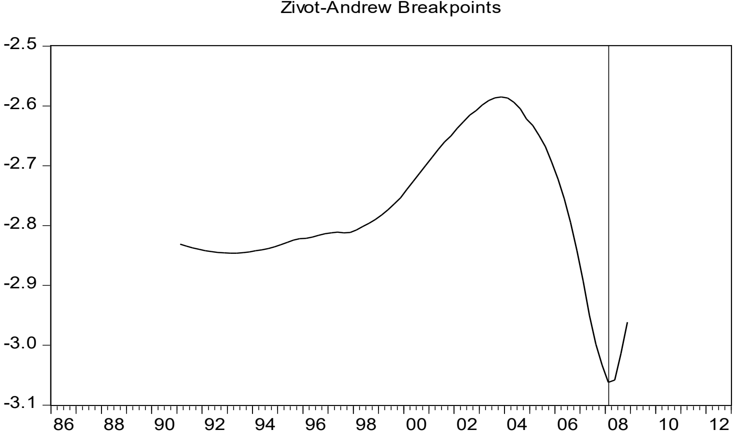


Figure2d: Plot of Zivot-Andrews Unit Root Tests for INT

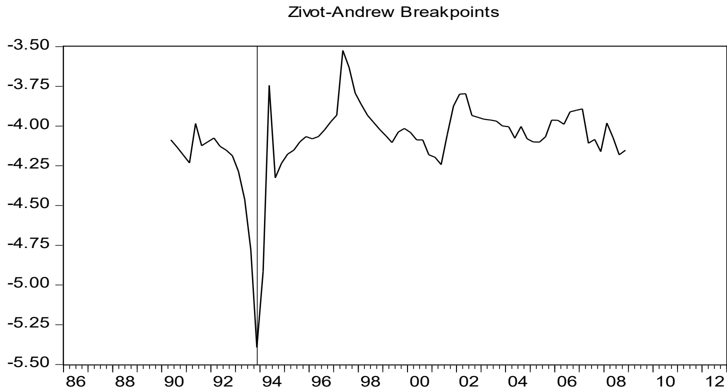


Figure2e: Plot of Zivot-Andrews Unit Root Tests for RY

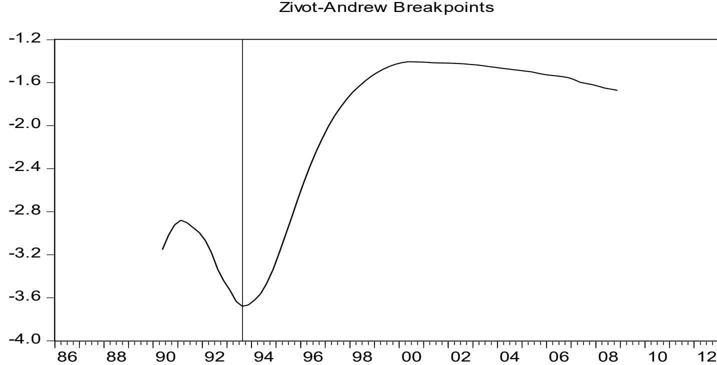


Figure 2f: Plot of Zivot-Andrews Unit Root Tests for EXC

Fig. 2(a-f) Plots of Zivot and Andrews (1992) unit root tests for the variables

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OBVIATING THE MORAL HAZARDS THAT CAUSED THE RECENT BANKING CRISIS AND FUTURE DISLOCATIONS WITH THE IMPOSITION OF REGULATIONS, RESERVE REQUIREMENTS, REVENUE/RISK ADJUSTED PAYOUTS

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ABSTRACT

This paper will examine the critical aspects of the Glass-Steagall Act of 1933 including a detailed analysis of the objective of the act on the banks and the economy. A further review will explore the atmosphere and psychology of the various banking practices that were implemented during the 1980's and 1990's. A chronology of pivotal events will prove that the current environment of deregulation and erosion of the distinct line between commercial and investment banks is actually attributed to monetary policies dating back to Alan Greenspan and the Federal Reserve Board actions of the 1990's. The start of the 21st entury saw the rapid growth of derivative instruments that were not regulated, prompting the moral hazard which caused the mortgage banking industry collapse. A further analysis of the reckless practices will show how these lending practices caused financial chaos. The companies that failed did so because of overleveraging and failure to control risk effectively while rewarding themselves without establishing adequate reserves. The paper will conclude with an analysis of the present arguments to strengthen the core requirements for both the investment and commercial banking.

JEL: G01, G24, G28

KEYWORDS: Moral Hazards, Revenue/Risk Adjusted Payouts

INTRODUCTION

Derivative trading moved from a total outstanding nominal value of $106 trillion in 2001 to a value of $531 trillion in 2008 (Kwak, 2012). At the same time, the Glass-Steagall Act was dismantled. Federal Reserve monetary policy favored financial leverage. Financial services company leverage blossomed; Merrill Lynch assets to equity moved from a low of 18:1 in 2002 to 32:1 in 2007 for Merrill Lynch (Kwak, 2012). Such circumstances created moral hazard, which the authors deem to be the root cause of the Great Recession. In 2007 United States unemployment was approximately 4.3%. By 2010 it reached almost 10% (U.S. Bureau of Labor Statistics). Delinquency rates on home mortgages were less than 2% in 2005. By 2010 the rates was above 11% (Board of Governors of the Federal Reserve System (US)). The statistics speak to the long lasting, devastating effects of the liberal policies created by the Federal Reserve. In 2016 the Federal Reserve continues to struggle with setting monetary policy to gently bring the U.S. fundamentals to their appropriate place. The literature on the subject of the root cause of the financial crisis is typically pointed at a singular cause, for example, deregulation, giving way to use and

abuse of collateralized debt obligations. Other experts credit commercial banks' liberal mortgage lending practices and ensuing real estate collapse as the main cause for the 2008 financial collapse.

This paper links the issues commonly addressed in the literature with Federal Reserve practices dating back to the 1990's. The authors present a compelling argument that the Federal Reserve actually created the moral hazard which caused the meltdown of the financial markets. In addition, the authors analyze the benefits of strengthening the core requirements for both the investment and commercial banking systems. The body of the paper presents important regulatory decisions since 1990 that have changed the financial services' climate. The root cause of bank failures such as Wachovia and Washington Mutual are examined. Connections between deregulation and financial services leverage are presented along with diminished reserve requirements. The authors provide needed examination of Value at Risk measurements. The conclusion makes a strong case for the importance of proper examination of leverage and avoidance of liberal Federal Reserve policy.

LITERATURE REVIEW

Glass –Steagall Act, also known as the Banking Act of 1933(48 Sat.162) was passed in 1933 and forbade commercial banks from engaging in the investment banking business (New York Times,2012). The enactment was an emergency response to the failure of nearly 5,000 banks during the Great Depression. It was originally a section of President Franklin D. Roosevelt's New Deal program and became a permanent measure in 1945. Some of the more important features included tighter regulations for national banks in the Federal Reserve System, prohibited banks from the sale of securities and created the Federal Deposit Insurance Corporation (FDIC), which insures bank deposits with a pool of money appropriated from banks. Beginning in the 1900's commercial banks established security affiliates that floated bond issues and underwrote corporate stock issues. The expansion of commercial banks into securities underwriting was substantial until the 1929 stock market crash and the subsequent Depression. In 1930, the Bank of the United States failed, reportedly because of activities of its security affiliates that created artificial conditions in the market. In 1933 all banks were required to close for a four day "Bank Holiday" and 4,000 closed permanently. Bank closings coupled with an already devastated economy pushed public confidence in the U.S. financial structure to new lows. In an attempt to reverse this spiral and restore the public's confidence that bank's would follow reasonable banking practices Congress created the Glass-Steagall Act.

The Act forced a separation of commercial and investment banks by preventing commercial banks from underwriting securities, with the exception of U.S Treasuries and federal agency securities and municipal and state general obligation securities. Conversely investment banks were not allowed to receive banking deposits. Investment banking consists mostly of underwriting securities and related activities, making secondary markets in those securities and setting up merger and acquisition activities, restructuring and over business advisement. The Glass- Steagall Act helped restore confidence in the banking industry during and after the Depression. Many historians however gesticulate that the practices of the commercial banks of the time had little actual effect on the already devastated economy and were not a major contributor to the crisis environment. Over the years legislators, economists and businessmen have argued that Glass-Steagall was outdated, created an atmosphere of uneven playing field between domestic institutions and those globally who were not constrained by such restrictions. There was also a strong feeling of government overreaction to a crisis in attempt to insure against repeat economic distress. The world economy became more dynamic with the emergence of the strong Japanese economy and the geopolitical impact of the Middle Eastern states buttressed with growing oil revenues.

In 1994 the Government proposed letting the banks enter new fields of business, including allowing big banks selling real estate, computer services and possibly even securities. The new rules would allow banks to set up subsidiaries that could undertake any activity "incidental to or within the business of banking" Until now, subsidiaries of federally chartered banks have been limited almost exclusively to banking

(Bradsher, 1994). Critics of big banks were quick to warn that new regulations could undermine Glass-Steagall which is murkily written and open to interpretation "said Diane Casey, executive director of the Independent Bankers of America, a Washington based trade group that represents small banks (Bradsher, 1994). While the Treasury was not actively involved in drafting regulations the proposals were consistent with the Clinton administration's general position that banks should be allowed to diversify into other industries. The first breach in the Glass-Steagall Act occurred in 1989 when some big banks were granted permission from the Federal Reserve to set up separate subsidiaries for trading securities and J.P. Morgan was the first obtaining the right to trade corporate debt and stocks in 1990.

These holding companies were legally separate from the banks and were limited to trading securities and could not engage in activities like real estate brokerage and data processing. The Financial Services Modernization Act of 1999 was passed by Congress after 12 attempts in 25 years. Congress finally repealed Glass-Steagall, rewarding financial companies after 20 years and $300,000,000 of lobbying efforts (Weill, 2014). The key element of the repeal of Glass- Steagall was the proposed merger of Citicorp and Travelers Insurance. The merger was granted temporary approval by Alan Greenspan's Federal Reserve. The official stance of the White House was that the Financial Modernization Act was tearing down the antiquated laws and granting banks significant new authority. The signing of the Gramm-Leach-Bliley Act in late 1999 repealed Glass-Steagall once and for all paving the way for both consolidation and expansion in the banking/investment banking industry.

It must be remembered that deregulation and consolidation in the banking and investment banking area had been in place and growing over the past three decades. In fact there were more bank mergers and acquisitions from 1988-1998 sixty-nine in total than from 1998 to 2012, fifty-nine (Weill, 2014). It also could be argued that an overly accommodating monetary policy by the Federal Reserve since before the dot.com bust and post 9/11 was the fuel that propelled asset backed price appreciation. Alan Greenspan, in an effort to move the stalled economy post 9/11 kept interest rate at historically low levels as the stock market and economy struggled. Investment money flowed unabatedly into real estate as a safe haven. This accommodative policy along with a relaxation of regulations led to an environment of ever increasing laxity when it came to policing risk and its potential consequences (Carmassi, Gros & Micossi, 2009). The Glass –Steagall repeal did not lead to a tremendous consolidation of banks and mergers or takeover of brokerage firms on a large scale. It is not often mentioned that there existed and still does exist tremendous differences in culture of the two types of institutions. The genetic makeup of those who work in investment banks is drawn from the universe of alpha males and females as opposed to the more staid personalities in the commercial bank sector. In fact of all the firms those failed or were in danger of failing only one was the real benefactor of the repeal. The institution was the very one that hastened and lobbied for the repeal of Glass-Steagall, Citigroup. Citigroup was the combination of Citicorp and Travelers Insurance and its subsidiary of Salomon Brothers-Smith Barney that was allowed by the adoption of Financial Modernization Act mentioned earlier. In studying the other firms that fell victim to the Great Recession in the banking and investment industry all others were either banks or brokerage firms.

The three large brokerage firms were Lehman Brothers, Bear Stearns, and Merrill Lynch. Lehman Brothers unfortunately was unable to find a buyer and fell into bankruptcy in September of 2008. Earlier in March, 2008 Bear Stearns was bought by J.P. Morgan through the intervention of the Federal Reserve and Treasury. Merrill Lynch was acquired by Bank of America in September 2008. Wachovia was purchased by Wells Fargo in October, 2008 without any government assistance. Wachovia was saddled with troubled mortgages through its merger with Golden West Financial in 2006. Finally, Washington Mutual became the largest American bank to fail in September, 2008. Washington Mutual's assets were seized by Federal regulations and sold to J.P Morgan Chase. A number of Savings and Loan Companies along with Mortgage granting institutions also failed, the most prominent being Countrywide Credit which was acquired by BankAmerica. Glass Steagall in and of itself did not directly cause bank and or investment bank failures, it was a component of a string of ongoing deregulation and lax regulation that added fodder to the fire. One

must look at some of the other factors that allowed, indeed provided impetus for the failures. Deregulation in its broad stroke should spur competition as long as the remaining regulations are upheld and enforced. The first line of defense in any organization is regulating itself as a means of survival and the ability to prosper and thrive. Given an atmosphere of relaxed regulatory involvement the risk appetite will rise to meet the appetite and intestinal fortitude levels of your rivals. This is exactly what transpired during the melt down and the Great Recession. It would be wise to look at some of the more pertinent and elusive descriptions of Glass Steagall and what are indeed factual.

A TIMELINE OF RECENT EVENTS

Glass Steagall in fact was never repealed. It is still applicable to insured banks and forbids them from underwriting or dealing in securities. What was repealed in 1999 were the sections that prohibited insured banks from being affiliated with firms commonly called investment banks, those that are engaged in underwriting and dealing in securities. Repeal allowed banks to use taxpayer insured funds for risky trading, this is also not factual. Portions of Glass Steagall that remained after 1999 prohibited insured banks from underwriting or dealing in securities. Before and after repeal the banks were allowed to trade [buy or sell] bonds and other fixed income securities for their own account. Banks have always been allowed to trade securities they can invest in. Banks did not get into trouble 'trading' risky mortgage back securities they ran afoul by holding these instruments in their portfolios. This is basically the same thing as granting loans that defaulted during the meltdown. The repeal of Glass Steagall did not allow the Investment bank subsidiary to have access to insured deposits so unless they fraudulently comingled or poached funds this would not be possible. The banks failed by making bad loans. The investment banks that failed Bear Stearns. Merrill Lynch and Lehman were not affiliated with insured banks. These institutions by and large became insolvent because of over leveraging, something this paper will address in ensuing pages (Wilson, 2012).

Two of the biggest banks that failed, Wachovia and Washington Mutual got into trouble mainly by making risky loans to homeowners. Two large banks with investment banking arms, JP Morgan and Wells Fargo, resisted taking government money and arguably could have weathered the storm without it. BankAmerica nearly met the same fate of Wachovia and Washington Mutual but not because they bought Merrill Lynch but for their large investment in Countrywide Mortgage a plain vanilla mortgage company (Pearstein, 2012). It would be better to focus our research on some of the reasons that these failures happened at all. Deregulation has had strong government backing since and before even the Reagan Administration. We will look at the most current governmental easing starting with the Riegle-Neal Interstate Banking and Branching Efficiency Act of 1994. This bill eliminated previous restrictions on interstate banking and branching. This was the first link in the foundation of allowing big regional banks to merge and acquire other banks while moving to a national platform. Figure 1 presents the deregulation timeline/key event.

Figure 1: Timeline of Key Events

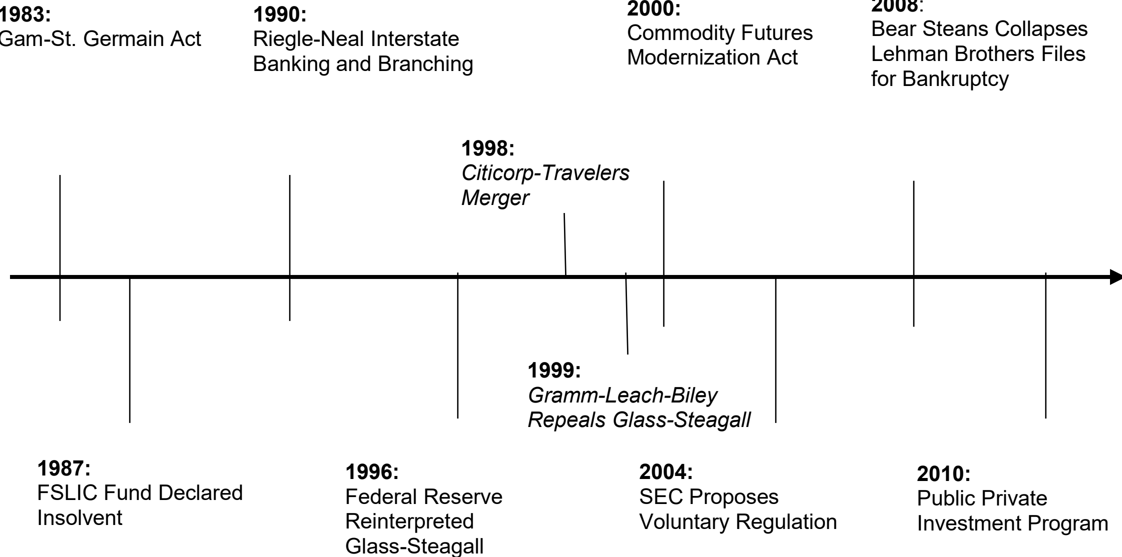

Figure 1 illustrates the chronological progression covering the repeal of the Glass-Steagall Act. Please note the confluence of the Citi-Travelers Merger and the Gramm-Leach- Biley Law as CitiCorp executives played a prominent role in lobbying for the repeal. Source: Sherman, Matthew. "Short History of Financial Deregulation in the U.S., Center for Economic Policy and Research," July 2009, [p.1.]

1996 - Fed Reinterprets Glass-Steagall. After several revisions bank holding companies were allowed to earn up to 25% of their revenues in Investment banking. 1998 – Citicorp-Travelers Merger, creates Citigroup, Inc. merges a commercial bank with an insurance company [Travelers owned Salomon, Smith Barney investment banks] to form the world's largest financial services company. 1999 – Gramm-Leach-Bliley Act—with support from Alan Greenspan, Federal Reserve Chairman, Treasury Secretary Rubin and his successor Lawrence Summer, repeals Glass-Steagall. 2000 – Commodities Futures Modernization Act-Passed with support from the Clinton Administration, including Treasury Secretary Lawrence Summers and bi partisan support in Congress. This bill prevented the Commodity Futures Trading Commission from regulating most over-the-counter- [non Listed instruments] derivative contracts, including credit default swaps [CDO's]. 2004 – Voluntary Regulation- the SEC proposes a system of voluntary regulation under the Consolidated Supervised Entities program, allowing investment banks to hold less capital in reserve and increase leverage. A pattern was emerging that eventually led to bank and investment bank failures. Investment banks were policing themselves more and more with less oversight by the SEC and Federal Reserve. This atmosphere allowed investment banks to increase leverage from 12-1 to 33-1 (Barker, 2012), this leveraging works wonders in a rising asset environment but downward spiraling of asset values leads to dire consequences very quickly.

What Went Wrong

Figure 2 shows the value at risk model that financial firms relied upon to create their CDO structures were predicted on the fact that housing prices experienced a general upward trend for over 50 years. In fact, their progression was upended as mortgage securitization became less "hand on" and more automated.

Figure 2: Financial Services Leverage

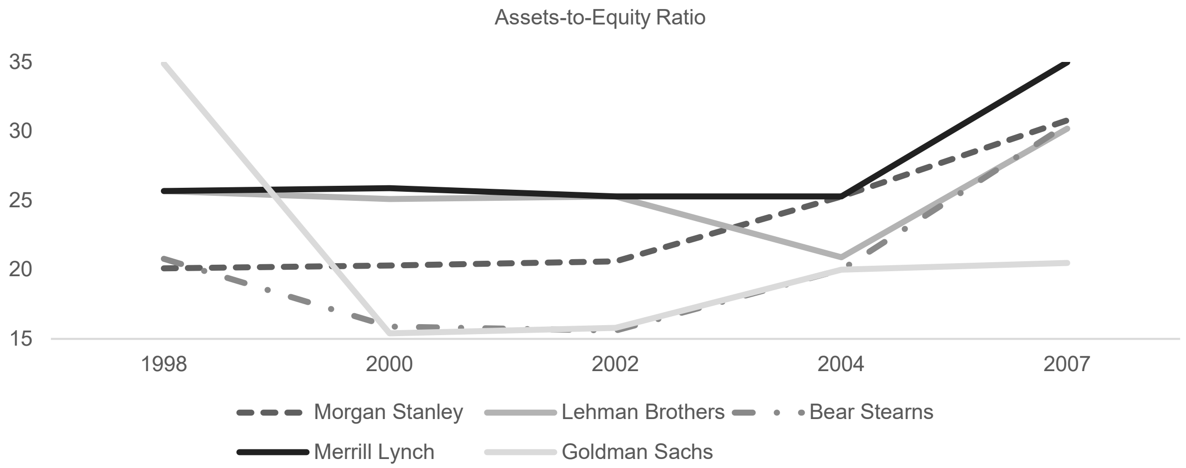

Figure 2 shows the value at risk model that financial firms relied upon to create their CDO structures were predicted on the fact that housing prices experienced a general upward trend for over 50 yearsSource: Kwak, James. "What Did the SEC Really Do in 2004?" www.baselinescenario.com /2012/01/30

Hands off Regulation

A rapid growth in the new types of derivatives instrument posed a major problem to regulatory agencies and removed any transparency that had here- to- fore existed. The financial industry developed a wide range of derivative instruments in the 1990's, most of which were not regulated, this growth continued unabated and accelerated in the first decade of the 21st century. The most important of these derivatives were credit default swaps [CDS] which were effectively a form of bond insurance, where the insurer would bear the risk in the event of a bond default (Financial Crisis Inquiry Commission, 2011). In a completely unregulated market, derivative trading ballooned from a total outstanding nominal value of $106 trillion in 2001, to a value of $531 trillion in 2008. Capital requirements were allowed to drift significantly low as result of S.E.C. actions in 2004 as reported in an article published by a former S.E.C official. SEC rule 15c3-1 allowed some financial firms to hold less capital and dramatically increase their leverage from 12-1 to 33-1. This move was in response to the existing regulatory ratio guidelines followed in Europe and was intended to help the 5 largest US investment banks remain competitive on a global basis. Before the rule change the broker-dealer was limited in the amount of debt it could incur, to about 12 times its net capital, though various reasons broker-dealers operated at significantly lower ratio. If, however, Bear Stearns and other large broker-dealers had been subject to the "typical haircuts on their securities positions" and aggregate indebtedness restriction, and other provisions for determining required net capital under the traditional standards, they would have not been able to incur their high debt leverage without substantially increasing their capital base (see Table 1).

An atmosphere of accommodative monetary policy, friendly bipartisan support for deregulation spanning two decades and an easing of regulatory oversight led to an appetite for increased leverage. This increased leveraging was in somewhat a response to the cries of shareholders for greater returns and a leveling of the playing field with European banks that routinely had leverage ratios even exceeding 40-1. The 2004 rule allowed the Investment banks to pile up debt at an unprecedented rate while at the same time weakening regulatory oversight (Labaton, 2008). It allowed, for the first time the S.E.C. to have a window on the bank's risky investments in mortgage related securities; unfortunately the agency never took true advantage of that part of the bargain. Christopher Cox who became the new Chairman of the S.E.C. a year later never considered this a high priority. The commission assigned seven people to examine parent companies—which in 2007 controlled financial empires with combined assets of more than $4 trillion [at the time of the

article in October 2008 not a single inspection had been made since the division was reshuffled] (Andrew, 2012). The 2004 decision reflected a faith that Wall Street's financial interests coincided with Washington's regulatory interests." In retrospect, the tragedy is that the 2004 rule making gave us the ability to get information that would have been critical to sensible monitoring, and yet the S.E.C. didn't oversee well enough" Mr. Goldschmid an S.E.C Commissioner and authority on securities law from Columbia University, said in an interview.

Table 1: Comparative Financial Leverage, 1997-2007 Debt-To GDP Ratio

	Economy-Wide		**Non-Financial Corporate Sector**		**Financial Sector**		**Households & Small Business**	
YEAR	EA	US	EA	US	EA	US	EA	US
1999	3.51	2.66	0.67	0.46	1.61	0.79	0.48	0.88
2007	4.54	3.47	0.92	0.49	2.32	1.17	0.61	1.28
2008	4.73	3.46	0.97	0.49	2.42	1.17	0.61	1.24
Change in 1999-2007	1.03	0.81	0.25	0.03	0.71	0.38	0.13	0.40

Table 1 shows the proliferation of related lending standards the entire economy employed greater balance sheet leverage. As housing comprised a major part of U.S. asset values, stock prices created a negative collateral effect thus exacerbating the credit crisis. Source: "The Global Financial Crisis: Causes and Cures," Journal of Common Market Studies, 2009. Vol. 47, No.5, [p.982]

Figure 3: Median and Average Sales Prices of New Homes Sold in the U.S 1963-2011 Annual Data

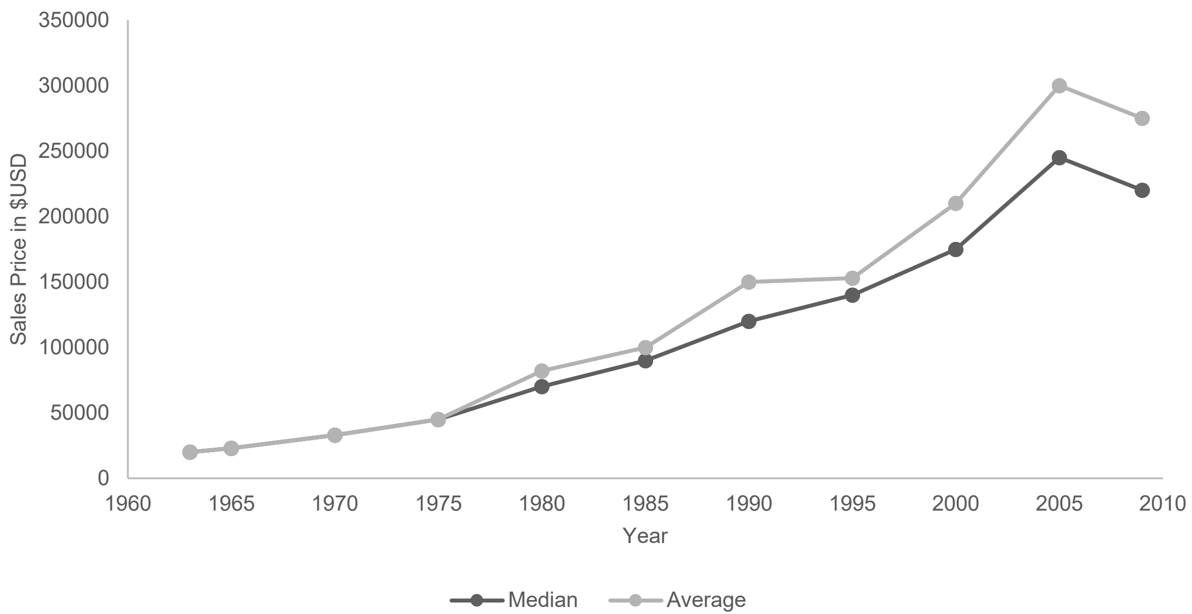

*Figure 3 illustrates how the relaxed leverage requirements led to a dramatic increase in borrowing by the major broker-dealer firms. In particular, the dramatic increase by Bear Stearns and Lehman Brothers helped to lead to their demise. Source: U.S. Census Bureau New Sales Residential Index *Sales price includes land, not inflated adjusted*

A Path Forward

Both commercial and investment banks are awarded government protection, without consideration for their risk taking via liberal lending practices and use of derivative instruments. The safety net provided to banks by the federal government actually protected commercial banks from suffering severe financial consequences when the mortgage market began to collapse. Making the country's exposure worse, was the activity which took place outside the traditional banking system, whereby private financial markets had willingly financed unprecedented amounts of leverage in more loosely supervised firms such as Bear Sterns,

Lehman and AIG (Geithner, 2014). In fact moral hazard became a global issue as the European Central Banks provided liquidity to the banks in Britain. "Never in the field of financial endeavor has so much money been owed by so few to so many. And one might add so far with little real reform." Mervyn King, Governor of the Bank of England, October 20, 2009. "If some banks are thought to be too big to fail, then in the words of a distinguished American economist, they are too big" (Blinder, 2013). Figure 3 illustrates how the relaxed leverage requirements led to a dramatic increase in borrowing by the major broker-dealer firms.

The Effect of Diminished Reserve Requirements and Declining Real Estate Prices on U.S. Banks

A drive for increased revenue combined with relaxed regulation and lower reserve requirements were major contributors to the banking crisis. The seeds of the Great Recession of 2008 were sewn with the advent of investment banks going from private to public partnerships in the late 1990's. The availability of public capital as opposed to the traditional partnership structure created the incentive for banks to take on ever-increasing risk. Striving to compete in a more aggressive global landscape they embraced the more relaxed reserve requirements. This, combined with the technology that allowed Quantitative Analysts, or Quants, the means to create new derivative structures, forged a path that ultimately led to a banking calamity. Global competitors, such as Deutsche Bank and Union Bank of Switzerland were using depositors' commodities-based wealth to strengthen their balance sheets. Concurrent with relatively relaxed regulations, made foreign banks more competitive thus giving them a business advantage and allowed them to attract valuable domestic talent. At the same time, the burgeoning hedge fund industry (who was also significant political donors) was demanding greater leverage from these U.S. Banks. The proprietary desks at these banks offered that leverage and mimicked those trades. New regulations allowed these banks to take on increased leverage, in some cases, approaching approximately thirty to one.

These banks relied on faulty statistical analysis to justify greater leverage. Housing prices had consistently increased in value without any dramatic retracement (see chart). This was mostly due to the fact that housing values have never experienced a significant downward trend in over fifty years. Value at Risk measurements that rely on standard distribution models, severely understated the probability of the significant decrease in housing stock assets. This risk was exacerbated by more accommodative lending standards in the mortgage industry. In the past, the traditional lending models more accurately assessed collateral. Banks, now funded with public money and relaxed reserve requirements, were more eager to offer mortgages to less credit worthy borrowers (Birger, 2008).

Quantitative modeling was employed to create a derivative structure that would enhance the offering of Collateralized Debt Obligations (CDO's). These CDO simulations used pools of mortgages that were assigned to different tranches according to their risk parameters. Using public money, the banks are able to generate significant commission revenue by packaging and selling these securities with buyers both domestically and offshore. Using enhanced leverage requirements, they purchased these securities for their own account trying to drive their revenue base higher, allowing them to be more globally competitive. These derivatives were mostly accounted for off balance sheet which further camouflaged the extent of the risk to the banking sector. Increase leverage allowed the banks proprietary desks to act like the hedge funds they serviced. The use of this leverage ultimately worked to their disadvantage. In comparison to the Long Term Capital debacle of the 1980's, the use of leverage proved ruinous. The rapid decline of housing prices tested a foreclosure system that was here to fore never stressed on a national or global scale. This created a system where the collateral backing these securities could not be judicially seized, creating more destruction. Ultimately, Investment Banks looking to increase their revenues in order to increase compensation levels, and to attract talent, employed ever increasing credit relying on mispriced VAR models and lenient reserve requirements and regulations. Credit rating agencies only magnified the problem by overstating their ratings on these CDO's. Finally, the system for monetizing these bad real estate-based

investments failed. This confluence of events, embodied by the need to create revenues to satisfy the public investor, set the stage for the debacle of 2008.

In the final analysis, it was the relaxation of reserve requirements that led to the Great Recession. Allowing banks to increase leverage, in some cases up to 33 to 1, a very small negative movement in the price of an underlying security would lead to the catastrophic losses experienced by the major bulge bracket firms. This leveraging, allowed by the 2004 relaxation, provided steroidal stimulus to investment banks dealing with investor expectation and overseas competition, where leverage of 40 to 1 had become the norm.Derivative trading exploded and oversight diminished and this allowed for an overabundance of leveraged induced profits. As long as the markets kept advancing the Investment banks were witnessing huge increases in profits but this turned into an incredible and insurmountable burden when markets began to unwind. None of the firms adequately established reserves that could reflect the possible adverse outcome that was about to unfold. This 'Black Swan' began to spread its wings and the leverage, which had provided the profits, came home to roost with a vengeance. If indeed, even with the 33 to 1 ratios, there would have been little ripple effect if the Investment banks had set up the proper reserves to reflect the VAR. If these safeguards were established then the compensation level would have been in line with historical norms and not hysterical levels. The revenues were paid out as bonuses as they were recorded on the books instead have held in abeyance until the contracts came due or the risk abated significantly.

Glass Steagall had less to do with these phenomena then was popularly assumed but was clearly the step child of the reason mentioned previously, Not just deregulation, which should be a boon to competition and aid the end user, but regulation that was not sufficiently enforced Leveraging that would lead to disastrous conclusions, this had been established as a fait accomplished of irresponsibility during the Long Term Capital debacle, so it was not an unexpected or new paradigm. Payouts were established based upon recording of business as opposed to completion and closure of the transactions. Reserves were not set up to counteract even the most damaging occurrences. Rates on commercial paper were shocked from the downgrades and made it impossible for some firms to survive, indeed some firms were not able to issue commercial paper at any rate. These losses were particularly acute at Lehman Brothers and Bear Stearns and led to their failures. Ultimately, the required reserves were not sufficient enough to protect these banks in the event of declining asset prices. At the same time, employees at these banks were still being compensated based on profitability and not risk aversion, this was a lethal combination.

CONCLUDING COMMENTS

As evidenced in this paper, numerous warning signals were evident prior to the 2008 financial crisis. The twenty year period of erosion of the Glass-Steagall Act contributed to the financial crisis by providing an opportunity for the explosion of the sub-prime mortgage market and creation of derivative instruments which fell outside the banking authority's realm of responsibility. Had Federal Reserve oversight been more stringent, perhaps excessive lending to largely financially unqualified American consumers could have been minimized, preventing the five largest investment banks from overleveraging to the point of disaster. The authors provide a clear case in support of strengthening the core requirements for both investment and commercial banks. A great deal of the financial dislocation, that world economies are experiencing today, has its roots in the relaxation and ultimate repeal of the basic tenets that were at the heart of the Glass Steagall (Glass Steagall) act of 1933. While important parts of Glass Steagall are still applicable, it was the ability for banks to harbor greater leverage on their balance sheets that drove our financial system to near ruin. One of the popular misconceptions is that financial intermediaries used taxpayer capital to fund risky speculation on titled backed assets. In fact, it was a combination of the need for U.S. banks to improve their competitive position, combined with an overly accommodative stance by the Federal Reserve that set the stage for the 2008 Crisis of Credit.

To recapitulate, U.S. banks were driven by their publicly funded nature to report better quarterly earnings.

Faced with this issue, and presented with a supposed solution created by lower rates, greater leverage and mispriced value at risk models; domestic. Financial institutions grossly over positioned highly priced asset backed securities. When one combines these bad facts with the false security created by flawed evaluations by American rating agencies you have a toxic mix that affects our economic system to this very day. In conclusion it is ironic that Glass Steagall was enacted as a reaction to the devastation caused by the Market Crash of 1929. The relaxed reserve requirements and regulations ushered in with the virtual repeal of Glass Steagall, in conjunction with the growth policies of the U.S. central bank almost brought us back to the precipice.

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WAYS TO BATTLE THE $431 BILLION FAKE PHARMACEUTICAL INDUSTRY

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ABSTRACT

Nowadays, counterfeit drugs are available in the marketplace more than ever. One has no idea whether they are acquiring the genuine drug or not. Many deaths have occurred because of mistakes made by consuming counterfeit medication. Not only does it alter one's health but it also crushes their hopes. The data concerning counterfeit drugs are increasingly being published in reports and reviews. It seems like government does not care about the issue since it is ongoing and growing. Governments seem to underestimate the importance of the issue, hence its growing prospect. Harsher sanctions are needed to prove that counterfeiting is not an unpunished crime. Whoever commits that felony has to face the consequences that come along with breaking the law and possibly participating in harming and endangering one's life.

JEL: I10, I18, I19, K20, K42, F19, F23

KEYWORDS: Medicine, Counterfeit Drugs, Generic, Regulation

INTRODUCTION

Over the years, the world as we now know it, has witnessed great progress. But with progress comes many issues. One issue of great consequences is pharmaceutical counterfeiting. Pharmaceutical counterfeiting stands for fraudulently producing or mislabeling medicines that are being purchased by consumers who believe them to be genuine. The illegitimate drugs can cause many serious health complications. Packaging is also identical to the legitimate ones, making it extremely difficult to distinguish them. But with close examination of their chemical formula, he/she notices that the ingredients were most likely misused.

Counterfeiting does not only target brand-names but generic ones as well. Medical devices and medical-related products do not escape this problem.

Counterfeiting has not only increased but has also targeted terminal and incurable diseases, giving people a prospect of an affordable and easy to get solution. On one hand, it raises people's hopes and gives them something to hold on and look forward too. On the other hand, the outcomes are unpredictable since no one knows what the impact of some components are to human health. Counterfeiting is an issue that is looking to dominate the pharmaceutical world. With its low cost and easy access, more individuals turn to the illegitimate drugs for salvation.

This paper proceeds as follows. Section 2 presents a brief overview of literature. Section 3 presents an analysis of the situation. Section 4 presents a path forward. Section 5 concludes.

LITERATURE REVIEW

One way to fight counterfeiting is to send the supposedly fake drug to the original maker and have them analyze it. Many renowned companies employ undercover detectives to help them track down and find out who is counterfeiting their drugs. Those detectives then share the information they found with each other since they are all fighting the same crime and criminals. Pfizer, which is the world's largest drug company fights continually concerning the safety of their trademark since their products are the most counterfeited. During 2010, counterfeited drugs generated about $75 billion (Gillette (2013)).

Counterfeiting does not only effect the economy but also people's lives. Each year, about 100,000 million people worldwide may succumb to these fraudulent medicines. Counterfeit pharmaceuticals sometimes contain chalk, brick dust, paint, and even pesticides. Some of them even contain the remains of human fetuses. Others contain no active ingredients at all. Miraculously enough, the fake medications sometimes do actually work (Gillette (2013)).

According to OseiTutu (2013), one form of the distribution of counterfeit pharmaceuticals into the hands of public is through the illicit drug trade. Individuals that traffic in the distribution of illegal drugs such as cocaine or heroin may also choose to enter the counterfeit medicine trade. Evidence shows that some counterfeits are as deadly as the illegal substances.

When one hears about how much profit is made out of fictitious drugs, he/she wonders how they get their hands on them. One way is the internet. Since its creation, the internet has only grown and been accessed all over the world. Finding fake drugs online is as easy as typing something on the computer. Specialized websites offer hundreds of drugs for whatever illness one may suffer from. Even websites like "Craigslist" offer fake drugs. Counterfeiters play on patients' feelings to get them to turn to them. People do feel some embarrassment and shame when seeking pharmaceuticals for their health and they would much rather order their medication online in the intimacy of their own home. Another way to get customers is their unbeatable prices. In fact, anyone would prefer to pay $1 rather than $15 per tablet.

In fact, the number one driver for the purchase of counterfeit drugs is price. One study of 144 American students showed that the perceived legal and social risk or societal consequences did not influence the intent to purchase counterfeit goods. In many cases, consumers of counterfeit drugs feel they are 'getting away with something.' They feel the discounted price they pay is somehow 'getting even with the large pharmaceutical companies,' for the prices they charge.

High drug costs drive Chinese consumers into the counterfeit marketplace, especially in rural areas. Chinese officials are more prone to ignore the activities of drug counterfeiters and in fact may aid the production of fake medicines supported by corruption in both the police and military (Bird (2008)).

In addition, the deception of websites offering pharmaceuticals runs wide and deep. A recent study funded by the Food and Drug Administration found that of 11,000 purportedly "Canadian" websites, only 214 were actually registered in Canada. Websites may display a pharmaceutical company's logo, company symbols, national flags, etc. in attempt to legitimize their presentation. It's also important to note that even drugs shipped through countries such as Canada are not subject to those countries' safety requirements if the products are not for domestic consumption. From a business perspective, the transportation of counterfeit pharmaceuticals is an act of trade (Liang (2008)).

Detectives investigate counterfeited pharmaceuticals by looking at the small leads that would eventually take them to the "big fish". For that purpose, criminals resort to the express mail service to get their drugs wherever they need to be. The bigger the package, smaller the odds of inspecting it. Once the package reaches its first recipient, usually a drop shipper, the drop shipper serves as an intermediary between the

original sender and the customer. The reason behind this is to not scare off the customer if the package is searched. Drop shippers are the ones that usually use "Craigslist" to make more money on the side, without thinking about the consequences. Asia is leading in counterfeiting, especially China. It is not surprising that counterfeiting is this prominent since the laws against it are very weak. Criminals do not fear the consequences hence there are more of them.

Counterfeiters pay attention to every detail to make sure that their drug looks indentical to the original one. Because of how much thought they put in it, many licensed distributors are not able to distinguish between the real drug and the fake one. It is tough to evaluate the severity of the issue because of the lack of resources available to detect counterfeited medicines, the different definitions of counterfeiting around the world and the variation in the distribution system (World Health Organization (WHO) (2010)).

To try and assess the problem's gravity, WHO (2010) sent on a questionnaire to a handful of countries. Only 13 countries out of the 22 in the WHO Regional Office for Eastern Mediterranean region (EMRO) responded. They found out that only 3 countries in EMRO have distinct legislation on counterfeit medicine. They also discovered that 23 countries would welcome a specific legislation on counterfeit medicine (13 from WHO Regional Office for Africa (AFRO); 10 from EMRO). Unfortunately, information on counterfeiting is rarely shared with other National Medicines Regulatory Authority (NMRA) or WHO.

Some recommendations were made, starting with Member States developing a specific legislation that empowers NMRAs and criminalizes counterfeit medical products. Second, proposing that information should be shared between NMRAs and police and customs. Joining efforts will increase the odds of lessening counterfeiting. Third, declaring that Single Points of Contact (SPOC) should be established to facilitate exchange of information on counterfeiting at regional, national and international levels. Fourth, saying that Member States are encouraged to declare cases of counterfeiting to WHO and INTERPOL. Fifth, proposing that pharmaceutical components or finished goods in free trade zones should be controlled by legislation. And finally, suggesting that information on counterfeiting should be shared with other NMRAs and law enforcers within the country (WHO (2010)).

Counterfeiting is underestimated crime even though it makes billions of dollars annually and is harmful to one's health and the society as a whole. The illicit pharmaceutical trade usually occurs with post-Soviet organized criminals, Columbian drug cartels, Chinese triads, and Mexican drug gangs. Hezbollah and al-Qaeda are believed to be involved. It proves that counterfeiting is not assigned to one special country or part of the world. It originates from all over the world, especially from the "rough" areas. Counterfeiting provides jobs in the roughest areas of Asia such as China and India. Private entrepreneurs, state officials, and online criminals play an important role as facilitators of counterfeiting. The internet advertises counterfeiting through spams. Out of all the criminals that are involved in counterfeiting, only 1,300 people worldwide were arrested over the past five years. More than the half of the arrests occurred in China. With so few arrests potential traffickers are likely never to get caught (Shelley (2012)).

About 2 billion consumers worldwide purchase counterfeiting medicine and fall victim to its dangerous consequences. Between 1999 and 2008, counterfeiting revenues increased by $8.2 billion per year (Shelley (2012)). Poverty plays a major role in counterfeiting. Fake drugs are very affordable, making it easier for needy people to get to them. One of the most important consequences to fake drugs is that most people tend to develop drug-resistant strains of the deadliest diseases. It was also discovered that licensed pharmacists use counterfeited drugs to make more money, selling them to customers as genuine. No one is willing to confront and address the issue, which is ongoing and still growing.

Online acquisition of counterfeit pharmaceuticals through the Internet has become much more pervasive. Some websites simply require an 'online profile,' followed by a brief review by a physician. The

physician never examines or communicates with the patient before the order is dispensed. One online pharmacy in particular was found to fill virtually every order that was placed. The physicians were compensated based upon the number of prescriptions they approved.
The main focus of law enforcement today are online outlets called 'rouge pharmacies.' These sites distribute drugs to consumers without a prescription. They are harder to track by regulatory bodies because they are not registered anywhere. If the drug or counterfeit is available, a credit card is all that is needed. These pharmacies are largely located outside the U.S., but may advertise their products as being "FDA Approved."

Given the light penalties and the time lag for regulators or law enforcement to shut down these Internet websites, operators simply take down the website and relocate to another region of the country or perhaps to another country. From a business perspective, this is merely a relocation of a distribution center. Large and important pieces of the supply chain remain intact.

A recent study found nearly 10,000 websites out of compliance with U.S. federal and state regulations. 2,274 of the sites have physical addresses located outside the U.S. and 3,708 maintain servers in foreign countries. Because of variations in drug laws from country to country, some countries may not be aggressive with either investigation or prosecution. In fact, extradition may not be possible if the defendant's actions are not considered criminal in the extraditing country (Lipman (2013)).

According to Faucon et. al (2013), a cargo ship originating in Guangzhou, China set sail for Luanda, Angola. Part of the cargo was a shipment of loudspeakers. Within the loudspeakers, 1.4 million packets of counterfeit Coartem, a malaria drug, was discovered by Angolan customs. The destination of the loudspeakers was a Luanda pharmaceutical distributor. He was arrested, questioned and released with no charges filed. It was enough to treat more than half the country's annual malaria cases, if only they were genuine. Because of how many fake antimalarial drugs are being sent to Africa, health administrators fear a relapse. The counterfeit "Coartem" found in Angola did not have any active ingredients found in the real drug. Instead, they consisted of calcium phosphate, fatty acids and yellow pigments. Patients turn to markets where fake "Coartem" is known to be sold because it is much cheaper and easier to get. Some of the counterfeited "Coartem" found seemed to be destined for African countries specifically.

According to WHO (2010), counterfeit and substandard medicines constitute a $431 billion market, which accounts for a 300% increase since 2000. Because of that increase, an estimated 25-60% of the medicine supply in developing countries is either substandard or counterfeit. The WHO also reported that more than 100 patients were killed in Panama by counterfeit glycerin contained in cough medicine. WHO also reported that around 100,000 deaths per year in Africa are linked to counterfeit drugs. Furthermore, Nayyar et al. (2012) collected surveys that examined 2,634 malaria drugs samples across 21 sub-Saharan African countries and found that one-third of them failed on the basis of chemical analysis. The London-based International Policy Network attributes 700,000 fatalities to fake malaria and tuberculosis medicines every year.

In 2008, an active ingredient in "Heparin" was replaced with with a cheaper counterfeit substitute that resulted in 81 deaths. 2012 statistics show there were 841 counterfeiting incidents involving customs seizures or police/health inspector raids, 1,238 people arrested for counterfeiting worldwide, and 123 countries were impacted by pharmaceutical crime (Asia and Europe were the most highly impacted).

ANALYSIS OF THE SITUATION

The human will to survive is a basic instinct. In regions with widespread chronic afflictions such as malaria, HIV/AID, tuberculosis, diabetes, etc., counterfeits can easily find markets to serve. These and other medical conditions drive consumers into the counterfeit market because they usually cost less than

the authentic product and they are more easily obtained. The vast majority of these consumers are unaware that counterfeits do not undergo the rigorous testing of manufacturers and regulatory bodies. They also risk consuming material that was formulated in a setting that was void of the Good Manufacturing Practices (GMP) and may be void of the active ingredients necessary to address the medical condition.

Criminal organizations and individuals are discovering that there is less risk and penalties associated with counterfeit pharmaceuticals than human trafficking and illegal drugs. Courts and judges generally do not view counterfeit pharmaceuticals as they may a violent crime. It seems to fall somewhere between what may referred to 'white-collar' crime and a violent offense.

For example, a pharmacist in Ontario, Canada was arrested in 2005 for substituting talcum powder in heart medicine. The coroner cited "unauthorized medication substitution" in four deaths. The pharmacist was acquitted by a court in 2007 because prosecutors failed to prove criminal intent. He sued to get his license back and is now the owner of a pharmacy in Toronto (LaGanga (2014)).

In another example, a Chinese national was accused as being the architect of a world-wide pharmaceutical counterfeiting operation when he was arrested in New Zealand in 2010. He was released on bail and failed to appear for an extradition hearing. Authorities suspect he fled to China (Gillette (2013)).

Finally, a U.S. citizen pled guilty to one count of conspiracy to traffic and one of trafficking. He received 10 months in prison and a $5,100 fine. According to Donelly, director of Pfizers global security team in the Americas, "…the laws against drug counterfeiting are too weak. If he were a crack dealer, for the same type of operation, he'd be looking at a five-year minimum" (Gillette (2013)).

The research in the area of counterfeit pharmaceuticals and law enforcement seems to reference "arrests," "questioning," "detainment." It's rare that any paper published in this area ends with the phrases "sentencing" or "incarceration." In the rare occasion the phrase 'sentencing' is mentioned it's usually in the context of 'ridiculously low'.

In fact, some counterfeit drug distribution has occurred from totally unsuspected sources, For example, in 1995 Niger suffered a widespread outbreak of meningitis. In an effort to provide aid to its neighbor, the government of Nigeria shipped 88,000 doses of meningitis vaccine to Niger. The vaccine was discovered to be counterfeit and resulted in the deaths of 2,500 people. Counterfeit drugs currently account for approximately 30% of the medicines distributed in developing African nations (Chavez (2009)).

Counterfeiting is more prevalent in countries where government and regulatory officials choose to turn a 'blind eye' to the situation. The depth and breadth of counterfeiting can also differ from rural to urban settings with a country.

According the WHO's (2010) survey of 24 African and Eastern Mediterranean countries, only three in the eastern Mediterranean have specific legislation on counterfeit medicines. Based upon subsequent discussions and meetings of survey responses, the number one recommendation was, "Member states should develop specific legislation that empowers National Medicines Regulatory Authority's (NMRA's) and criminalizes counterfeit products".

Organized criminal elements within Italy have played a lead role in the importation and dissemination of a variety of counterfeit goods. According to the U.S. Department of Treasury, the criminal group Camorra may earn as much as $2.5 billion of their annual profit from counterfeit goods, including pharmaceuticals. According to Shelley (2012), "Corruption within the Italian government is a key component in their ability to operate on such a large scale". Central and South America are fast emerging as a production and

sales territory for a wide variety of counterfeit goods, including medicines. Many of these medicines travel north into the U.S. This trade survives because of "…corrupt officials of all ranks..." (Shelley (2012)).

The Australian government recently threatened to withhold a $38 million medical aid project destined for Papua New Guinea (PNG) due to corruption allegations. A large contractor, Borneo Pacific Pharmaceuticals was accused by the PNG medical society of "giving presents to people in the government procurement system" and branded the process "corrupt". The PNG Health Departments' drug supply division was described by its minister in 2011 as "riddled with corruption" (Towell (2013)).

The continent of Africa is an example of a large group of countries with borders that ill defined and is easily breached. During a 9-month period in 2012, China exported $1.5 billion worth of medical products to Africa which in some cases have few or no active ingredients at all (Good Governance Africa (2013)).

According to the United Nations Office on Drugs and Crime, in 2012, 500 million container movements were recorded. Of those containers, only 2% received any attention in regard to inspection.

A PATH FORWARD

Some administrators are looking into finding some way to battle counterfeiting. They are using private investigators and many new technologies such as RFID to trace medicine. But to get right to the problem's core, one has to understand it.

One of the major reasons is poverty. People hold on to the tiniest bit of hope, which, in this case is what usually hurts them more. But it is the only alternative they can afford, without having a prescription. If medical care was cheaper, no one would look into buying a medicine that can possible hurt them in any way. Consequently, economical, educational and social policy implemented by local government can help avoid the proliferation of counterfeited medicine.

Another part of fighting counterfeit drugs is enforcing the laws. Laws regarding counterfeiting are way too weak and does not intimidate the criminal element. Illegal drug dealers face a harsher sentence compared to medicine counterfeiters. The government has to make it clear that they are not facing a few months of incarceration but more like a couple of years. Finally, another way to fight counterfeiting is to check larger cargos rather than just letting them go. Not only will it take them by surprise but it will also make it possible to arrest the people that are higher in the supply chain rather that just the drop shippers.

CONCLUSION

Counterfeiting is a terrible problem that has become worldwide. Not only is it crushing the economy but it also is crushing people's health and hopes. It would be easier if customers stopped buying medicines online. Sadly, there are many other factors that play along, such as poverty or emotions.

Economics combined with a severe medical condition tend to establish an end user market for counterfeit pharmaceuticals. This demand is more easily serviced when laws are nonexistent or not rigorously enforced. One reason laws may not be enforced is because of the lack of an effective regulatory system and a government in place that chooses to ignore certain criminal activities. The last major piece is access – the challenge to counterfeiters to move their materials into the country and establish the forward distribution networks.

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CORPORATE ACCOUNTING MALFEASANCE AND FINANCIAL REPORTING RESTATEMENTS IN THE POST-SARBANES-OXLEY ERA

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ABSTRACT

The U.S. Congress passage of the Sarbanes-Oxley Act of 2002 (SOX) was a direct response to the accounting scandals of the 1990s and an attempt to reform the financial/business reporting process. Due to corporate malfeasance in the United States since the mid 1990s, there has been a significant increase in the number of companies restating their financial statements. After a large increase in restatements over the first years after SOX, for the past five years, fewer companies are restating financial statements. This paper provides an overview of corporate accounting malfeasance, the state of corporate accounting malfeasance, reasons for its occurrence, comprehensive listings of the types of corporate accounting malfeasance activities, and the U.S. legislative response. The paper also theorizes that not only is corporate accounting malfeasance is here to stay, but malfeasance is an inherent part of the U.S. and global financial system, regardless of the policies implemented by the Securities and Exchange Commission (SEC), other regulatory bodies, or leading institutions of the accounting profession. The paper suggests that certain aspects of the Sarbanes-Oxley Act have been effective in helping companies to detect fraud more easily, and corporations have added internal controls and provided restatements of financial statements to demonstrate their commitment to compliance. Future commitment to internal controls for corporations and auditors is necessary to ensure transparency in financial statements.

JEL: M410

KEYWORDS: Accountant, Accounting, Auditing, Fraud, Malfeasance, Sarbanes-Oxley, Financial Reporting

INTRODUCTION

The paper discusses the extent of financial statement restatements for acts of corporate malfeasance in the post SOX years. This paper discusses the roots of malfeasance, including motivations for malfeasance, methods of malfeasance, and the impact of malfeasance. In addition, post SOX, the paper notes, how internal control frameworks for corporations and auditors have increased transparency.

This paper will provide an overview of malfeasance activity in the United States since the early 1990s. The paper will discuss commonly cited reasons for malfeasance activities, in the section Six Critical Reasons for Corporate Malfeasance Activity. The paper will next provide a comprehensive listing of the types of corporate malfeasance activities that result in restatements, entitled Examples of Malfeasance. The Path Forward section evaluates the SOX related policies implemented by COSO and the PCAOB over the past 15 years.

LITERATURE REVIEW

Corporate accounting malfeasance is defined as the use of false or misleading accounting information, or omission of these entries, in the financial reporting process (announcements, filings, etc.). This malfeasance, where material, later requires that the financial statement be restated. This restatement approach, which considers restatements to include accounting errors, accounting misstatements, and/or any other accounting irregularity, is similar to the approach utilized by the United States General Accounting Office (GAO) in their restatement study (GAO, 2002).

The passage of SOX in 2002, the formation of the Enhanced Business Reporting Consortium (EBRC) in 2005, and the Dodd-Frank Wall Street Reform and Consumer Protection Act of 2010 are the most recent attempts to mitigate corporate malfeasance and empower the users of publicly reported information of companies. One important question remains: will these initiatives help to curb the volume and magnitude of corporate malfeasance?

CONSEQUENCES OF ACCOUNTING MALFEASANCE ACTIVITIES

Corporate accounting malfeasance has led to legislation and has increased the cost of doing business for publicly traded companies. Below is a summary of some of the effects:

Increased Legislation

As a result of the growing number of accounting restatements from 1997 to 2002, new laws and regulations have been enacted to help curb this epidemic of malfeasance. The Sarbanes–Oxley Act of 2002 was one of the most significant pieces of legislation. SOX has resulted in more requirements for internal compliance by corporations, materially increases in the cost of business expenses, and greater accountability. The Internal Auditing industry has been one beneficiary of SOX. However, whether accounting malfeasance has actually decreased since SOX is an open issue. Recent research such as Scholz (2014) reports that the number of restatements reported has decreased from 2007-2012, which coincides with SOX's 404 internal control requirement. However, whether this recent decline in reported activity is a direct effect of SOX is an open issue that researchers need to address.

Stock Price Declines

Companies engaged in malfeasance have experienced significant declines in stock price, and this downward trend continues over a longer time frame (compared to non-malfeasance companies). Investors tend to penalize these companies, and institutional investors shy away from these companies, until confidence in the company is restored.

Increases in Reporting of Corporate Malfeasance in The United States: Pre- and Post-SOX

In the United States, the number of companies that file restated financials, as well as the magnitude of the restatement amount in dollars, has significantly and steadily increased since the mid-1990s up until approximately 2006, as measured by the sheer number of restatements filed with the SEC as well as the number of restatements announced publicly. Recent evidence shows a different trend, i.e., that the number of restatements has leveled off from 2007 to 2012.

Files (2012, Table 2) documents that the number of publicly announced restatements increased steadily each year, from 33 in 1997 to 407 in 2005, which is a 1,100% increase over an eight year period. The U.S. Government Accountability Office (GAO)'s 2002 study (GAO, (2002) also documented a similar increase in announced corporate restatements, with 92 announced restatements in 1997 and the 225

restatements in 2001, which is a 245% increase over a four year period. Similarly, a Huron Consulting Study in 2003 found that the number of corporate restatements filed in 1997 was 116, while the number filed in 2002 was 330, which is a 285% increase.

Over the mid-1990s until about 2006, the number of companies that were publicly registered with the SEC decreased, which suggests that restatements were more frequent within a set number of firms: The GAO study in 2002 noted that the average number of companies listed on New York Stock Exchange (NYSE), NASDAQ, and American Stock Exchange (AMEX) decreased annually from 9,275 in 1997 to 7,446 in 2002. The Huron study in 2003 also noted that over the period from 1997 to 2001, the number of public registrants decreased by 14%, while the number of restatements rose by 53%. The CPA Journal in 2003 further reiterated that the total number of registered companies decreased from over 10,500 in 1999 to around 9,000 in 2002, including all U.S. publicly traded companies. Although some of the decrease can be attributed to company delistings and bankruptcies related to corporate malfeasance, some of this trend is driven by a number of public companies that have chosen to become private (Grant Thornton, 2003). The results of these studies, and the sentiments expressed in a 1998 speech by Arthur Levitt of the SEC, demonstrate that the increase in corporate malfeasance existed even prior to the occurrence of the subsequent accounting scandals at Enron and WorldCom in late 2001.

Recent evidence shows a different trend, i.e., that the number of restatements has leveled off from 2007 to 2012. For example Scholz (2014, Figure 1) reports that the number of restatements announced peaked at 1,784 in 2006, shortly after the implementation of SOX's 404 internal control reporting requirements. After that, the number of restatements has declined to about 738 in 2012, which is a decrease of 141%.

Given that the effect of SOX in 2002 on corporate malfeasance activity has been both mixed and inconclusive (taking a minimum of five years to have an effect on the declining number of restatements beginning in 2007), this prompts the following questions: What are the causes of corporate malfeasance activity? Since it is likely that legislation, such as SOX 2002, may have no effect on the incidence of corporate malfeasance, restatements may be a permanent fixture in companies traded in the U.S. stock market.

Six Critical Reasons for Corporate Malfeasance Activity

We will explore six critical reasons for corporate malfeasance activity: internal pressure in meeting unrealistic earnings expectations, income smoothing, short-term thinking, ambiguity in accounting rules. difficulty in assessing accountability, and lack of internal ethical environment.

Executives may feel internal pressure of meeting corporate earnings expectations, and may try to falsify information to ensure that stockholders remain confident and that their personal performance incentives are fulfilled. A company's failure to meet earnings expectations can have a significant negative effect on the company's stock price, which can lead to lower profits, lower executive bonuses, and underwater stock options.

Executives also have an incentive to engage in Income Smoothing: volatile and erratic earnings patterns are considered to indicate high risk, which can potentially increase the required rate of return that investors demand from companies and can potentially lower the company's stock price. Since volatile earnings are considered undesirable, managers of companies may have incentives to engage in earnings management tactics to smooth revenues and profits, thereby showing continuous company improvement.

Many investors and managers view the short term as the critical time frame without regard to the long term, which may lead managers to engage in malfeasance behavior. Also, since there is the possibility

that malfeasance activity will not be detected, some managers may have the mindset that the fraud will not be discovered or that future accounting adjustments can be made to cover the misstatements.

Unclear or Ambiguous Accounting Rules also add to the ability to engage in fraud. Many individuals consider accounting rules to be vague, non-uniform, ad subjective (i.e. the definition of "materiality"), which may lead some managers to engage in manipulation of accounting reporting. Additionally, some accounting reporting requires individuals to make internal assumptions, which may be subjective or unreasonable.

There is difficulty of Assessing Accountability in fraudulent activity. Assessing whether an individual's actions are intentional versus unintentional, or fraudulent versus non-fraudulent, is difficult and sometimes an impossible task. As a result, only in very extreme cases like Enron or WorldCom is the evaluation of such actions as fraud clear cut. In the majority of cases, criminal and/or civil penalties are difficult to enforce. In general, the penalties of malfeasance are less than the overall cost, which presents a problem to discourage such behavior in financial reporting.

Finally there is often a Lack of Internal Ethical Environment in the firms represented. Malfeasance activity is human in nature and may be caused by several things, such as the stresses of management to meet goals to the lack of personal ethical behavior. Additionally, internal ethical guidelines may be non-existent or not reinforced by management, which adds to the problem.

EXAMPLES OF MALFEASANCE

Revenue Related Malfeasance: Revenue Can Be Falsified, Revenue Recognition May Be Manipulated or Revenue May Be Misclassified

False revenues are methods of creating the impression that there is additional revenue include: Round-tripping; which is sale of contract from company A to company B, and then from company B back to company A (there is at least one "round-trip", and there can be more) to increase revenues for each company. Another n\method is back-to-back; sale of assets from company A to company B at a gain, and then from company B back to company A at a gain, to increase the income for each company. Round tripping is a form of "back-to-back" but usually with no gain. A third method is fraudulent sales; Revenue created from fictitious sales transactions with or without sales' orders and/or shipping documents (customer names can be either legitimate or fictitious).

Revenue Recognition involves Revenue Timing. A valid sales transaction recognized as complete in a different accounting period than when the actual transaction was completed. This overstates revenue in one period and understates revenue in another. Premature revenue recognition is recognizing revenue on a valid sales transaction before the sales transaction is completed. Backdating sales or software invoices/contracts is a form of premature revenue recognition in which the date for a completed sale or software contract transaction is changed to an earlier accounting period than when the actual transaction was completed.

Revenue Misclassification and Other Improprieties include Recognition or misclassification of sales transactions that are not valid sales transaction due to terms being incomplete and/or other contingent information. Improper classification/recognition of revenue; recognition of revenue from sales that are not completed sales transactions – i.e. goods on consignment, overselling goods to distributorships, and/or other buy-back/return agreements. Improper revenue disclosures include recognition of sales transaction (one-time revenue gain) without disclosing in footnotes that this was a one-time gain/transaction. Reduction of inflated reserves; revenues created by reversing previously created expense reserves (cookie

jar reserves – reserves that are created in good times to be used in bad times in order to increase income). Revenue reduction includes skimming revenue for regulatory rate increases.

Expense Related Malfeasance: Expense Related Fraud Includes Misclassifications and Shifting of The Timing of Expenses

Misclassification, non-recognition, or unauthorized expenses of the period include Compensation Abuses. Unauthorized pay and bonuses, excess/unauthorized use of company assets, and backdating of stock options are examples of this practice. Another method of fraud is fraudulent capitalization of current expenses; capitalizing expenses as assets (to be written-off over a period of time), when those expenses should be included as costs in the current period. A third example is Expense or Cost Misclassifications/Manipulation; recording expense(s) in a later period than the period incurred, or changing the amount of an expense in the current period. In addition, there can be non-recognition of losses and disregarding or erasing expenses of the period. Finally, fictitious or inflated expenses can boost regulatory rates.

The process of recording more costs and expense during an accounting period than normal when (1) a restatement resulting in lower income is required to be filed or (2) a significant loss has occurred for the reported period. Restructuring Costs (Fraudulent or Misclassified) include using a loss/restatement situation to create a reserve (asset) for future restructuring/reorganization of the business by expensing the dollars in the current period (as required by Generally Accepted Accounting Principles, or GAAP). As the restructuring occurs in the future, the charges will be written off against the reserve account. However, if the reserve is not needed, or if the reserve is overstated, then the unneeded dollars are added to income in the period for which it was determined the reserves were not needed. There are also erroneous or inaccurate reserves recorded; recording expenses in periods of high income to build "cookie-jar" reserves and/or to reduce income. Finally, write-downs are used; using a loss/restatement situation to write-down or write-off assets that will be used or sold at a later date. This will reduce the asset cost when sold in a later period thereby increasing income.

Other Malfeasance Including Income Inflation-Assets-Liabilities

Income can be inflated. Earnings inflation is motivated by meeting analyst expectations; using inappropriate use of reserves, false financial statements and other items. Improper accounting is used to inflate income; bundling leases, insufficient disclosures. Fraudulent accounting schemes, can be employed; Use of shell companies, erroneous reserves. There are Accounting errors; overstatement of perishable inventory, and premature revenue recognition. Finally, Improper internal controls; indicate that internal controls that do not detect errors.

Assets may be overstated. Any situation where the specific revenue or expense detail is not available, but the resulting asset(s) detail or impact is provided. In Mark-to-market abuse; companies recognize gross revenues as profits, which results in accounts receivables being overstated. Where Assets are not properly written down; inventory is overstated, goodwill is overstated._Overstating reserves through restructuring is another problem; Creating excess reserves based or cookie-jar reserves (see revenue above).

Non-Disclosure or inadequate disclosure of liabilities can have a large impact; debt and guaranteed loans are not disclosed, and liabilities are not included in the financial statements in the appropriate manner. Other methods include, improper off-balance-sheet financing of assets or inappropriate synthetic leases. Fraudulent use of SPEs and inadequate disclosure of SPE accounting issues; inappropriate reclassification of debt related to special purpose entities (SPE), SPEs listed that do not meet the SPE criteria, unauthorized SPEs; transfer of bad debt and other items to SPE inappropriately. Finally Non-recognition of liability presents a transparency issue; liabilities are not disclosed that should have been disclosed or

presented in financial statements.

Theft and Misappropriation

Theft includes inappropriate purchases/payments to/for employees/officers and Misuse of company assets by employees and officers. Misappropriation can include compensation and/or stock abuse by officers; granting of options or other stock payments to officers that are not included in the contract or does not meet company requirements for such actions. Other misappropriation includes, inadequate or no repayment of loan by officers/directors; loan repayments are dismissed, which result in a decrease in assets or earnings of the company.

Other Abuses

Insider trading is an external factor impacting the financial statements; an employee trades his/her company's stock based on knowledge of an impending downturn or upturn in the company's financial position, which thereby increases the employee's financial position. Also, the employee's sharing of this information with others (e.g., family or friends), who then act upon the employee's privileged information. Bribery/Influence Peddling; illegal payment by a company to a public official or private individual to gain favorable treatment for that company or the company's goods and services. Conflicts of interest can manipulate reporting outcomes; Taking a fiduciary position in a situation or making a fiduciary decision on an issue where the individual is not considered to be "independent" (i.e., the person has a personal or business relationship, stock owner, etc.). Abetment/Accessory to malfeasance of others; assisting others in misrepresenting financial information is another issue. Loan guarantees for executives have been an area of abuse; Excessive or inappropriate loan guarantees for employees or board members. Related party transactions; Transactions occurring with the approval of, or sanctioned by, individuals with a personal or business relationship with the individual, organization or company that requires approval.

A PATH FORWARD

The importance of Internal Control Standards: The Committee of Sponsoring Organizations (COSO) has been a prolific source of post SOX advice for corporations, in the area of Internal Control and Enterprise Risk Management (ERM). Stressing Internal Controls and corporate accountability, COSO standards advise corporations understanding about Enterprise Risk Management and understanding Key Performance Indicators (KPIs) including the effectiveness of the overall process for gathering and verifying relevant financial report information.

Auditor Standards: The PCAOB has also engaged in creating Internal Control Standards for Auditors and Auditing firms. Creating a comprehensive framework for auditors provides a quality control that will hopefully be more likely to detect malfeasance.

Would IFRS Adoption End Corporate Malfeasance?: The Move toward a Standardized Worldwide Accounting Reporting System: There has been a major shift around the world to standardize accounting reporting systems. By implementing such as system, the unclear, inconsistent and arbitrary accounting rules will move towards standardization. Effective in 2011, Canadian, Australian, and European publically traded companies are required to adhere to International Financial Reporting Standards (IFRS). Many believe that a single global set of accounting standards will minimize accounting malfeasance, while increasing comparability of diverse and global companies' financial statements. Others believe that IFRS standards are even more inconsistent than current US GAAP, and will lead to more cases of malfeasance. The SEC worked with the IFRS on special joint projects, with the ultimate goal of adapting IFRS by the end of 2014. However, in November 2014, the SEC's Chief Accountant James Schnurr had

not made a formal announcement as to the SEC's adoption of IFRS. As of December 8, 2014, the SEC announced it will explore voluntary IFRS adoption, but overall adoption of IFRS is unlikely.

CONCLUSION AND NEXT STEPS

The number of corporate financial statement restatements in the post SOX era reflects the fact that executives and auditors have embraced stronger internal control practices and have prioritized implementing internal controls. The discovery of malfeasance and misstatements using stronger internal controls, in turn, led to providing public transparency through restatements of financial information.
The reduction in the number of restatements in recent years indicates that these companies have implemented effective internal control and audit programs to prevent material misstatements in the financial statements.

Although it is possible that the incidence of corporate accounting malfeasance can be reduced, due to its inherent nature, it is likely that corporate malfeasance will remain a permanent burden on the financial system. This paper gives an overview of corporate accounting malfeasance, explains some of its causes and the resulting legislative laws it has created. Additionally, a comprehensive listing is provided for the many different types of malfeasance activities, separated into the categories of income, expense, asset, theft-misappropriation and exogenous factors. What should be the role of the auditor in identifying accounting malfeasance? It is clear that the auditor's role is of critical importance in detecting malfeasance not detected using other internal controls.

In future research, we also could explore the difference in malfeasance materiality and its resulting consequences between self-reported versus SEC imposed financial statement restatements. An effective system of internal control, accountability in the executive and auditor roles will be the overall best method to decrease the presence of corporate malfeasance.

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AN EMPIRE BUILT ON A LIE – THE PEREGRINE FRAUD: A CASE STUDY ON CONFIRMATIONS AS AUDIT EVIDENCE

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CASE DESCRIPTION

This study examines the real world case of the Peregrine fraud. In this fraud, the CEO Russell Wasendorf, Sr. duped the auditors and the public for years. Wasendorf was able to carry out a fraud using an unsophisticated scheme involving falsified bank statements and falsified audit evidence. Only when an electronic confirmation services was used by the auditors did the fraud unravel. This case provides interesting discussion points for an auditing, fraud detection and deterrence, forensic accounting or ethics class. Students typically need one to two hours of time outside of class to complete the case and instructors should budget approximately one to one and a half hours of class time to discuss the case after the students have completed it.

JEL: M42

KEYWORDS: Audit Evidence, Confirmations, Fraud

CASE INFORMATION

Background Information and Introduction

Recent massive high profile financial frauds such as Madoff and MF Global, the economic crisis and recession in this country as well as the Dodd-Frank Wall Street Reform and Consumer Protection Act of 2010 have all caused an increased scrutiny of external auditors and questions about auditor skepticism. A recent financial fraud at the company Peregrine Financial Group highlights the implications for the auditing profession. The CEO and Chairman of the Board Russell Wasendorf, Sr. was able to build the Peregrine empire on a lie, dupe the auditors and steal approximately $200 million over the course of 20 years with an unsophisticated scam using Photoshop to forge "documentation" and setting up a bogus bank address at a post office box. He stole from his customers' accounts for years in order to finance a new $24 million headquarters for Peregrine, personal shopping binges, a private jet and other luxuries. The fraud went undetected for approximately 20 years and Wasendorf stole approximately $200 million during this time. What regulators and investors are asking is, "Why didn't the auditors catch this fraud?" The failure of the auditors to catch this blatant fraud has regulators demanding to know why it was not detected. In addition, regulators are asking why the bank did not notice that Wasendorf was using client funds for personal use.

Russell Wasendorf, Sr. came from a modest upbringing. He founded Peregrine Financial Group (also known as PFG or PFGBest) in 1992. Peregrine Financial Group was an independent futures brokerage, also known as a futures commission merchant (FCM). An FCM "solicits or accepts orders to buy or sell futures contracts, options on futures, retail off-exchange forex contracts or swaps and accepts money or other assets from customers to support such orders" (NFA, 2016). "All customer funds for trading on

designated contract markets (exchanges) must be kept apart ("segregated") from the futures commission merchant's (FCM's) own funds—this includes cash deposits and any securities or other property deposited by such customers to margin or guarantee futures trading" (CTFC, 2016). The CFTC requires FCMs to provide customers with monthly statements as well as next business day confirmations of transactions executed including gains/losses from any offsetting positions. All FCMs must be members of the NFA. The NFA is a non-profit independent self- regulatory organization for the derivatives market in the US. The NFA conducts a rigorous screening of registrants as well as having a comprehensive set of compliance rules. Supposedly the NFA performs periodic examinations of its members to ensure compliance. (See https://www.nfa.futures.org/NFA-about-nfa/who-we-are/how-NFA-fights-fraud-and-abuse.HTML). The question is, why did the NFA fail to discover the Peregrine fraud?

This is not the first fraud of this type. MF Global's CEO, Jon Corzine, was involved in similar fraudulent activities of comingling customer accounts with other company transactions. MF Global was deemed to have an outdated compliance system that contributed to the ability of the company to engage in risky transactions. Controls were lacking regarding both risk and how to keep separate customer trading accounts from other firm activities (Fox Business, 2011). To the public, Wasendorf grew PFG into what appeared to be a very successful trading business. Wasendorf lived a lavish lifestyle with two luxury homes, extravagant vacations, a $100,000 wine collection, his own high-end Italian restaurant and a private jet. However, in violation of regulations, customer funds were not kept segregated, so PFG had access to customer money and Wasendorf was able to misappropriate it. The auditors and regulators failed to detect this for years. Changes in technology in recent years have significantly altered the audit process. Audit confirmations used to be sent via regular mail. However, the use of electronic confirmation services has increased in the past few years. The NFA auditors started using an electronic confirmation service, Confirmation.com and pressured Wasendorf to agree to the use of it in the audits of PFG. Wasendorf resisted at first. In 2012, twenty years after he formed PFG, Wasendorf, called the regulators and agreed to use of the electronic confirmation service. The next day, he was found in his car in an attempted suicide. In the car was a note to his wife and a confession letter that said he had been committing fraud for twenty years. Wasendorf Sr.'s son, Russell Jr., who was the President and COO of PFG, arrived at work that day and found a suicide note addressed to him as well as an exact copy of the confession letter that was in the car. Wasendorf Sr. wrote in the letter, "I have committed fraud." (To view a copy of the indictment, go to: http://www.jdsupra.com/legalnews/jdsupra-00183/).

<u>How the Fraud Was Perpetrated</u>

A normal procedure in generally accepted auditing standards (GAAS) is for the independent auditor to obtain and examine bank statements. Wasendorf simply used software such as Photoshop to create phony bank statements showing heavily inflated balances. According to Wasendorf's confession, he was the "sole individual with access to the US Bank accounts held by PFG. No one else in the company ever saw an actual US Bank statement." When the bank statements arrived in the mail, they were delivered to Wasendorf, who opened them and then made phony bank statements, passing the phony statements on to the accounting department. Wasendorf also made sure that he was the only person with online access to PFG's bank account. Another standard auditing procedure is to send confirmation requests directly to the bank and obtain confirmation of balances and other information directly from the bank. Wasendorf simply set up a phony bank address at a post office box and tricked the auditors into believing it was a legitimate address for the bank. Wasendorf would then intercept all confirmation requests from the auditors, fill in the information with fictitious amounts, and send them back to the auditors. The Wall Street Journal has made copies of the falsified bank statements available at http://www.documentcloud.org/notes/print?docs[]=398920_. Copies of the falsified confirmations are available at http://www.wsj.com/news/interactive/pfgbestcftc .

Auditing standards call for maintaining professional skepticism throughout the planning and performance of an audit, describing professional skepticism as, "an attitude that includes a questioning mind, being alert to conditions that might indicate possible misstatements due to fraud or error, and a critical assessment of audit evidence" (Arens et al., 2014). In Auditing Standard No. 15, the Public Company Accounting Oversight Board details standards for audit evidence. AU 316 describes the procedures for consideration of fraud in an audit. (PCAOB, 2016). Previous frauds at Parmalat and Olympus illustrate the problems with relying on paper confirmations. Only after Parmalat defaulted on a $185 million bond payment did the auditors uncover the fraud. "Some 38% of Parmalat's assets were supposedly held in a $4.9 billion Bank of America (BAC) account of a Parmalat subsidiary in the Cayman Islands. But on Dec. 19, Bank of America reported that no such account existed" (Bloomberg, 2004). Managers simply forged documents over a15 year period and eventually put the company in bankruptcy. Similarly, an investigation in to the Olympus scandal uncovered evidence that a company executive sent a fake confirmation letter to the auditor to perpetuate the fraud (Vanderford, 2013).

<u>Electronic Confirmation Services</u>

Electronic confirmation services are relatively new to the field of auditing. These digital confirmations significantly reduce the amount of time it takes to receive confirmations back and can significantly reduce the potential for fraud. Reducing delays and the need for follow ups can reduce audit costs. Electronic confirmation services ensure that both the requestors (auditors) and the responders are vetted and verified. According to their website, Confirmation.com users can initiate and receive confirmations in as little as 24-48 hours. Using old-fashioned paper confirmations can take weeks or even months. The night before he attempted to take his own life, Wasendorf agreed to let the regulators use Confirmation.com. The next morning, while Wasendorf was found in his car with a suicide note, the auditors began to receive electronic confirmations noting that the balance in PFG's US Bank account was approximately $7 million, a long way off from the $220 million that was supposed to be there. PFG was subject to audits by the NFA and also to an annual audit by an independent accounting firm. The audits by the NFA were to test whether the financial statements were fairly presented in all material respects according to Generally Accepted Accounting Principles and also to make sure that PFG was in compliance with NFA regulatory requirements. PFG's outside accounting firm, Veraja Snelling & Company, was a small, one-person firm. The CTFC later determined that this accountant did not follow Generally Accepted Auditing Standards, failed to adequately plan and staff the audits, and failed to exercise due care (CTFC, 2013). The CTFC noted that the accounting firm did not appropriately review and test internal controls and procedure for safeguarding customer assets (CTFC, 2013).

<u>The Aftermath</u>

PFG was forced to close its doors. More than 200 employees lost their jobs. More than 13,000 customers suffered major financial losses. Russell Wasendorf, Sr. pleaded guilty to mail fraud, making false statements to regulators and embezzlement of customer funds. He is currently serving a 50 year prison sentence for fraud (the maximum term). Wasendorf has insisted that he acted alone. U.S. Bank was sued by the U.S. Commodities Futures Trading Commission for failure to follow rules requiring the bank to segregate customer accounts. The two parties agreed to settle the suit and they have not disclosed the terms of the settlement. The CTFC has permanently barred PFG's external accounting firm from practicing before the commission (Tadena, 2013) and the firm is no longer registered with the PCAOB.

QUESTIONS

1. Explain the role of professional skepticism in an audit and in your opinion, why wasn't this fraud detected sooner?

2. What internal controls were deficient or lacking at Peregrine? What red flags existed?
3. Explain the fraud triangle. Detail how all elements of the fraud triangle were present in this case.
4. How can the use of electronic confirmation services help to prevent fraud?
5. Why did the NFA fail to discover the fraud?

AN EMPIRE BUILT ON A LIE – THE PEREGRINE FRAUD:A CASE STUDY ON CONFIRMATIONS AS AUDIT EVIDENCE

TEACHING NOTES

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CASE DESCRIPTION

This case examines the real world case of the Peregrine fraud. In this fraud, the CEO Russell Wasendorf, Sr. duped the auditors and the public for years. Wasendorf was able to carry out a fraud using an unsophisticated scheme involving falsified bank statements and audit evidence. Only when an electronic confirmation services was used by the auditors did the fraud unravel. This case provides interesting discussion points for an auditing, fraud detection and deterrence, forensic accounting or ethics class. Students typically need one to two hours of time outside of class to complete the case and instructors should budget approximately one to one and a half hours of class time to discuss the case after the students have completed it.

GENERAL COMMENTS

This case describes a real world, multi-million dollar fraud that was able to go undetected for twenty years. Students find this case interesting because it actually happened and many of them recall hearing about it in the news. Completing the case study allows the students to go beyond traditional textbook learning and apply what they have learned in class to a real world situation. Concepts such as *professional skepticism* should become more salient. The authors usually assign this case as an individual assignment. We allow the students approximately one week to complete the case questions outside of class. Then, on the day the case questions are due, we spend the entire class period (one hour) discussing the case and questions.

QUESTIONS

Question 1: Explain the role of professional skepticism in an audit and in your opinion, why wasn't this fraud detected sooner?

Solution 1: Instructors may find this a good place to have students research the authoritative literature and discuss how it translates into the "real world" in an actual audit. The PCAOB website is a good starting point. AU 230 states, "Due professional care requires the auditor to exercise *professional skepticism*. Professional skepticism is an attitude that includes a questioning mind and a critical assessment of audit evidence. The auditor uses the knowledge, skill, and ability called for by the profession of public accounting to diligently perform, in good faith and with integrity, the gathering and objective evaluation of evidence." (PCAOB, 2016)

Question 2: What internal controls were deficient or lacking at Peregrine? What red flags existed?

Solution 2: This is an excellent spot for the students to point out huge red flags and blatantly missing internal controls. An obvious red flag is the autocratic CEO. Students may note that the characteristics of the Peregrine CEO are similar to those of the WorldCom CEO Bernie Ebbers. Another red flag is that the company used a small, one person outside accounting firm, similar to both Madoff and Allen Stanford. The most blatant missing internal control is basic separation of duties. Wasendorf should not have had

access to bank statements, customer records, customer funds and accounting records. In addition, having a whistleblower hotline may have improved internal controls.

Question 3: Explain the fraud triangle. Detail how all elements of the fraud triangle were present in this case.

Solution 3: Incentives or pressure is what motivates the fraudster. It seems like Wasendorf felt pressure to succeed. He indicated that he felt he had the choice of go out of business or commit fraud. The opportunity to commit the fraud was there because of the lack of separation of duties, coupled with lax oversight. The rationalization piece of the triangle may be that Wasendorf felt that is was not his fault, it was the fault of the regulators who had it out for him. Instructors may find it helpful to refer their students to the ACFE website for an interactive explanation of the fraud triangle at http://www.acfe.com/fraud-triangle.aspx.

Question 4: How can the use of electronic confirmation services help to prevent fraud?

Solution 4: AU 505 covers the use of external confirmations. When auditors use external confirmations, they are only valuable audit evidence if they are completed by a reliable third party source. By using an electronic confirmation service, the auditor should be able to improve the likelihood of the appropriate third party completing the confirmation and also shorten the time it takes for the confirmation to be returned. In addition, if a client does not want to use an electronic confirmation service, as in the case of Peregrine, this alone could be a red flag.

Question 5: Why did the NFA fail to discover the fraud?

Solution 5: The NFA is an independent self-regulatory agency financed exclusively from membership dues and assessment fees. It could be argued that the independence of the NFA is in questionable because the organization is funded by its members – those it monitors. The Commodities Futures Trading Commission (CFTC) set regulations requiring FCMs to be registered with the NFA. Does the NFA have enough resources to carry out a thorough audit of its members? What real power does the NFA have over the FCMs? These are discussion points for the class. The class could also look at other self-regulatory bodies and draw parallels. For example, the FASB is funded primarily by the publicly traded companies that it sets standards for. Is this a similar conflict of interests? The FASB is also a self-regulated organization. Even the PCAOB, created by the Sarbanes Oxley Act of 2002 to oversee the audits of publicly traded companies, is funded by accounting support fees from the companies they monitor.

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DURATION RISK: DO YOU KNOW YOUR NUMBERS?

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ABSTRACT

Most investors know that bond prices move inversely with interest rate fluctuations. These same investors, however, may not fully understand how to assess the interest rate risk of different fixed income investments. This is particularly timely given the improving U.S. economy and Federal Reserve's expectation of increasing interest rates in the near future. The simplest measure of interest rate risk for the average investor is something called duration. The Financial Industry Regulatory Authority (FINRA) stated that the one number a bond investor should know is duration. This article will explain what duration is, how to use this measure to evaluate risks, examples of how changes in interest rates will impact bonds or bond funds with different durations, and where investors can find this information.

JEL: M10, G10, M40

KEYWORDS: Duration, Interest Rate Risks, Bonds, Investments

INTRODUCTION

In light of FINRA's new emphasis on the importance of duration, a primer on Duration Risk is an important tool for investors who may not be well versed on the basics of this important tool for measuring investment risk**.** As baby boomers age, the traditional investment advice is to allocate a larger percentage of one's assets to fixed income as opposed to equities or other investments. Many investors erroneously believe that investments in high quality long-term bonds or bond funds have very minimal risks. This may be true if individual bonds are held to maturity or have a very short maturity. However, if interest rates increase, the value of their bonds or bond funds will decline. This is called interest rate risk and as this article will illustrate interest rate risk generally increases as the maturity of the bond or bond fund increases. Although there may be limited credit risk in a 20-year AA rated bond, investors should still be concerned about interest rate risk. A bond maturing in 20 years may be twice as sensitive (volatile) to changes in interest rates as a 10-year bond. This is a very important point to remember as individuals and some funds are "chasing higher yields" by investing in longer maturity bonds that generally pay a higher rate of interest. Some investors might initially believe that they will hold their bonds to maturity, but unforeseen circumstances may develop.

Even more likely, an investor may want to either sell their existing low yield investment to obtain a higher yield or to change their asset allocation to increase their equity exposure. A risk adverse conservative investor might be surprised to incur a significant loss on the sale of their "safe" investment. Current interest rates are at historically low levels and the realistic expectation is that they cannot go any lower and may increase in the near future. Hence, fixed income investments are not necessarily as safe and less volatile as they had been in the past. Bond funds also present a different challenge for investors than holding individual bonds. Individual bond investors can hold their bonds and receive the par amount at maturity assuming the bonds do not default. However, bond funds are typically structured as short-term, intermediate term (typically 5-7 year maturity) and long-term (typically ten or more years' maturity). The bond funds' managers will routinely purchase new bonds as existing ones mature in order to maintain the target average maturity so most bond funds never mature.

LITERATURE REVIEW

"Although duration has a long history, it is still an important and widely used tool in the risk management of portfolios of interest rate sensitive assets. Most papers studying duration focus on default-free (Treasury) bonds, but for the many portfolio managers also investing in defaultable (corporate) bonds it is important to understand the sensitivity of defaultable bonds to interest rate changes. The few existing papers address the duration of corporate bonds either derive durations from relatively simple firm-value based models or estimate the empirical relation between changes in the prices of corporate bonds and changes in interest rates." (Kraft and Munk 2007). Macaulay developed the concept of duration in 1938 as an alternative to term-to-maturity. He proposed that it was a more precise way to measure the time period for a bond or a fixed income security. It has been utilized as a risk management tool since 1938 in various forms. Hicks focused on the mathematical aspects of duration by examining a series of cash flows (1939) and calculating the elasticity of this series with the discount factor, resulting in re-deriving Macaulay duration. He concluded that a small change in yield to maturity is proportional to duration. "Nonzero coupon bonds generate regularly scheduled payments before maturity. Thus maturity provides an incomplete description of the time pattern of all the payments of a bond."

Fisher and Weil (1971) proposed that using yield to maturity to obtain duration implies that interest rates are the same for all maturities (a flat-term structure). Thus they felt that this flat term structure assumed by Redington (1952) and Macaulay were unrealistic. Fisher and Weil reformulated duration introducing an approximation of duration with convexity so that it could be used to immunize a bond portfolio against interest rate risk when hedging a bond position with respect to a parallel shift of the interest rate curve. They felt that this reformulation would address the increasing volatility of interest rates in the 1970s. "A bond's duration increases with maturity but it is shorter than maturity unless the bond is a zero-coupon bond (in which case it is equal to maturity). The coupon rate also affects duration. This is because a bond with a higher coupon rate pays a greater percentage of its present value prior to maturity. Such a bond has greater weights on coupon payments, and hence a shorter duration." Fisher & Wield (1971).

Bierwag and Roberts (1990) conclude that when a change in interest rates occur in portfolios with higher durations, they found more price sensitivity. They determined that the volatility in their models was a function of the parameters of the stochastic process and of implied measures of duration. Fooladi and Roberts (1992) examined the effectiveness of immunization in practice using the actual prices of Canadian bonds over the period 1963-1986. They set a five-year investment horizon and rebalanced every six months. Their conclusion was that duration matching with hedges outperformed non-duration matched portfolios. They determined that this validated the use of duration in measuring risk and immunization. Thomas S.Y. Ho (1992) states in his paper entitled Key Rate Duration: Measures of Interest Rate Risks, that "identifying interest rate exposure is central to active and structured portfolio management." Key rate duration measures the sensitivity of a portfolio to a 1% change in yield for a given maturity if all other maturities remain unchanged. T. Ho further states (2013) that "key rate duration gives us a measure to enable us to manage our yield curve risk". Cox, Ingersoll and Ross (1979) examined duration as a measurement of basis risk. They found that Macaulay duration was a "valid measure of basis risk only under circumstances which are theoretically and empirically unrealistic."

Their findings support modified or effective duration calculations. They proposed a general equilibrium model of duration and immunization within a continuous time and no arbitrage. Campbell and Mei (1993) `investigated systematic risk resulting from variations in future returns in comparison to variations in expected cash flows. "…the survival of the corporate practice of discounting longer-term projects at higher rates is not irrational but is an intuitive response to correctly perceived risks. In fact, given the difficulties associated with estimating betas, the duration of a project may be one of the most accurate ways of assessing its systematic risk." (Campbell and Mei 1993) Fooladi and Roberts (2000) surveyed the current applications of duration analysis in risk management. "Today both discrete and continuous time duration models are in

use." "The realized rate of return has two components: interest accumulated from reinvestment of coupon income and the capital gain or loss at the end of the planning period when the portfolio is sold. The two components impact the realized rate of return in opposite directions. For example, if rates rise, coupon reinvestment income will increase, raising realized return. On the other hand, lower bond prices, associated with higher rates, will lead to a capital loss." (Fooladi and Roberts, 2000).

Kraft and Monk (2007) examined the concept of duration to study differences in duration between corporate bonds and similar treasury bonds. "In a frequently used intensity-based model for corporate bond valuation we provide an example showing that, given the parameter estimates found in empirical studies, the duration of a corporate coupon bond may very well be larger than the duration of a similar Treasury bond." (Kraft and Monk, 2007). Lajili and Rakotondratsimba (2012) proposed that the classical duration-convexity approximation of Fisher and Wield had several deficiencies including neglecting the passage of time, as well as the shift size of the yield curve and error approximation. They proposed an enhancement to the classical duration-convexity to avoid these deficiencies. They further maintain that "a parallel positive shift (as 100 basis points) remains also a standard and easily tractable approach in the perspective of stress-testing. The result we obtain in this paper enables the user to consider any large shifts lying inside a given range. This is particularly useful to grasp turmoil situations as we are faced frequently since the 2007 financial crisis." Rakotondratsimba (2011) examined benchmark models introduced by Vasicek (V) and Cox-Ingersoll-Ross (CIR) which use only one variable, the instantaneous short-rate variable, to predict interest rate sensitivity. Empirical tests for bond immunization performance did not show superiority of the stochastic duration in comparison to simple classical duration. Rakotondratsimba introduces "suitable zero-coupon sensitivities with respect to the one factor shock related to the V/CIR model."

The Financial Industry Regulatory Authority (FINRA) in 2013 issued an investor alert cautioning investors who own bonds or bond funds that the one number an investor should know is duration. FINRA was established in 2007 by Congress to protect investors. On February 14, 2013 FINRA issued a new investor alert called "Duration: What an Interest Rate Hike Could Do To Your Bond Portfolio" which warned investors that duration could cause their bond or bond portfolios to decline in value if interest rates were to rise. "The higher a bond's duration, the greater its sensitivity to interest rates changes. This means fluctuations in price, whether positive or negative, will be more pronounced. (FINRA, 2013).

How Can an Investor Determine Their Interest Rate Risk?

The most widely accepted measure of interest rate risk for the average investor is something called duration, which is a measure of the sensitivity of bond prices to changes in interest rates. Duration is a number that at a particular point in time will tell an investor approximately what percentage a non-callable bond will change in value given a 1 percent change in interest rates. With a known bond or bond fund's duration, an investor can estimate, all else being equal, how the investment will react to a change in interest rates and make an informed decision based on his expectation of future interest rates. The time to maturity for a given bond may provide a general sense of its interest rate sensitivity, but duration is a much more accurate measure. An example is Vanguard's Intermediate Term Treasury Bond Fund (VBILX), which has an "effective maturity" of 7.2 years but an "average duration" of 6.5 years. Generally, the higher the duration number of a bond, the more sensitive the bond is to interest rate changes. Investors who are expecting higher interest rates might wish to invest in bonds with shorter durations or maturities to limit their potential losses.

How is Duration Calculated?

Duration is the number of years it would take an investor to recoup the full cost of their bond or bond fund considering the present value of all interest and principal payments to be received. Hence, a bond's cash flow payments for both interest and principal are discounted at current market interest rates divided by the current market value of the bond. In general, the greater the duration of the bond, the more sensitive that

bond will be to interest rate changes. It should be noted though that duration is generally accurate for small changes in interest rates. Utilization of duration for large interest rate changes requires taking into account a concept known as convexity which measures the change in duration as interest rate changes become more significant. The market value of a bond will generally decline less for larger interest rate increases. Convexity depending on the characteristics of the bond or bond fund can be both negative and positive, which means that the duration can actually decrease or increase based on the degree of interest rate change. Thus the correlation between a change in interest rates and their effect on bond prices is not necessarily symmetric. This paper will not address convexity however; but investors should be aware that it may impact their investment decisions if there are large changes in interest rates.

An Example of how Duration Can Be Applied

Assume an investor puts $10,000 into a bond fund which has an average duration of 5. Generally, a 2 percent across the board increase in interest rates will result in approximately a 10 percent (5 duration x 2%) or a $1,000 decline in the fund's value to $9,000, all else being equal. However, if that same $10,000 had been invested in a fund with duration of 10 with this same 2 percent interest rate increase, the investment would have decreased 20 percent (10 duration x 2%) or $2,000 and now be worth $8,000. Conversely, a 2% *decrease* in interest rates could result in the fund increasing in value by 20%.

Figure 1: Illustration of how A 2% Increase in Interest Rates Reduces A $10,000 Bond's Value Based on Its Duration

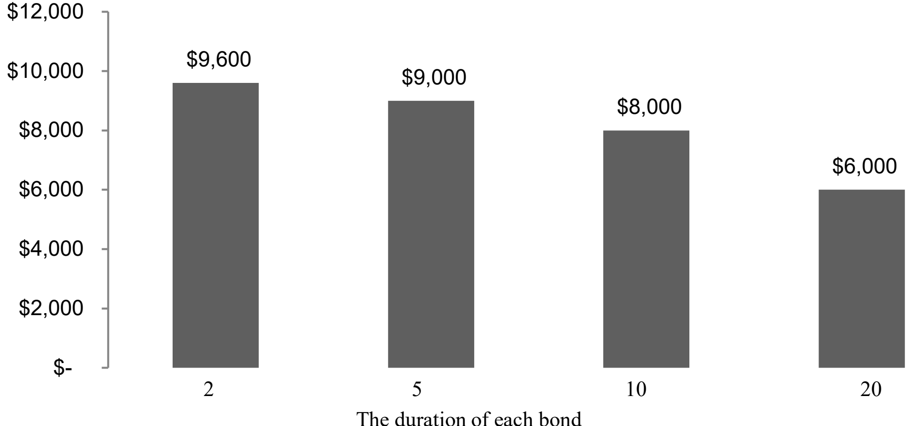

Figure illustrates the theoretical impact of a two (2%) interest rate increase for bonds with different durations. Note that a 2% increase in interest rates with a duration of 2 would result in a $400 loss for a $10,000 bond. A 2% increase in interest rates in a $10,000 bond with a duration of 5 would result in a $1,000 loss whereas a 2% increase in a $10,000 bond with a duration of 10 would result in a $2,000 loss on the investment.

An example of a bond fund with a high duration is the Schroder Long Duration Investment Grade Bond Fund (STWLX) which has a duration of 14.79 as of September 2015. "To the extent that changes in prices reflect the degree of interest rate risk assumed, duration represents a good first-approximation measure of risk because it is proportional to the price change. For example, the price of the 5-year CD will change five times as much for a given change in interest rates as the price of the one-year CD. This makes it five times as risky, which is reflected in a duration five times as great." (Kaufman, 1984).

How Does Duration Impact Investment Decisions?

The level of interest rate risk that an investor may take is a function of their overall risk tolerance, time horizon and their expectation of future interest rate changes. The key is that knowing the duration of a fixed income investment allows the investor to quantify their interest rate risk and make an informed decision. An example of such an evaluation process was expressed by the brokerage firm, Charles Schwab, on their

website in September 2015. Their advice to clients who might be tempted to purchase longer-term bonds for a slightly higher yield was that the increased duration may not be worth the risk.

"We see limited value and higher risks in long-term funds today compared to intermediate-term funds. The benefits of a slightly higher rate aren't well-balanced with the increased interest-rate risk, in our view, for funds with average maturities much greater than 10 years. An exception might be if you're focused on income and income alone and won't need to sell, or if you believe that interest rates will fall. While we believe rates could stay lower longer than many investors expect, they will rise eventually. Also, pay attention to the fund's duration. Duration is a measure of interest rate sensitivity, but it can also be thought of as a measure of how long it takes to recover your initial investment. Funds with shorter durations will typically be less sensitive to increases in interest rates and you'll generally recover your initial investment sooner if interest rates rise as compared to funds with longer durations. However, funds with shorter durations typically have lower yields." C Schwab 2015.

Where Does an Investor Find Duration Information?

The duration for an individual bond may be obtained by contacting the bond issuer, a broker or by using an online bond duration calculator, which can compute a specific bond's duration. With regard to bond funds (versus individual bonds), most fund issuers provide "fund facts" on their websites, which disclose their average duration as well as other information including yield, expense ratio and average maturity. Another excellent source of information on the duration of many bond funds can be found at finance.yahoo. By inputting the fund's ticker symbol and then selecting "holdings", the duration, average maturity and credit quality are disclosed and can be compared to the relevant category averages.

Several Methods Are Utilized to Calculate Duration

$$\boldsymbol{Macaulay\ Duration} = \frac{\sum_{t=1}^{n} \frac{t * C}{(1+i)^t} + \frac{n * M}{(1+i)^n}}{P}$$

n = number of cash flows
t = time to maturity
C = cash flow
i = required yield
M = maturity (par) value
P = bond price

$$\boldsymbol{Modified\ Duration} = \left[\frac{Macaulay\ Duration}{\left(1 + \frac{Yield\ to\ maturity}{Number\ of\ coupon\ periods\ per\ year}\right)}\right]$$

The Macaulay duration calculation is a commonly used method. It measures a bond's sensitivity to interest rate changes by calculating the weighted average number of years the investor must hold a bond until the present value of the bond's cash flows equals the amount paid for the bond. It is a pure discounting of the present value of a bond's cash flows so tends to theoretical. (Cox et al). Modified duration is a modified Macaulay computation that directly measures price sensitivity. Effective duration, on the other hand, is often the calculation cited for bonds that may have special redemption features. Unlike Macaulay duration, effective duration takes into account the potential changes in cash flows which can occur from redemptions. Redemptions can occur from prepayments and the exercise of call and put options. Understanding the formula calculation is not as important though as understanding that duration is a measure of risk in relation to interest rate fluctuations. However, some bond funds, such as Blackrock, have their own proprietary method for calculating duration and in those instances financial websites may not show duration for those funds and direct you to the fund's actual web site.

There are also some special circumstances that could affect duration. Duration assumes that for every movement in interest rates, there is an equal change in bond prices in the opposite direction. However, this is not always the case. For example, when interest rates drop, a residential mortgage-backed security (a bond backed by home loans) might not see an equal increase in the bond's price because it might prompt homeowners to refinance their mortgages. This in turn may limit increases in the bond's price as the underlying mortgages are being refinanced at lower interest rates.

Changes in the Slope of the Yield Curve

The yield curve refers to the graphical representation of interest rates over a specified time period. Generally, interest rates increase as the time to maturity increases. However, there have been rare times when the yield curve has been "inverted", meaning that shorter-term rates were higher than long-term rates. More importantly, the application of duration assumes that a given 1% change in interest rates occurs uniformly across the yield curve. The reality is that interest rate changes may not be the same for all maturities. Consequently, the change in value of a bond or a bond fund is directly affected by its position on the yield curve and where interest rates are changing on that curve. Figure 2 illustrates both the 2008 and 2014 yield curves. One can see that interest rates may not stay at their current historically low levels and might revert to a more normal level in future years. This figure also visually depicts that the actual shifts in the yield curve are not usually perfectly parallel when interest rates rise across the board.

Figure 2: Yield Curves for US Treasuries

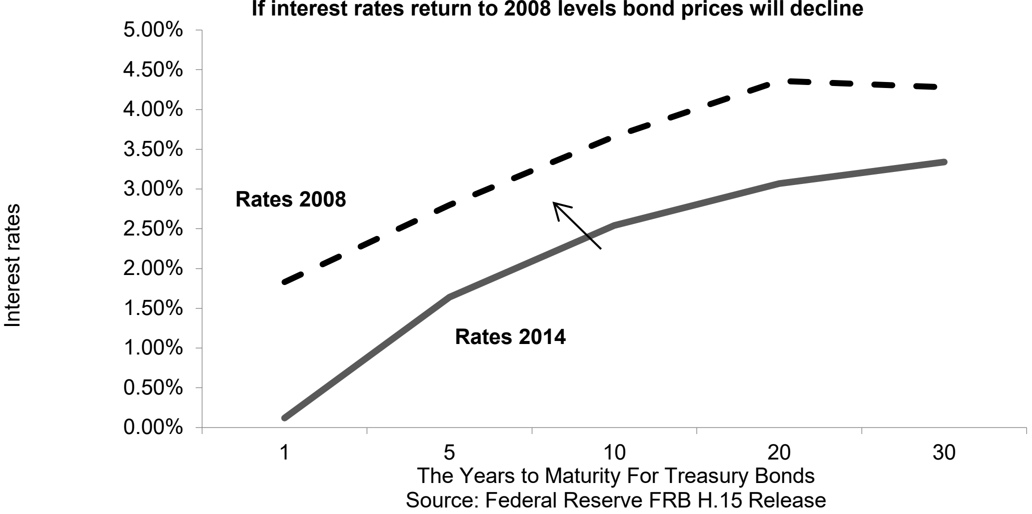

Figure 2 illustrates the interest rate yield curve for 2014 from the Federal Reserve Board's statistical release. It also illustrates the interest rate yield curve as it was in 2008 from the Federal Reserve. One can see that the interest rate yield curve for US Treasuries is historically lower than it was in 2008.

A Bond Fund's Name Is Not Always an Accurate Gauge of Its Duration Level

It is not always possible to judge a bond fund by its name. U.S. News and World Report regularly publish a listing of "Best Mutual Funds" which includes a list of "Intermediate-Term Bond" funds. U.S. News does appropriately note that their list of intermediate-term bond funds has durations from 3.5 to 6 years, which represents a significant range of interest rate sensitivity. Investors cannot just rely on the name of bond funds to accurately judge their interest rate risk. A case in point are two well respected funds on this intermediate-term bond fund listing that have very different durations as of October 2015. The Loomis Sayles Intermediate Duration Bond Fund (LSDIX) has a duration of 3.87 which is below the category average of 4.93 for Intermediate-term bond funds and therefore is less sensitive to interest rate changes then

the general category. At the other end of the spectrum on that same list is the Vanguard Intermediate-Term Bond Index (VBIIX) which has a duration of 6.49. This is 68% greater than the aforementioned Loomis Sayles Fund, and is also 32% higher than other funds in this category average. Consequentially, Vanguard's fund has a significantly higher interest rate risk. This does not mean that the Vanguard Fund is inferior to the Loomis Sayles Fund. In fact, the Vanguard fund has very high credit quality and half the annual expense ratio of the Loomis Sayles Fund. The two funds just have very different interest rate risk characteristics. During the last year twelve months when interest rates declined slightly the Vanguard fund reported a one-year return of 4.07% versus a return of only 2.42% for the lower duration Loomis Sayles Fund. This is an excellent example for investors that higher duration (all else being equal) means higher returns in a declining interest rate environment and lower relative returns in an increasing interest rate scenario. In addition to duration, investors should consider the type of bonds, their credit quality, fund managers and the expense ratios charged. FINRA warned investors to be cautious of duration but that also other factors including inflation risk, call risk and default risk could affect the value of a bond or bond fund. Investors should always check a bond fund's prospectus for these risk factors.

Lifecycle or Target Date Funds Bear a Closer Examination for Interest Rate Risk

Many baby boomers who may currently be or approaching 60 years old and hoping to retire by age 65 may be in an age based life cycle fund such as TIAA-CREF's Lifecycle 2020 Fund. The purpose of an age based lifecycle fund is that it regularly changes the asset allocation reducing the individual's equity exposure and increasing their fixed income exposure under the premise that fixed income investments are less risky than equities. However, in our current economic climate in which interest rates are at abnormally low levels, fixed income investments of any significant duration may not be significantly less risky than equities. There is a risk for older investors in lifecycle target date funds since they are more heavily invested in fixed income. Consider the example of a baby boomer with $1 million in the TIAA/CREF's 2015 Lifecycle fund (TCNIX). At September 30, 2015, 34.1% of the fund's assets were invested in CREF bonds. (tiaa-cref.org). This means that if interest rates increase 2% across the board (parallel shift of the yield curve), the bond fund portion of the portfolio would decline by approximately 10.8% (5.4 duration x 2%). 34.1 percent of the $1 million investment is $341,000, and a 10.8% decline would result in a loss of $36,828. (TIAA/CREF has received multiple awards including the 2013 and 2014 Lipper Fund Award "as the best large fund management company overall". (de Aenlle). Most investors consider TIAA/CREF to be one of the safest options for retirement portfolios and thus might never expect *any* loss.)

How to Lower Your Interest Rate Risk (Duration) Without Giving Up Yield

As previously discussed, during this time of extremely low interest rates, many investors and money managers seek to increase the yield on their fixed income investments by buying longer maturity bonds, "going further out on the yield curve". Longer maturities will typically result in a higher duration/interest rate risk. However, there is a little known strategy used primarily by institutional investors of keeping the higher yield on longer dated bonds but reducing their duration. Consider an example of two 20-year bonds which both have an effective yield of 2%. Bond A is a bond trading at par (value at maturity) which has a stated interest rate of 2%. Since the bond is trading at par, the effective yield is also 2%. Bond B trades at a large premium (price over par) because the stated interest rate (coupon) on the bond is 5%. However, the effect of paying a premium for the bond reduces the effective yield on Bond B to 2%, equivalent to Bond A. While the term and yield on these two bonds are identical, the durations are very different. Using one of the many online duration calculators (such as WolframAlpha), Bond A with the 2% coupon has a 16.41 modified duration (16.58 Macaulay), while Bond B with the 5% coupon has a 14.13 modified duration (14.27 Macaulay). How is that possible? While the overall return (yield) to investors is the same, the higher stated/coupon interest payment the investor receives from Bond B (typically semi-annually) effectively returns the investment slightly faster back to the holder of Bond B and consequently reduces the duration of the bond. How important is this difference of 2.28 in duration between Bond A and B? If interest rates

increase 1%, Bond A's price will theoretically decline 2.36% MORE than Bond B's price. Besides the reduced interest rate risk, institutional money managers can also report a lower duration for their mutual fund or portfolio by using this tactic. Hence, an observant investor might notice that bond issuers prefer to sell more of their bonds at a premium. _In an efficient market, the buyer of Bond B who paid a premium could potentially lose some or all of that premium paid over the face value of the bond if the issuer calls that bond before maturity. Consequently, it is important for an investor to understand the call or redemption provisions before buying a bond at a premium. A low duration does not mean that a bond or bond fund is risk-free. (FINRA 2013) Another option recommended by Bohlin and Strickland (2004) is to build a portfolio of bonds with staggered maturities so that bonds mature every year as a way to minimize portfolio risk. This stream of cash flows as bonds mature can be reinvested into new less expensive higher-yield bonds.

CONCLUSION

The importance of bond duration for most investors is that it predicts the amount of change in the market price of a bond as a result of changes in interest rates. We are currently experiencing historically low interest rates. Consequently, some investors are tempted to invest in longer maturities for their bonds. If interest rates were to rise, the price of a bond would fall by an amount equal to approximately the change in the interest rates times the duration of the bond. This primer on duration was to inform investors who might have forgotten or might not know duration basics including what duration is, how it is calculated and where an investor can find the duration number for a bond. Duration is so important that FINRA issued an investor alert in 2013 that all investors should know their duration numbers. This paper also serves to caution an investor to look beyond the title of a bond fund. The duration in an intermediate-term bond fund can range from 3.5 to 6 years in the U.S. World and News Report listing of "Best Intermediate-Term Bond Funds". "There are two main reasons why duration is a basic concept in bond analysis and management. It provides useful information on the bond's riskiness and it is essential to the procedure of protection against unforeseen changes in interest rates." (Pianca, 2005). It is interesting to note also that because of the Eurozone debt crisis, duration has risen steadily in Europe. "The duration of the iBoxx euro sovereign index, which tracks Eurozone government bonds, has risen to 7.2 years, according to financial data firm Markit. That is up from less than five years in 2006 and about six years until as recently as 2011." (M. Bird, 2016). "The fact that two bonds have the same term to maturity does not mean that they have the same interest-rate risk. A long-term discount bond with ten years to maturity, a so-called zero-coupon bond, makes all of its payments at the end of the ten years, whereas a 10% coupon bond with ten years to maturity makes substantial cash payments before the maturity date. Since the coupon bond makes payments earlier than the zero-coupon bond, we might intuitively guess that the coupon bond's effective maturity, the term to maturity that accurately measures interest-rate risk, is shorter than it is for the zero-coupon discount bond." (Mishkin 2012). The bond which makes substantial cash payments before maturity would have an expected lower duration even though both bonds have the same term to maturity.

Investors do not have to know how to calculate duration. A savvy investor should not only know their duration numbers but also be aware of what percentage of their life cycle holdings are held in bonds and the duration number for those bonds. Duration is a good estimate of what effect an interest rate increase or decrease will have on bond investments or bond funds. If interest rates were to rise by 3 percent over the next 10 years, a bond or bond might potentially decline in value by approximately 3 percent times a bond's duration number. Conservative investors who seek safety may be unpleasantly surprised to realize that they may be experiencing losses in their "safe" investment portfolios if there is a reversion to the mean and more normal interest rates. Convexity is not addressed in this paper. Although large interest rate changes are not expected in this current economy, investors should be aware that it may impact duration and their investment decisions if there are large changes in interest rates.

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STRATEGY AND LONGEVITY IN BUSINESS: HOTEL AVENIDA, CANCUN, MEXICO CASE STUDY

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CASE STUDY DESCRIPTION

This case study is intended for undergraduate students. We aim to have students analyze and propose alternative models for decision making regarding the implementation of administrative and management strategies in a business hotel. Information is presented on a hotel that has 53 rooms and a traditional approach to administration. It was established in 2002, in the city of Cancun, Mexico. Students are given information about: the history of the hotel; key figures involved in the business decision-making; evolution of the management model; and, the current management model within the traditional approach to administration. The hotel has a constant 87% annual occupation rate. The case study asks students to evaluate strategies for the following dilemma: a) modernize the management model; or, b) improve the existing model, based on the performance of the business and the ever-changing context of the tourism industry. Students can suggest alternative courses of action and can assume the role of external consultants. Students should ideally work in teams. Knowledge in administration, management and marketing is necessary. This case study can be developed in a two-hour class and should include a presentation of the results and a discussion at the close of the class.

JEL: M14, M15, M31

KEY WORDS: Tourism, Business Performance, Leadership, Strategy

CASE STUDY INFORMATION

In recent years a reconfiguration of the hotel operation model has been occurred in the Mexican Caribbean (Reyes O y Che Marbella 2015). Lodging centers that specialize on beach and business destinations have adopted operational strategies taken from the all-inclusive model. At first, it was used to guarantee that guests had all necessary services. Later, senior management of different hotel chains opted to use the all-inclusive model after noting the benefits in logistics, finances and operations that this model entitled. In parallel with the all-inclusive model adoption, business hotels from the bigger chains such as: Fiesta Inn, One, Quinta Inn grew significantly. They increased in size by up to 120% in recent years (Almaguer, J. 2016). Their success can be attributed to how they handle the business using a franchise type operational model. The model includes: perfectly defined operations manuals, privileged location, reduced staff numbers, ample parking space and limited offerings in food and beverages. Some traditional chains of business hotels have dabbled in the business tourism market to diversify their operations. The development has produced instability in traditional lodging centers of sole proprietors. These traditional lodging centers are commonly operated with a centralized administration model, and little emphasis on using technologies, processes and costs control.

This case study looks to establish how a traditional hotel business can grow and be successful in a globalized market through leadership and pertinent supervision (Olivares, M. 2015 pag. 34-40). A historical overview is presented which follows the hotel from its start to the completion of this research. In addition, the origin, advances and decision making processes undergone by the organization during this time is discussed (Robbins y Judge, 2013 p. 165). To reach the objective for the study, the text presents data gathered through interviews of key figures in the business. Quantitative and qualitative data was generated to aid in identifying administration functions which have positively impacted the hotel longevity and its success within the sector. This document can be used as an instrument in the decision making process for future businesspeople. The influx and existence of competitors in the market, adjustments to operational laws and regulations, taste and preference of consumers, among others, have provoked innovation in the tourist industry. This is especially true in the commercialization of tourist services, such as lodging centers. These centers are witnesses to the quick transformation in the industry. They in turn must react to these changes promptly and quickly to keep their competitive edge (Corona & Olivares, 2015; Moncada, Gonzalez, Valtierra & Jimenez 2011, pag. 57).

The changes in paradigm for the commercialization of tourist services are derived from four categories of service recognized by World Tourism Organization (UNWTO): a) Hostels; b) Entertainment and leisure industry; c) Travel industry; and, d) Transport. This case study deals with a hotel owned by a sole proprietor. The hotel has been managed with a traditional centralized family-business model. It seems surprising the hotel has survived so well under these centralized strategies. It caters to niche market customers and has specialized in customer service. Regardless of changes in its surroundings, corporate competitiveness, shifts in operational styles by its direct competitors and tourism paradigms, Hotel Avenida proves to be ideal to learn about leadership and decision making.

History of Hotel Avenida

In 2001, *Miguel González Gómez* decided to give life to a new business venture: Hotel Avenida. HThe hotel was located in downtown Cancun, Mexico. The hotel officially opened its doors in August 2002. It started operations with 45 rooms. The idea was to procure something for his daughter to manage who at the time was close to graduating with a bachelor's degree in International Business. *Miguel* believed that this business idea was the best way for his daughter to start her path in the world of business administration. Miguel was in charge of all administrative tasks from its opening until the year 2005. At that time, his daughter was supposed to take over as general manager. However, Miguel's daughter decided that she did not want to stay. Her general management tenure was only three 3 months long. She never took part in any other area of the business structure and left to pursue a master's degree in Tourism Management in Madrid, Spain. Thus, Miguel was back in charge rather quickly.

A few months after Miguel's return as General Manager, he decided to build eight more rooms, for a grand total of fifty-three rooms. This decision resulted from an increase in demand for cheap rooms and good service and an existing undeveloped area in the building. As the occupation rate and income increased in the hotel, the owner *Miguel González Gómez* broadened his operations in the city. He diversified by investing in real estate in Cancun and the Riviera Maya, specifically in the city of Playa del Carmen. The original idea was to expand and diversify the hotel business. For this reason he acquired some buildings downtown, a lot to build another hotel and some other properties. The acquired properties include: Edificio Cozumel (Cozumel Building) located in front of the football stadium; Edificio Zoraya (Zoraya Building) opposite the post service office; Edificio Madrid (Madrid Building); around 80 houses which are currently leased; a small hotel in Playa del Carmen and some beach-front residences. In addition, a collection of lots without a tourism-related development permit were acquired. As Miguel´s business ventures grew his ability to manage Hotel Avenida was compromised.

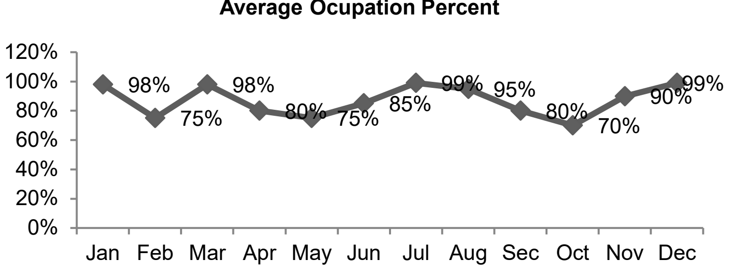
Miguel decided to delegate general management to a relative and allowed for some innovations in the administration model to occur such as: the use of a computer based system in the front desk, accounting software, outsourcing of cleaning duties, control of operating expenses, empowerment for the night manager and housekeeper, among other things. These changes produced instability in the traditional management style used. After some analysis, *Miguel* decided to return to basics and do away with the implemented changes so that he could take over operations. In summary, the hotel went back to traditional management, but under closer supervision by the proprietor and offering less maneuvering space for the employees. The return to a traditional management style came together with an initiative to elevate the quality in the service provided by the hotel. The hotel placed emphasis on personalized service, closer dealings between the hotel staff and the guest, room booking by phone so that repeating guests could always occupy the same room and parking space and be served by the same personnel.

This strategy showed results in the short-term and it promoted word-of-mouth recommendations. Basically, the marketing communication strategy is based on recommendation, word-of-mouth to be precise. This approach generates higher occupation rates which in turn are not affected by tourism cycles and seasons. Multiple recommendations resulted from the hotel becoming popular among sales agents, commissioners, tourist agents, corporation employees from the Yucatan Peninsula who do business in the city. Thus, the shift from a general public hotel to a business hotel can be explained.

The niche market currently served is sufficiently large so they could concentrate their strategy on that niche. The hotel is positioned as an alternative among the ever-growing availability of hotels in the city. Due to the operational model that centered on strong central leadership, a question arises: Does this hotel have a sustainable business model which will withstand the test of time? Strategy and longevity in business are head to head and it is a fight where only time will tell who is victor. Hotel Avenida does not have variation in its occupation rates by season. Throughout the year it maintains an average of 87.3% occupancy, with the exception of the last week of the year, Easter week and the three weeks of summer holidays when it reaches 99% to a 100% occupancy rate. Figure 1 shows occupancy rates.

Figure: 1: Annual Occupation Rate for the Year 2015

Annual Occupation Rate in Hotel Avenida for the Year 2015



This figure shows the monthly percentages in hotel occupation that Hotel Avenida registered between January 2015 to December 2015. Source: Developed by authors.

Good service is the best publicity and has yielded extremely positive results for Hotel Avenida. Another selling point is that this publicity strategy has no cost. Guests normally return and they recommend the hotel to friends and colleagues. Many customers have become personal friends of *Miguel* and they have been regulars for many years. The vast majority of customers indicate they are very happy with the hotel and the service provided. They understand that this hotel is not beachfront nor Grand Tourism. However, it has friendly service, it is welcoming and has all the amenities and facilities needed by the niche market.

Description of the Guest

The main guests served in the hotel are people dedicated to business. Guests stay 2 to 5 nights on average. Additionally, couples looking for a hotel downtown or families meeting during holidays, are regular guests. The hotel has a small number of promotional tools. One, is a banner which is displayed outside stating the occupation rate. The second promotional strategy, is to send every two to three-months emails to all the companies that have sent their employees to stay at the hotel. The email thanks them for their business and reprising their safety record, plus a mention of their special fee. They do not work with any tourist agency or holiday promoter. Regarding publicity, two signs are displayed. The signs have exchangeable boxes and are used to advertise promotions. Every once in awhile brochures are printed and visits to local businesses are planned where hotel services are offered.

Services Offered by Hotel Avenida

Table: 1: Services offered by Hotel Avenida

Service Offered by Hotel Avenida
Reception desk open 24 hours
24 hour security
Free covered parking
Free safe deposit box
Air-conditioning with remote control
Flat screen TV with cable
Hair dryer
Elevator
Minibar
Free Wi-Fi
Personalized guest service

This table lists the services and ammenities offerd to guests at Hotel Avenida, at no additional cost. It also has an on-site restaurant. Source: Developed by authors.

Interesting/ Curious Facts

As any other hotel, Hotel Avenida Cancun has some interesting anecdotes. Six years ago they were petitioned by the Attorney General's Office (PGR). With the leave of the owner, Hotel Avenida was converted into a safe house and virtual headquarters for the Federal Police. Many delinquents were brought to the hotel and it was filled and surrounded by police forces and soldiers. The receptionists had to wear bulletproof vests given by the armed forces and many infamous local and regional lawbreakers stayed the night. On another occasion, the Federal Police arrived a couple of times to the front desk asking, photo in hand, if a guest had already registered. On both occasions the "guest" had already arrived. The guests were contacted and asked to go down to reception. These guests were actually delinquents were on the run. The authorities had been alerted by management as they were not regulars and seemed suspicious. Not long ago, one of the maintenance workers suffered a fatal accident while trying to install an electric connection on the third floor from outside the building. He got distracted and received an electric shock. He fell and was dead on impact.

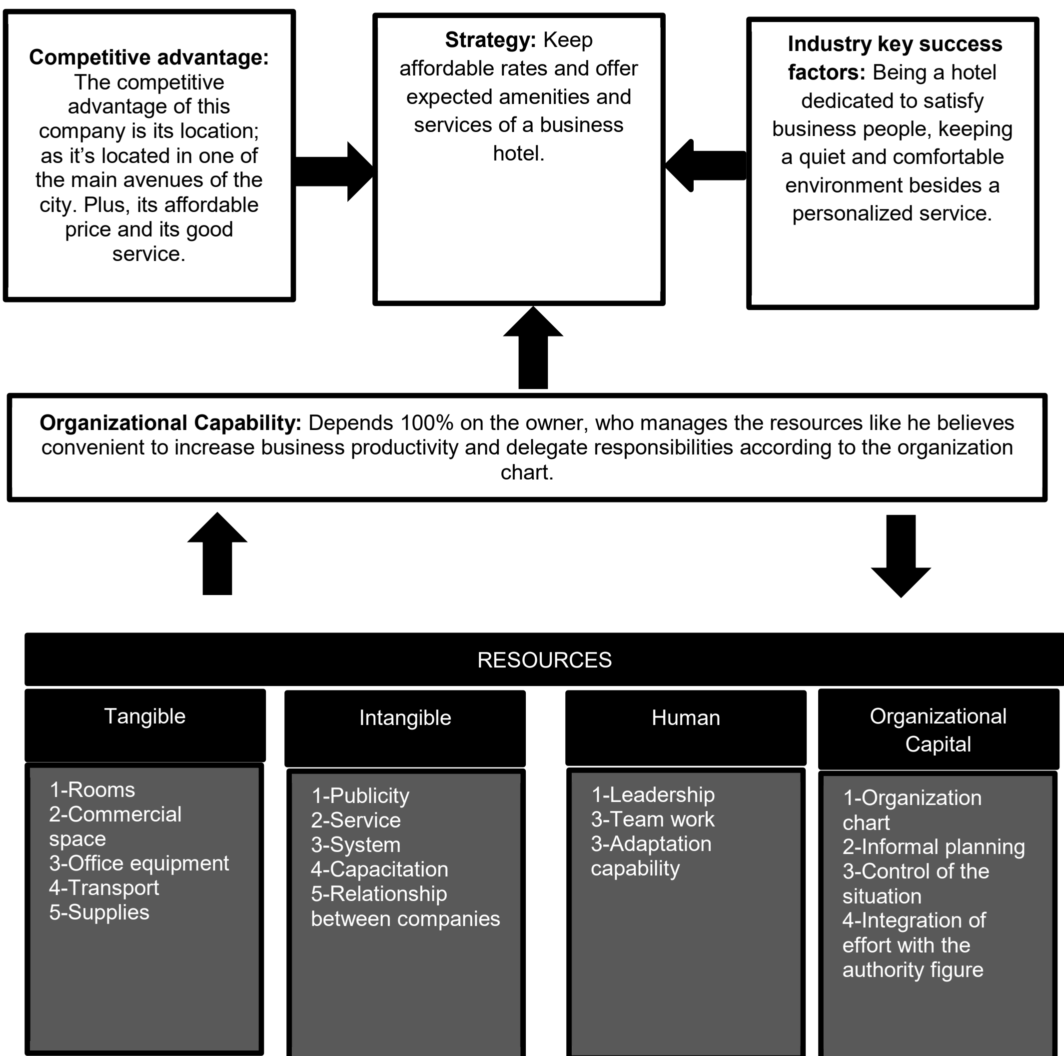
Theory of Resources and Capabilities

The theory of resources and capabilities states that organizations are different amongst themselves in terms of the resources and capabilities they possess at a determined moment. Also, by the different

characteristics each has resources and capabilities are not available for all businesses in the same condition. This theory allows for an internal analysis focused on the more salient aspects of the organization interior. This is related to the external analysis made and which will serve as a basis for the general strategic and human resources subsequent plan presented in Figure 2. Additionally, this tool is used to determine internal strengths and weaknesses in the organization (Grant, 2006).

Resources and Capabilities Hotel Avenida

Figure 2: Resources and Capabilities Hotel Avenida 2015



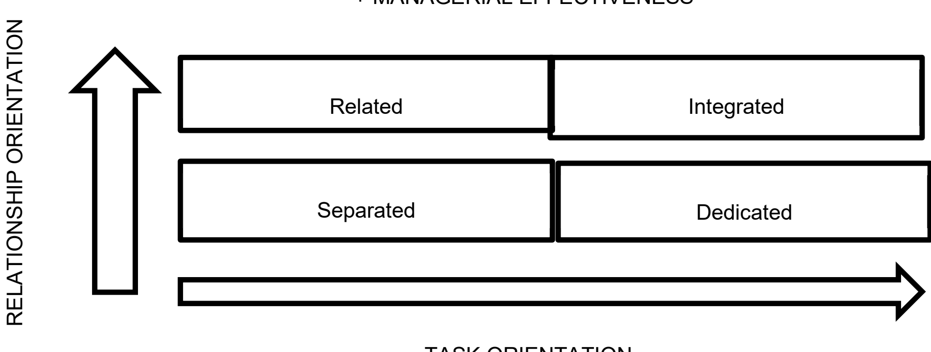
This figure describes the resources and capabilities of Hotel Avenida following Grant's theory of Resources and Capabilities. Source: Developed by authors.

Management Styles

Management is an activity performed by humans and as such, it is influenced by personal characteristics. These characteristics serve as key elements to what has been termed management style. Aspects such as leadership as well as capability to negotiate and harmonize, form part of an individual's personality. These in turn define the management style and the possibility of obtaining results with a high degree of

performance. It is imporant to identify the more vulnerable components of the business related to a management style. These components must be taken into consideration when deciding on a management profile. The profile should follow demands imposed by the processes and more importantly by the person's characteristics. It is quite different to lead a high professional level versus an operational level; or high-quality technicians versus beginners. Consider an environment where actions are repetitive to an environment that works on a case by case scenario. Personal style does influence management style. Consider hyperactive people with little or no patience and who want to impose their way of doing things, against a calm and patient person who lets each individual solve things to the best of their abilities. The conviction is that a strong character equates to leadership. The best management style one that accomplishes the best results, due to its style being attuned more frequently with the situations it faces and which has the necessary flexibility to adapt to new occurrences (Tripier, 2002) (Figure 3).

Figure 3: Management Style



This figure describes different trends that management styles can follow regarding decision making and staff interaction. Source: Developed by authors.

In this case the Management Style is profoundly decisive thanks to the owner being committed to supervising and leading all his employees in a direct manner, similar to a dictatorship. However, this has worked quite effectively since the business opened. In the words of Miguel " You do what you're told, as I'm the one who pays." That sums the owner's view on the matter.

IN CONCLUSION

Hotel Avenida is a clear example of hard work and perseverance on the owner's, *Miguel González Gómez,* part. He added value to his investments through his impressive business acumen. In addition, Miguel has been "learning" the business for over 35 years as he acquired more properties throughout this time. It is not necessary to make any changes to administration for the hotel to work. Since its start, it has grown gradually to the position where it now stands. The owner's motto: hard and steady work, seems to permeaete the whole business structure. He also believes that all problems have a solution. The model Miguel has followed seems to work very well. However, it does rely heavily on his figure and if he went missing the viability of the business could be heavily compromised.

QUESTIONS

1. Do the administrative decisions employed by the hotel answer to an identifiable pattern within Management Theory? Identify and justify your answer.

2. Is there any evidence of the relation between the performance of the hotel and the management style used? Justify your answer.

3. What strategic actions would you recommend for internationalization of the firm in the coming years?

4. List some of changes in context that would impact the business the most, in the short-term and in the long-term. Draw a table and suggest possible scenarios.

5. From the external consultant perspective, propose a final recommendation for the senior managers of the company.

STRATEGY AND LONGEVITY IN BUSINESS: HOTEL AVENIDA, CANCUN, MEXICO CASE STUDY

TEACHING NOTES

Miguel Ángel Olivares Urbina, Universidad del Caribe
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CASE STUDY DESCRIPTION

This case study is intended for undergraduate students. We aim to have students analyze and propose alternative models for decision making regarding the implementation of administrative and management strategies in a business hotel. Information is presented on a hotel that has 53 rooms and a traditional approach to administration. It was established in 2002, in the city of Cancun, Mexico. Students are given information about: the history of the hotel; key figures involved in the business decision-making; evolution of the management model; and, the current management model within the traditional approach to administration. The hotel has a constant 87% annual occupation rate. The case study asks students to evaluate strategies for the following dilemma: a) modernize the management model; or, b) improve the existing model, based on the performance of the business and the ever-changing context of the tourism industry. Students can suggest alternative courses of action and can assume the role of external consultants. Students should ideally work in teams. Knowledge in administration, management and marketing is necessary. This case study can be developed in a two-hour class and should include a presentation of the results and a discussion at the close of the class.

General Comments

This case study encourages students to reflect on the importance that decision making has in a traditional organization which needs to perform in a highly competitive and innovative field. A systemic vision is necessary to provide this vision and experience as an external consultant. Management strategies work as guiding principles from which to act in the decision making processes. The information presented has been complemented with data which should aid in the adoption of a qualitative analytical frame. The team should seek to discuss ideas and reach consensus on management strategy proposals. Students are free to present any proposal they see fit as long as they can justify their choice. They also need to prove that the proposal derived from the analysis and discussion done with their team.

QUESTIONS

Question 1: Do the administrative decisions employed by the hotel answer to an identifiable pattern within Management Theory? Identify the pattern and justify your answer.

Solution 1: The stratecy is identifiable with the decision making schools. Miguel establishes quantitative and qualitative parameters for his decision making. This results in centralizing leadership and control in his own person. He tried to delegate the direction of the hotel business, but the lack of shared vision between the incoming manager and the existing manager and owner, didn't allow for the delegation of leadership. This has in turn made a change in succession very difficult. The high-profile of the owner doesn't allow for empathic coordination of activities between the new manager and the current leader due to the latter believing things should be done his way.

Question 2: Is there any evidence of the relation between the performance of the hotel and the management style used? Justify your answer.

Solution 2: The activities developed by management incentivise the development of activities. The return to a traditional, personalized style centered on a market niche for operational level business guests. They allow growth in the demand for the services of the hotel. Growth in demand is made evident in the high numbers in occupation seen in the hotel. High and low seasons disappear due to the guest profile. The hotel's guests seek not sun and beach destinations. Rather, they are looking for a room that has basic commodities at a low price point. Offering this services and word of mouth marketing guarantees constant occupation throughout the year.

Question 3: What strategic actions would you recommend for internationalization of the firm in the coming years?

Solution 3: Due to its centralized administration, a firm commitment on the owner's part to delegate functions to experts in the field must be reached. Those experts would allow the hotel to be positioned in an international segment. Under current conditions, the owner and manager are focused on an operational staff level segment which big hotel firms that franchize this service do not contemplate. For the internalization of this hotel, a deep restructuring in the functions and operations of the hotel would be needed. In addition, the facilities would have to be renovated and modernized.

Question 4: List some changes in context that would impact the business the most, in the short-term and in the long-term. Draw a table and suggest possible scenarios. (Expect different answers).

Suggested answers 4:

Change	Short-term	Long-term
Miguel retires or passes away.	Hotel occupancy goes down; change in management doesn't go well.	Hotel closes; a franchise takes over. Bankruptcy.
Financial crisis	Increase rates; lose niche market.	Competitiveness is lost.
Adoption of technology	Loss of stability in the business;	New forms of making business are adopted successfully.

Question 5: From the external consultant perspective, propose a final recommendation for the senior managers of the company.

Solution 5: The hotel might specialize and expand by attacking the same market niche of operational level business guests which it already has. They might move toward specialized service. Due to the current scheme outlay, the operation can be replicated and systematized in small hotels in centric locations. The hotels could be operated with a small number of highly committed personnel keen on providing top quality service. To do this, the decision making process must be decentralized and leadership awarded to candidates who undergo a strict selection process to guarantee that they are imbued with the vision and spirit of expanding Hotel Avenida.

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BEST PRACTICES FOR VALIDATION FOR AN UPGRADE OR NEW ERP SYSTEM

Mitch Kramer

ABSTRACT

This paper discusses best practices for validation for an upgrade or new Enterprise Resource Planning (ERP) system. Topics covered include Introduction to ERP Systems, Upgrading ERP Systems, Implementation ERP Systems, ERP Financial and System Document Reports, SQL Command Scripts and Database Design.

JEL: C88, G0, L86, M15, M40, M41

KEYWORDS: Enterprise Resource Planning, Structured Query Language, Microsoft Access, Pass-Through Query, ODBC, Databases, Implementation, Financial Reports, Finance

INTRODUCTION

In this paper, the discussion will be based on best practices for validation for an upgrade or new Enterprise Resource Planning (ERP) system. I have completed numerous upgrades and implementations and have used these techniques to validate the data. Herein, I discuss the importance of upgrading and/or implementing an ERP system. The topic described in detail is the best approach to confirm that all data has been converted successfully. It is important to recognize that the worldwide ERP Software Market grew by 3.8%, from $24.4 billion in 2012 to $25.4 billion in 2013 (Columbus, 2014). The Global ERP Software Market is expected to garner $41.69 billion by 2020, registering a Compound Annual Growth Rate (CAGR) of 7.2% during the forecast period 2014 to 2020 (Chaudhari & Ghone, 2015). In the past, there have been many papers with discussion around upgrading and implementation an ERP system. Other discussions have detailed whether the upgrade or implementation of the ERP system was successful or if it failed and why. The purpose of this paper is to contribute information on the necessary steps to validate the upgrade or new ERP system and ensure it will be successful.

The majority of organizations use large accounting or Enterprise Resource Planning (ERP) systems to manage the needs of their organization. I have been responsible for planning, implementing and testing the functionality before allowing users to access the upgraded or new system (also known as going “Live”). There are certain steps that you need to take before you go “Live” with the system. All companies share a common goal when it comes to ERP implementation: they would like a quick and smooth process that does not disrupt business with network or system issues. The literature review provides more detail about the innovation of the system as well as why organizations upgrade and/or implement an ERP system. This paper will give guidance on ERP financial and system reports and SQL Command Scripts to run. This will enable you to confirm the data has not changed. As well, it is a good idea to have a Microsoft Access database for storing the scripts to run a comparison between systems.

LITERATURE REVIEW

One of the most important IT-enabled business innovations during the past decade has been the emergence of Enterprise Resource Planning (ERP) systems. Lured by guarantees of improved business productivity,

streamlined business operations, and increased cost savings, organizations worldwide have launched initiatives to integrate ERP systems into their existing business environments (Beatty & Williams, 2006). An Enterprise Resource Planning (ERP) system is a packaged business software system that allows a company to automate & integrate the majority of its business processes, and share common data and practices across the entire enterprise (Seddon, Shanks & Wilcocks, 2003). This allows a company to manage their integration solution and resources across finance, supply chain, manufacturing, order processing, project management, customer relationship management and human resources. The majority of large-scale organizations have implemented their ERP systems for the following reasons: to overcome the millennium date problem (often known as the Y2K initiative). To resolve issues of disparate systems within the organization. To resolve poor quality/visibility of information. To resolve a lack of business processes and/or systems that were not integrated. To replace obsolete systems. To assist in integrating acquisitions and to resolve issues stemming from a lack of support for organizational growth. (Deloitte Consulting, 1999). Why upgrade? This is necessary to stay within the ERP vendor's window of preferred release. Vendors prefer their clients to stay current in order to support the organization's ERP system. By staying current, the ERP Vendor is able to offer new features and updates to their system. An ERP upgrade is deceptively complex and can be daunting, especially for organizations ignorant of the massive effort required to perform it correctly (Beatty & Williams, 2006).

ERP Implementation

The accuracy of the data is an important part of doing an upgrade or implementing a new ERP system. The ERP system is only as good as the data that is in it. (Schiff, 2012) Below are some recommendations for reports and SQL Command Scripts to run. These will assist you with verifying that the data has not changed. In the ERP system, run the following reports before going "Live" and after the update has been installed:

Trial Balance
Balance Sheet
Income Statement
Accounts Payable Aged Report
Open Purchase Order Report
Accounts Receivable Aged Report
Open Order Entry Report
Item Master Listing
Inventory Transaction History

Confirm these reports match and balance. If there is a difference, you need to investigate why they are out of balance. The upgrade process may have caused the out of balance. If there were transactions that were completed after the validation reports were run, this may also have caused a discrepancy. I would also recommend confirming that the reports print and export (if applicable) successfully. After running the reports, run the SQL queries before the system is upgraded. Run the SQL queries again to verify all data has been converted successfully, once the system is back up after the upgrade. You can run the SQL queries on many different modules including, but not limited to Asset Management: compare total count and total assets by company. Accounts Payable (Receivable): compare total batch invoice count & amount (if applicable) and invoice count & amount by the company. Postings to General Ledger: compare system counts by Fiscal Year for each module that was posted to the General Ledger. You can modify the script for each Fiscal Year and save it as a new script (for each year that you run). The SQL scripts, I will be discussing are based on Infor Lawson ERP System Tables. The same script can be used for other ERP systems; keep in mind, each system has its own file layouts and structure. GLTRANS is the General Ledger Transaction file that contains the journal entry details. APINVOICE is the Accounts Payable Invoice file that contains the invoice records. AMASSET is the Asset file that contains all asset records.

General Ledger Transactions Count by Fiscal Year, Company, and System: select company, system, count(company) as count from gltrans where fiscal_year = 2016 and company = 1000 group by company, system

Accounts Payable Invoice Count by Company: select company, count(company) as count from apinvoice group by company

Asset Management Total Summary Count with Company Totals that are active: select company, count(asset) as count, sum(it_tot_csttran) as total from amasset where status = 2 group by company

In the past, I have created a Microsoft Access database in order to run my SQL queries to compare the data. There are many reasons for creating a database: Verification: compare counts and totals (these must match before the system is ready to go "Live"). Audit: In case, the CPA firm asks if there have been any significant changes to the ERP system. You can confidently say that the data has been converted successfully. The database is proof! Organizations should upgrade their system at least once a year to keep current. The database can be used repeatedly when there are significant patches or upgrades; it makes your job less stressful by making it a smooth process because the SQL scripts have already been written and the Access queries have been created. Upgrading an ERP system is an ongoing process. Here are a few important steps to follow when creating a Microsoft Access SQL Upgrade Database: Make sure that you have an ODBC connection to the old and new server. In Access, you can either link the tables from the ERP System or use Pass-Through ODBC Connection String to create your SQL queries. Create a Query Type: Make a Table with using your SQL queries. Once the data has been upgraded, append the data to the table with a different field name. Create a query comparing the two fields. See Table 1 below. The General Ledger query will have the Company, System, Before Count and New Count and Differences. The Differences should be zero.

Table 1: General Ledger Query Results

Company	System	Before Count	New Count	Difference BC - NC
1000	AM			
1000	AP			
1000	AR			
1000	GL			
1000	IC			
1000	PO			
1000	PR			
1000	RJ			

CONCLUDING COMMENTS

As the person responsible for validation the data, there will be numerous verification scripts that you will need to run. It is important the data has been updated successfully. Otherwise, this can lead to misleading financial statements. As well, (Umble, E. and Umble, 2002) mention: Data entered into an ERP system may be used throughout the organization. Because of the integrated nature of ERP, if inaccurate data is entered into the common database, the erroneous data may have a negative domino effect throughout the enterprise. Inaccurate data can lead to errors in market planning, production planning, material procurement, capacity acquisition, and the like. If a company with inaccurate data just forges ahead under the assumption that data errors will be corrected when they are spotted, the ERP will lose credibility. This encourages people to ignore the new system and continue to run the company under the old system. The intent of this paper to help identify which reports and SQL scripts need to be run when validating an ERP system. This paper also discusses the importance of creating a Microsoft Access database to run and compare the SQL scripts. After the successful completion of the upgrade or implementation of the new

system, remember, the users will need time to adjust. Patience is key! They are looking to you, the expert, for assistance.

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PEDAL AND MOTOR CYCLE HELMET USE, SPLIT BY GENDER: EVIDENCE FROM EUROPE, CENTRAL AMERICA AND THE CARIBBEAN

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ABSTRACT

According to the WHO's Global Status Report on Road Safety of 2013, road fatalities were 1.24 million for the 182 countries studied; the injury statistics were as always less precise: depending on definition and recording measures, there were 20-50 million injuries –either extreme of the spectrum would constitute the size of a medium-large nation state. In economic terms the cost of road injuries in 2000 was recorded in the WHO Report as in excess of $1/2 trillion –again equivalent to the GDP of medium-large national economies. Correct helmet use was estimated in the study to reduce the risk of death by 40%, and that of serious injury by 70%. These somewhat sobering statistics provide the backdrop for the empirical study of helmet use by riders of bicycles and motorcycles analyzed by gender, age, number of riders and personal/cargo use, which are presented below. Locations in the following countries were chosen in Central America and the Caribbean, for empirical observation of helmet use: Latin America (Cuba, Costa Rica and Nicaragua) and locations in the following countries in Europe (U.K., Italy and the Netherlands.) The data collected are summarized, analyzed and reviewed; and comparisons between countries and regions made. Policy implications are discussed. Tentative policy recommendations are suggested, subject to more extensive empirical research, for a more pro-active approach to road safety for pedal and motor cycle users –not just operators but also passengers, who constitute some of the most vulnerable road users.

JEL: R41, N70, I00, H83

KEYWORDS: Road Safety, Bicycle Helmet Use, Motorcycle Helmet Use, Risk, Gender Differences, Public Health, Public Policy, Transport Management

INTRODUCTION

The sobering statistics published by the WHO (World Health Organization), of millions of fatalities plus tens of millions of serious injuries sustained annually by road users, were qualified by the following comments specifically related to bicycle and motorcycle operation and riding: helmet use was estimated to reduce the risk of death by 40%, and that of serious injury by 70%. These enormous potential savings of lives and on-going misery, in addition to the hundreds of millions of dollars of lost income resulting from road accidents (half a trillion is cited in the WHO report overall), have provided the interest in conducting the following empirical study of helmet use by riders of bicycles, and of motorcycles, analyzed by operator vs. passenger, by gender, by number of riders and by use (personal/cargo), in the hope of detecting underlying commonalities and differences per category, location, country and global region. Most of the existing literature has focused on accident and fatality/injury analysis, mostly comprising secondary research; the present study is empirical research using the author's primary data; it provides and analyzes data on 2-wheeler riding behavior, rather than focusing on accidents, injuries and death. Since the study was self-financed, observations were restricted to 16 locations in the following 6 selected countries; and in 2 distinct global regions: Central America and the Caribbean (Costa Rica, Nicaragua and Cuba) and European Union (The U.K., the Netherlands and Italy.)

The existing literature is briefly reviewed in the next section. Following is a section providing data and analysis for each location, and some comparative cross-country and regional analysis are reviewed. Some implications of the results are discussed, together with further theoretical analysis. Concluding comments are made, including tentative policy recommendations, subject to further research, for a global approach to road safety for some of the most vulnerable road users. Appendix 3 provides all 4,533 observations, split by bicycle and motorcycle operators, by passengers and by gender identification for each; these data are collated for each of the 16 locations, and aggregated. Appendix 1 provides totals per country, and per global region studied, plus ranking for each of the countries' studied, according to helmet use, for both motorcycle and pedal cycle users. Appendix 2 focuses on motorbikers' helmet use only.

LITERATURE REVIEW

According to the WHO's Global Status Report on Road Safety of 2013, road fatalities were 1.24 million for the 182 countries studied in the report; the injury statistics were as always less precise: depending on definition and recording measures, there were 20-50 million injuries –either extreme of the spectrum would constitute the size of a medium-large nation state. Data for countries not covered in the Report can only be imagined, since records tend to cover data in countries with less extreme experiences –not quite the tip of the iceberg, but understating the state of the accident universe, rather than overstating it. In economic terms the cost of road injuries back in 2000 was recorded in the 2013 WHO Report as in excess of $1/2 trillion – again equivalent to the GDP of medium-large national economies. Correct helmet use was estimated in the study to reduce the risk of death by 40%, and that of serious injury by 70%. According to the European Road Safety Observatory (2007):

Motorized Two-wheelers: Motorcycle and moped fatalities in western European together represent 10-15% of all traffic fatalities. For both mopeds and motorcycles, the rate of fatalities per 105vehicles is much higher for younger riders than for older riders. Ireland and Greece exhibited increasing fatality rates in these five years. (1990-95)

Cyclists: The number of cyclists killed per cycled kilometre is very much influenced by the total number of cycled kilometres. The accident risk based on the amount of cycling is lowest in Denmark and the Netherlands (resp. 15.9 and 17.6 fatalities per billion km). The risk is particularly high in France and Great-Britain (resp. 67.7 and 52.5), where the amount of cycling is low. It has been proven that the risk decreases as exposure increases

> Safety: improvement of the safety of cyclists on the road is therefore a precondition for promotion of cycling….design principles and measures for improving cyclist's safety include
>
> Grade-separated crossings for crossing main roads (urban motorways, main arterials etc)
>
> Frequent crossing possibilities along main roads, in order to prevent the barrier effect for cyclists
> Wide cycle tracks and wide pavements along main roads, affording cyclists good accessibility, safety and security
>
> Junctions provided with crossings for cyclists.

The World Resources Institute, India wrote in its Sustainable Cities publication under the following heading:

"Challenges arising from the rapid growth of two-wheelers –Road Accident Deaths"

Safety is a particularly significant concern with the use of two-wheelers. Data from 2012 showed that two-wheeler riders account for the largest share of road fatalities (23%) and India records the maximum number of deaths from motorized two-wheeler accidents in the world. In Pune, 50% of traffic accident fatalities in 2010-11 were two-wheeler riders, only 1% of whom were wearing a helmet. For a variety of reasons, Indian states have not notified the helmet law, and when introduced, it is partial in nature. Compliance and enforcement of the law has been poor. Also of concern is the license age being reduced from 18 to 16 years, with many youngsters in their early teens riding two-wheelers illegally.

Mark Hinchcliffe wrote the following with regard to the situation in Australia (Motorbike News 20/1/15)

<u>Powered Two-Wheelers</u>

PTW's provide little protection against injuries in the case of an accident. Injuries to the legs are frequent, but injuries to the head are more severe even though wearing a helmet. Accident studies show head injuries would have been much more frequent if helmets had not been worn. From the point of view of preventing injuries there is no reason to exclude any group of PTW users from compulsory wearing a helmet.

Australian Road fatalities were down in 2014, from the previous year, except for vehicle passengers. 'Unfortunately, reflecting the growing popularity of riding among women, females represented 10 of the 187 riders who died, compared with 7 of 201 riders last year.

<u>Road Deaths 2014</u>

Riders 187 (201 in 2013); Pillions 5 (12); Cyclists 45 (49); Car Drivers 532 (567); Car Passengers 229 (202); Pedestrians 151 (157)'

"Despite what authorities tell us about riders killing themselves in single-vehicle crashes, Australian road death statistics for the past couple of years prove the opposite.

Government statistics show that of the 187 riders and five pillions killed last year, only 40% of crashes were single-vehicle accidents, which is down from 49% the previous year.
Most motorcycle crashes last year involved a car, while 14 were collisions with trucks and two with buses. Most fatal motorcycle crashes also occurred around town where bikes are more vulnerable to being hit by other vehicles, not on highways and sparsely populated country areas."
What has ben taken for granted in Hinchliffes analysis is the exceptionally proactive (aggressive?) stance of Australian public policy towards helmet use, 'drunk driving'and other strongly penalized criminal offences.

Juxtapose this public policy position, and its positive effects on road fatalities across the board, with that of India: as reported by Ruinkar (2013)

> *Between 1970 and 2011, the number of accidents increased 4.4 times accompanied with 9.8 times increase in fatalities and 7.3 times increase in the number of persons injured, against the backdrop of more than a 100-fold increase in the number of registered motor vehicles and close to a four-fold increase in the road network.*
>
> *During 2011, a total of 4,97,686 road accidents were reported by all States/UTs [Figure 1]. The proportion of fatal accidents in the total road accidents has consistently increased since 2002 from 18.1 to 24.4% in 2011. The severity of road accidents measured in terms of persons killed per 100 accidents has also increased from 20.8 in 2002 to 28.6 in 2011.*

With its population of less than 0.5% that of India, the relatively flourishing economy of Costa Rica is reflected in its similar increase in motorcycle use, and the road carnage which has ensued. La Nacion published on Page 1 its leading article highlighting the severity of the problem: 81 fatalities were recorded for YTD, compared to 52 for the same period the previous year –an increase of 56% year on year to that point. More significant from the perspective of data collation: 5,000 injuries were reported for motorcycle users in the first 3 months of 2015. Note that in Costa Rica, with a relatively well-developed hospital and emergency system, some credence can be given to the ratio of deaths to injuries in motorcycle accidents. If we were to hazard a guess as to the number of injuries globally due to motorcycle accidents, we might do worse than to borrow the ratio: 5,000/82= 60.98, or a multiple of roughly 60 times. Using that multiple and applying it to an approximation of 500,000 motorcycle fatalities worldwide would yield 30 million injuries PER ANNUM, and according to Indian and WHO predictions, rapidly growing. Finally mention should be made of the findings of motorcycle fatalities reported by the IIHS (Insurance Institute for Highway Safety), using U.S. Department of Transportation's FARS data, (updated January 2015):

> *1997 recorded 811 deaths, of which 785 (97%) were helmetless.*
>
> *By contrast: 2013 recorded 741 deaths, of which 464 (63%) were helmetless; (150= 20% were not identified as with or without helmet.*
> *Hence we have an important rationale for this empirical study. No gender split was given by this IIHS secondary research: providing a motivation for the parameters of the research outlined below.*

DATA AND METHODOLOGY

The data collected is presented in Appendix 3 and further analysis is provided in Appendices 1 and 2, infra. Some 4,500 individual observations are recorded and collated, organized by each of 16 specified locations, in 6 countries, and divided between European and Central American/Caribbean locations. The countries are Costa Rica, Nicaragua and Cuba, in Latin America; and the U.K., Netherlands and Italy, in Europe.
The methodology employed by the investigator/author was to observe and manually record the use/nonuse of helmets by 2-wheel riders, distinguishing between male and female, operator and passengers, and where possible other safety-related characteristics, such as use of earphones, smoking, heavy load carrying etc. Each of the 16 locations was selected to provide as clear and unobstructed view of road users as possible. In each, a standard observation period of one hour was used.

Problems with Methodology

Since the observations and recordings were taken in a specific time and place, it would not be feasible to replicate the study; the best that could be done would be to repeat a one-hour observation at the same time, on the same day of the week, with similar weather conditions –all of which variables would clearly have some impact on bicycle and motorcycle use.

Accuracy of observation and recording: it would be impossible to warranty 100% accuracy of observation and recording: e.g. a large bus or truck might have obscured vision at an observation point for enough time to lose some observations; in busy locations it would have been impossible to warranty that the same operator did not pass through the observation point more than once; gender differentiation/identification was sometimes difficult to ascertain, e.g. when motorbike operators and/or riders were both helmeted and wearing thick motorbike gear; thus in auditing/accounting terminology, errors of both omission and commission almost certainly occurred, in the course of the study. However, in the opinion of the author the number of errors would have been fairly minimal, relative to the total of over 4,500 observations recorded. The additional observations –e.g. smoking users, earphone use, precise age of users both old and young, could not be ascertained with the degree of accuracy of the basic observations; they are therefore added as

narrative comments to complement each scenario; additional human and electronic resources would be required to undertake the more comprehensive set of observations and analysis which the subject is considered by this investigator to warrant –hopefully available in the future.

RESULTS AND DISCUSSION

The following provide brief descriptive contexts and data analysis pertaining to observations in each location.

Locations in Central America and the Caribbean

Location #1: San Jose, Costa Rica: Avenida 4, Calle Central was chosen to check whether the new dedicated bike lane in the city center would attract cyclists, and help change the San Jose motorized vehicle culture to a more non-motorized culture. In fact, the new bike lane was hardly used by cyclists, but continued to be used by hundreds of pedestrians during the observation hour. 50% of the cyclists observed comprised one group of teenage males, who chose to cycle on the extremely busy Avenida 2, which is generally full of cars, taxis and buses. Of the 104 2-wheeler users, some 20% were pedal cyclists, almost all without helmets, and virtually all male; of the motorcycle users, virtually all wore helmets (as required by law, and with an obvious police presence); the majority of the passengers were female, and comprised some 25% of total motorcycle use. San Jose, the capital of Costa Rica, has some 1 million residents, and suffers from major vehicle congestion and resultant ambient pollution. Observation date January 2 2016; time: 13.55 pm -14.55 pm.

Location #2: Santa Cruz, Costa Rica: Santa Cruz is a major commercial town in the province of Guanacaste, with a population in the thousands. The observation location was in the central square next to the major bus station, which had the highest local traffic count. Of the 3 locations, Santa Cruz had by far the most 2-wheel traffic –roughly double the volume of motorbike users, still mostly with helmets; but more strikingly, at 324 bicycle users, over 15 times the number of bike users than in San Jose –roughly 10% of them being passengers, un-helmeted, with a substantial number of these children (10 boys, 17 girls, plus a second girl passenger). Observation date: May 4, 2015; time: 11.55 am -12.55 pm.

Location #3: Villa Real, Costa Rica: With a population in the thousands, Villa Real has evolved as a 'feeder' town to the predominantly tourist-oriented beach town of Tamarindo, some 4km away. It provides most of the labor supply to the tourist businesses of Tamarindo, and while no longer exclusively Latin American in population, it is still predominantly so. Here 70% of the 2-wheel users were motorcycle users; compliance to the legal requirement of helmet use was less stringent, with some 15% of male operators helmetless, (8 of 54 observed), and 1/3 of female operators likewise driving without helmets (3 out of 9). Whilst the numbers are small, the issues raised are not. Although not part of the scope of this investigation, it was noted that 7-10 horse riders used the busy intersection in Villa Real, all male, none with helmets. The town has not lost all its roots. Observation date: Friday, September 11, 2015; time: 9.05 am-10.05 am.

Location #4: Rivas, Nicaragua: Rivas is a commercial entrepot, the first market city North of the main border of Nicaragua from Costa Rica, en route to Managua, Granada and Leon, the 3 principal cities of Nicaragua; it is also situated strategically between San Juan del Sur and San Jorge, the gateway to La Isla de Ometepe. Of the 3 Nicaraguan towns studied, Rivas had by far the largest proportion of bicycle/tricycle users -166 cf 111 motorbike users. It was also unique insofar as pedal tricycles were a common form of public taxi, and as such numbered 71, of the total number of 'pedal cycle' operators. None wore helmets. All were male. Only 11 females were bicycle operators, comprising almost exactly 1/10 the number of male operators. However if one were to discount the all-male pedal taxi operators, the ratio of female to male bicycle operators would change to ¼ -still a major imbalance; all helmetless. The number of female passengers on the other hand outnumbered the number of male –at 20 cf 17. Females displayed more

proclivity to be passengers than operators. Of the total of 111 motorbike users, 76 were male operators, and only 5 were male passengers; cf 14 female operators and 16 female passengers. The helmet use divide was as follows: approx. 4/5 of male operators wore helmets (16% were helmetless); whilst 100% of female operators wore helmets (14/14). However, as passengers, females were less inclined to wear helmets – fewer than half did so (7/16). 2 boys and 3 girls were included in the number of helmetless bicycle passengers, plus one boy operator. Among the female motorbike passengers was one girl. Observation date September10 2015; time 13.05-14.05 pm.

Location#5: San Juan del Sur, Nicaragua: SJDS has developed from a fishing village into a tourist resort town during the last two decades. Some of the increased prosperity is reflected in the ubiquity of private transportation –from pedal cycles to motor cycles to cars, trucks and SUVs. Thus in our observations the total number of bicycle users was 98, compared to the total number of motorbike users, which was some 40% higher, at 140. All bicycle users were helmetless, including 2 child passengers (one boy, one girl) and one child operator (male). Included in the bicycles reported were 5 pedal tricycles, used primarily for carrying cargo or passengers. Of the motorbike operators, the majority of the males (86/110, or 78%) wore helmets, but 24 (=22%) did not. For female operators, the percentages were 50/50: half the females wore helmets, and 50% were helmetless. The number of passengers was insignificant. Observation date September 12 2015; time 13.15-14.15.

Location #6: Moyogalpa, Nicaragua: Moyogalpa is the principal port and largest town on la Isla de Ometepe, the largest island in el lago de Nicaragua. Like San Juan del Sur, it has developed recently into a tourist reception nexus, and the growth in the use of private transportation has reflected this rapid development. Motorbike use outstripped bicycle use by almost exactly 2:1, in our observations (116 cf 59). Of the 59 bicycle users, one (a male adult passenger) did wear a helmet. 2 boy operators, plus 2 boy passengers, and 5 girl operators, plus 1 girl passenger, were among the 58 bicycle users who were helmetless. Compared to all other Latin American locations studied, Moyogalpa boasts by far the highest percentage of motorcycle users and passengers without helmets. It is the only location where helmetless male users outnumber those with helmets (40 cf 39). By contrast some 36% of female operators were without helmets, though the absolute numbers are much smaller than those of the male operators (5 cf 9). Among passengers, almost all males were helmetless, compared with females, 36% of whom did wear a helmet (5 cf 9). Observation date: September 10, 2015; time 8.30-9.30 am.

Location #7: La Habana, Cuba: Barrio Cecilia is about 10 km from the city center of old Habana, with major arterial roads into the epicenter. Buses conveyed the vast majority of traffic. As is evident, helmet use was zero for both operators and passengers, of either gender, for bicycle users. Male passengers comprised over 1/3 of total bicycle ridership. Motorbike operators were overwhelmingly male, on a ratio of close to 12:1, male to female. Likewise passengers were predominantly male, but with a ratio of only 2.5:1. Excluded from the data was the sight of 2 police officers, both male, on a day succeeding the observation: both were helmeted. Their location was in the center of Habana. Few other cyclists were observed; none were helmeted. Observation date: December 4, 2015; time: 17.00-18.00.

Location #8: Pilon, Cuba: Pilon has a population numbered in the thousands, compared to Habana's population, which numbers in the millions. As is clear from the data observed, in the Central Square, the private transportation of choice was overwhelmingly the bicycle, which was both operated by helmetless riders, of whom only 15% were female, and whose passengers were likewise helmetless, (both first and second passengers). 2 of the first passengers were boys; 1 was a girl; the 2 second passengers were boy and girl respectively. In addition there were 3 pedal tricycles, being used as a taxi service –no helmets were in evidence. The one motorbike observed had a helmeted male operator and a helmeted male passenger. Observation date: Sat. October 10, 2015; time: 21.30-22.30.

European Locations

Location #9: Portsmouth, U.K: Portsmouth -The Front, close to the city center, provided an unobstructed view of traffic. In all, however, only 93 2-wheeler users were observed: the majority on bicycles (77/93=83%). Of these, the majority were male operators without helmets; but 8/53 (15%) did wear helmets. Among the 21 female operators the proportion of helmeted operators was far higher: 6/21 = 29% wore helmets –almost double the usage of male bicycle operators. Of the 16 motorbike users, only 1 was a passenger. Only 1 operator (a male) was helmetless. 14/16=88% of the operators were male; one was female. 2 boys were bicycle operators and helmeted, one was a helmeted passenger, one not. Likewise 2 girls were bicycle operators, one with, one without helmet, and a girl passenger was helmetless. No children were on motorbikes. Observation date Saturday, July 4 2015; time 16.00-16.45

Location #10: Bournemouth, U.K.: Of the 16 locations in the study, the lowest number of 2-wheelers observed was in this seaside location of Bournemouth. The observation point chosen was in view of bicycle lanes, and with restricted car use. Just 4 motorbike users were observed, all male, all helmeted. Of the 72 bicycle users, all were operators; none passengers; just over 2/3 male and 1/3 female. The ratio of helmeted to un-helmeted operators was similar for each gender: 11/38=29% for males; 6/17=35% for females. Observation date: July 1, 2015; time: 12.05 pm-1.05 pm.

Location #11: Brighton, U.K.: In Brighton's town center, the observation point included regular vehicle roads, with no bicycle lanes; however it was close to a pedestrian market, closed to motorized traffic, but heavily used by pedal cyclists. Just 6 motorbike operators were observed, all male, all helmeted. Just one motorbike passenger was observed, female, also helmeted.

Location #12: Amsterdam, Netherlands: The contrast between bicycle use in the U.K. and in the Netherlands is quite marked, according to the data observed in this study. Outside the central train station, literally thousands of bicycles were parked –an indication of the 'bicycle culture' of the city. Bicycle lanes were provided around the city center, and were in constant and dense use. In the one hour of observation, forming the basis of this study, a street was chosen roughly 2km from the central train station. (specific spot: Zeeburg/Jadaplein). 529 bicycle users were observed: with an almost equal gender split. The great majority were operators (male 268; female 245) but there were 4 male as opposed to 12 female passengers. None of the 529 observed wore helmets. All 4 of the male passengers were children. 9/12 (75%) of the female passengers were children. 6 female operators were children; just one male. One adult male was observed speaking on the cell phone, while riding single-handed. Very few 4-wheel vehicles were observed. Compared to elsewhere, the bicycles themselves were mostly old, much used, and non-sporty. They were clearly intended primarily as modes of transportation, as opposed to status symbols. There were more male operators, as the evening got darker. Observation date: February 16, 2016; time 18.00-19.00.

Location #13: Lecce, Italy: The Central Square in Lecce was chosen as the observation point. Just 13 motorbike users were observed -9 male, 4 female. All the males wore helmets. The 2 female operators wore helmets; the 2 female passengers did not. Female bicycle users made up close to one third, and male users 2/3 of the total number (80 cf 155, of the total of 235 users). Of these the overwhelming majority were helmetless. 2 of the 4 helmeted male cyclists were police. While motorized traffic was authorized on the peripheral roads in view, it was not officially authorized for other than public motorized vehicles in the central square; hence the majority of the 2-wheelers using the square as a transit point were pedal cyclists. This may have given a skewed perception of the relative use of motorized and non-motorized 2-wheelers throughout this small, well-preserved town. It also may help explain the relatively lax mode of bicycle operation: 8 of the male operators were observed using cell phones while cycling, and 2 were smoking – both of which operations reduced riding to a single-handed task. It might also help explain the high incidence of older cyclists (judged at least 65+): 7, of the total of 151 males operating without helmets, or

roughly 5%. 5 of the bicycle passengers were children, and all female –including an infant second passenger carried by her mother on the crossbar. Observation date: Monday, February 22, time: 12.35-13.35.

Location #14: Bari, Italy: A far larger port town than Lecce, Bari exhibited a high use of motorbikes, and a secondary use of pedal cycles: 367/474=77% of 2-wheeled traffic observed was motorized. Of those, the majority were composed of male operators (293/367=80%), all helmeted. By contrast, 7 females were motorbike operators, again all helmeted. The passenger population shows a markedly different story: while 23/25 male passengers wore helmets (92%), none of the 42 female passengers observed were wearing helmets. There appeared to exist a clear cultural divide by gender, for passenger helmet wear. Male un-helmeted pedal cyclists outnumber female un-helmeted operators by exactly 5:1 in our study; but again the incidence of un-helmeted female bicycle passengers is far higher than that of un-helmeted male passengers (8:1).; again possibly indicating a cultural gender divide. Both second un-helmeted bicycle passengers were girls. Observation date: Saturday February 27, 2016; time: 11.55 am -12.55 pm.

Location #15: Napoli, Italy: Observations were made close to the central railway station, on a main road (Garibaldi). At 888 observations in one hour, Naples registered the highest level of 2-wheel use among the 16 locations selected, and also the highest number of motorbike use; conversely it registered proportionately the least use of pedal cycles among the 16 locations studied (24/888, approximating 2.5%). All male pedal cyclists were helmetless, as was the sole male passenger (a child). One female cyclist was observed without a helmet. Almost all male motorbike operators wore helmets (8/652=just over 1% were helmetless); compared to a much higher proportion of female operators without helmets (6/87= just under 7%). The high passenger helmet use was more or less equal across the gender divide (49/56=88% for males; cf 51/60=85% for females.) Of the 7 male passengers riding without helmets, one was a child. Of the 9 female helmetless first passengers, one was a child. However of the 3 helmetless second passengers, all 3 were girls. It was observed that the vast majority of vehicles on the road were private cars, and speed limits were noticeably not enforced. Observation date: Friday, February 19; time: 8.40-9.40 am.

Location #16: Rome, Italy: Weather conditions were windy, chilly, turning into driving rain. Location: Largo di S. Susanna, 1 km from central train station. Bicycle riders were scant: at 12, males outnumbered the 3 females 4:1. 2 males were using earphones. All were helmetless. None had passengers. In the motorbike population, virtually all users wore helmets, regardless of operator/passenger status or gender. This contrasts starkly with the observations of other Italian cities. Roughly one in 5 five operators were female; whilst female passengers outnumbered male by some 7:1. Inter-gender operator and passenger behavior patterns seemed to be clearly defined. Two of the male operators were smoking, which would impede 2-handed steering. Just one motorbike passenger was a child (male, and helmeted). As the rain and wind got stronger, and the temperature dropped (to 9-10 degrees Celsius), 2-wheeler use dropped substantially. Observation date: March5, 2016; time: 17.15-18.15.

DISCUSSION AND ISSUES RAISED

The range of variation in helmet use, across operators and passengers of both bicycles and motorbikes, is large, and is not accounted for entirely by the legal constraints in the 6 different jurisdictions covered in the 16 locations observed. Cultural variations seem to account, for example, for the comparative laxity of helmet use for female motorbike passengers in Bari, compared particularly to Rome, but even to Napoli. Proportionately the least well-helmeted, for both bicycle and motorbike users, were 2-wheel riders in Amsterdam. Moyogalpa in Ometepe comes a distant second. All of these latter findings may also have explanations in the cultural context of each location: 2-wheelers in Amsterdam have such a critical mass, outnumber 4-wheelers so obviously, that they can perceive themselves as ‘kings (queens?) of the road’. This would definitely be a totally incorrect perception in, for example, Napoli, where 4-wheelers constitute the majority of vehicular traffic, and therefore a constant threat to the safety of 2-wheeler traffic, motorized or otherwise. Police surveillance of helmet use was nowhere in evidence, in any of the 16 locations; nor

was there any evidence of police surveillance of unseated first and second passengers on bicycles, many of whom were children and un-helmeted.

The difficulty of changing an entrenched culture is well illustrated by the creation and the ignoring of the new bicycle lane in central San Jose. Very few San Jose residents have considered bicycles a viable form of transport. Until a complete and connected network of bicycle lane is established, keeping cyclists separate and safe from motorized traffic, it may be reasonable to expect most San Jose residents to shun their new city center bicycle lane. Nonetheless, cultural attitudes do change: there are more cyclists evident in downtown San Jose than there were a decade ago.

<u>More General Theoretical Considerations Raised -The Notion of Risk and Attitudes Towards Risk –Wilde Revisited!</u>

Gerald Wilde raised an academic storm when he first introduced his notion of risk homeostasis (Wilde, 1989.) He suggested essentially that people have an inbuilt predisposition to risk, such that public policies reducing the probabilities of accident/injury in one area will merely make people more predisposed to increase their risk level in another: thus forcing all cyclists to wear helmets may merely encourage them to cycle faster and more recklessly, to 'compensate'.

Needless to say, the theory has remained controversial since its conception several decades ago. It has remained so in its later iterations (1994, and 2001). In the present empirical study, we might explain the use of earphones, cell phones, smoking of cigarettes while cycling etc., all as strategies by 2-wheel operators to increase their level of risk to a level more attractive to them. Thus public policies to attempt to curb such action may end up a waste of time, since the perpetrators would just find alternative high-risk activities as compensation. The popularity of 'extreme sports' would fit well into Wilde's exposition.
The problem with this logic is that not only are the perpetrators putting themselves at risk. In the context of this study, passengers and other road users are also affected by the risk proclivities of all road users. Thus public policy can be seen as a prophylactic mechanism for the whole of society, not just for individual recalcitrant road users.

An alternative overarching theory to the seductive model provided by Wilde and his protagonists is that of assessing the value of life attached 1/ to individuals, in their behavior, especially as it relates to risk-taking activities; and 2/ to different societies, with respect to the risk-taking activities of their members. This approach might help better to explain the enormous disparities between mortality and injury rates of poor, as compared to rich countries, which gap seems to be widening rather than narrowing. Much of the literature review would tend to reinforce this view. The smoking and drinking habits of different societies, rich and poor, might be used to check the utility of such an alternative theoretical approach. The two approaches would not seem to be mutually exclusive. Further discussion of this suggested approach will be left to a later date, when more comprehensive data have been collected and analyzed from a wider range of locations and countries.

<u>The Hierarchy of Power</u>

Ironically perhaps, the same basic technology has driven most advances in land surface transportation –the harnessing and development of the wheel. However, a major diremption exists in the inherent safety built into the design of transport modes using one-wheel, two-wheel, three-wheel, 4-wheel, 6-wheel 18-wheel vehicles, and so on. The two-wheel vehicle is inherently more risky to operate, as a matter of balance and stability, than the 4-wheel. Caterpillar systems such as tanks employ would seem to provide not just the greatest stability, but ipso facto the greatest power. As it happens generally the larger the number of wheels, the heavier the vehicle and the more powerful the motive force needed (engine power). In this hierarchy of power, the 2-wheel motorized cycle is low down, and the pedal cycle is lower (Lehrer, 1997a, b, and c.)

However, a compensating characteristic of any 2-wheeler is its agility (it can 'turn on a dime'); and the very lightness of a bicycle provides it with the added valuable quality of portability (compared, for example, to a tank). Some members of society may be willing to sacrifice the power, security, status and comfort of multiple-wheeled vehicles for the agility, portability (and of course economy and environmental friendliness) of a 2-wheeler, especially the non-motorized variety, despite (or perhaps because of?) its low power ranking among all other land vehicles.

CONCLUDING COMMENTS AND POLICY IMPLICATIONS

Given the cyclists' low power position, it could be argued that it behooves government jurisdictions to do their utmost to compensate for that low power position, for example by providing separate and protected bicycle paths. This has been the strategy adopted in the Netherlands, and improved and safer bicycle infrastructure is increasingly being built and/or retrofitted elsewhere (Costa Rica and the U.K. among countries in this study, and Canada, the U.S., Germany and Panama among other countries elsewhere. If this public transportation management policy were to be accepted at the level of radical infrastructure development, it might be argued that draconian enforcement of helmet use would be seen as somewhat of a red herring, deflecting public health policy from a much more radical approach to bicycle user safety. It may be argued that the impact of a 20-ton truck colliding with a bicycle or motorcycle user is much the same, whether or not he or she is wearing a 'safety helmet'. Whilst true, the two areas of public health and safety improvement can be seen as mutually re-enforcing, rather than mutually exclusive: seriously enforced 2-wheeler helmet use would help to substantially reduce 'target risk' of fatalities and injuries –at a local, national, regional and global level. With deeper public health and transportation infrastructure pockets, properly segregated motorcycle and bicycle lanes would provide a deeper amelioration to the misery attached to the increasing millions of current 2-wheeler deaths and injuries world-wide.

Suggestions for Further Research

This study has neglected to relate localized helmet use to the impact on fatalities and serious injuries, at the local level of observation. To do so would have required access to hospital and police records, at the very local level –not necessarily openly forthcoming, and not inexpensive. The results might have provided a useful though by no means perfect feedback on the efficacy of helmet use, in and around the locations observed. The expectation would of course be an inverse relation between helmet use and fatalities and serious injuries, as suggested by the WHO report cited in the introduction. Funding will be sought for this additional research; also for extension of the helmet use research to other locations, in other regions, with different cultural contexts –such as S. and S.E. Asia, Australasia, N. Europe, E. Europe and S. America.

APPENDIX

Appendix 1: Empirical Study of Helmet Use in 6 Countries: 3 in Latin America and 3 in Europe

	Total Observations	Bicycle Users		Motorbike Users		Country Ranking of Helmet Use	
		W/Helmets	%	W/Helmets	%	Bici	M/bik
All Countries	4533	84/2151	3.9	2114/2382	88.7		
Central America and the Caribbean	1712	5/973	0.5	591/739	80.0		
1. Costa Rica	669	4/384	1.0	261/285	91.6	3	4
2. Nicaragua	690	1/323	0.3	244/367	66.5	4	5
3. Cuba	353	0/266	0.0	86/87	98.9	5=	1
Europe	2821	79/1178	6.7	1523/1643	92.7		
1. U.K.	295	59/268	22.0	26/27	96.3	1	3
2. Netherlands	578	0	0	10/49	20.4	5=	6
3. Italy	1948	20/381	5.2	1487/1537	96.7	2	2

Appendix 2: Comparing Latin American Helmet Use Observations to European –Focus on Motorbike Use, Split by Gender

Total Latin American Motorbike Users in study: 739					
	MWH*	**MNH#**	**FWH+**	**FNH^**	**OPERS/TOT USRS@**
Opertrs	462= 62.5%	84= 11.4%	47=6.4%	12=1.6%	605/739=82%
					PSNGRS/TOT USRS
Pasngrs	32=4.3%	23=3.1%	50=6.8%	29=3.9%	134/739=18%
Total European Motorbike Users in study: 1,643					
	MWH*	MNH#	FWH+	FNH^	OPERS/TOT USRS@
Opertrs	1189=72.4 %	41=2.5%	141=8.6%	10=0.6%	1381/1643=84%
					PSNGRS/TOT USRS
Pasngrs	82=5.0%	9=0.5%	111=6.8%	60=3.7%	262/1643=16%

Codes: MWH=Males wearing helmets, MNH#=Males not wearing helmets, FWH+=Females wearing helmets, FNH^=Females not wearing helmets, OPERS/TOT USRS@=Operators/Total Users*

Appendix 3: Statistical Summary of 8 Observation Points in Latin America, plus 8 locations in Europe of bicycle and motorcycle users with and without helmets, split by Gender

	Bicycle								**Motorbike**								
	Operators				**Passengers**				**Operators**				**Passengers**				**Totals**
	MWH	**MNOH**	**FWH**	**FNOH**	**MWH**	**MNOH**	**FWH**	**FNOH**	**MWH**	**MNOH**	**FWH**	**FNOH**	**MWH**	**MNOH**	**FWH**	**FNOH**	
Central America and Carribean																	
1. San Jose, Costa Rica	2	19		1					59		1		5		16	1	104
2. Santa Cruz, Costa Rica		198		99		10		17	109		8		4	2	6	2	455
3. Villa Real, Costa Rica	1	30	1	3		1		2	46	8	6	3	1	4		4	110
4. Rivas, Nicaragua		118		11		17		20	64	12	14		3	2	7	9	277
5. San Juan Del Sur, Nicaragua		81		8		6		3	86	24	4	4	2	7	10	3	238
6. Moyogalpa, Nicaragua		32		23	1	2		1	39	40	9	5	1	8	5	9	175
7. Habana, Cuba		31		5		20		1	58		5		15		6	1	142
8. Pilon, Cuba		167		24		9		9	1				1				211
Total Central America and Caribbean	**3**	**676**	**1**	**174**	**1**	**65**	**-**	**53**	**462**	**84**	**47**	**12**	**32**	**23**	**50**	**29**	**1,712**

Europe																	
9. Portsmouth, UK	8	45	6	15	1	1		1	13	1	1		1				93
10. Bournmouth, UK	11	38	6	17					4								76
11. Brighton, UK	19	63	7	29	1				6		1						126
12. Amsterdam, Netherlands		268		245		4		12	10	31		4				4	578
13. Lecce, Italy	4	151	1	73				6	9		2					2	248
14. Bari, Italy	6	75	2	15		1		8	293		7		23	2		42	474
15. Napoli, Italy		15	7	1		1			644	8	87	6	49	7	51	12	888
16. Roma, Italy		12		3					210	1	43		9		60		338
Total Europe	**48**	**667**	**29**	**398**	**2**	**7**	**-**	**27**	**1,189**	**41**	**141**	**10**	**82**	**9**	**111**	**60**	**2,821**
Combined Totals	51	1,343	30	572	3	72	-	80	1,651	125	188	22	114	32	161	89	4,533

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