SECTION 1. Macroeconomic processes and regional economies management

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The effect of FICA on the shareholders' interest of listed automobile firms on the JSE

Abstract

Despite the contributions of advanced technology to the global integration of financial practices and operations, there are inherent challenges in this development. To curb associated opportunist behaviors and fiduciary risks, governments formulate and apply a series of policies. This article examines the impact of the Financial Intelligence Centre Act (FICA) as a regulatory framework on the capital structure of the listed automobile firms on the South African Johannesburg Securities Exchange (JSE). The study uses pooled time series data generated from the McGregor BFA Research Domain and applied correlation and regression analyses. The study examines the possible relationships that exist between the agitation posed by the Act to the multinational investors in the automotive industry, and the resulting swings in the capital structure of these firms over a period of fourteen years. The finding of the research suggests that the regulatory environment over the period under consideration significantly influenced the capital structure variables of the firms concerned. The impact of the distress ratio of these firms on their capital structure was equally significant in the analysis. Although regulatory instruments are critical to checkmating possible opportunistic behaviors of financial practitioners and investors, it may be suggested that these policies be carefully crafted and cautiously applied to avert the possibility of a self-defeat.

Keywords: Johannesburg stock exchange, automobile industry, financial intelligence centre act, capital market, globalization.
JEL Classification: G28, C52, L51.

Introduction

The recent increase in the interdependence of nations brought about by renewed appetite for global goods and services has contributed meaningfully to a better quality of life and a decreased cost of living across the globe (Hill, 2011). Globalization is renowned for its contribution towards increasing the global exchange of goods and services, as well as the transfusion of technological expertise and competence across the world (Stglitz, 2002). In short, the process of globalization has contributed to the recent unprecedented levels of prosperity among some nations in various dimensions and intensity (Aregbeshola, 2009).

Information technology, one of the conduits of globalization, is a known catalyst of significant advances in facilitating global financial practices in a way that reduces the overall costs of capital and the efficiency of financial transactions. Significant technological advances such as using the electronic money transfer system with the aid of new technology have contributed immensely to this reality (Singh, 2004; Stichele, 2004). Despite its effectiveness and efficacy, the electronic money transfer innovation has proven to be pervious to manipulation. Coupled with the complex nature of international financial practices, the use of modern technology has precipitated challenges and changes of a noticeable dimension in the global financial sector, thereby, further enervating the complexity of the global financial practices.

These technological changes have increased the security vulnerabilities of the financial sector of every economy, which are exploited through opportunistic behaviors of numerous financial practitioners (Stiglitz, 2002; Maphakela & Pottas, 2005). The challenges of opportunistic behaviors on the part of financial practitioners necessitate governments across the globe to establish regulatory instruments to moderate the operations of the financial sector, both locally and internationally. The global financial turmoil that began in 2008, which precipitated the economic crises across the globe, and the more recent Greece financial woes, attest to the gravity of such fiduciary risks and their lasting effects. The tentacles of these crises spread beyond its immediate borders through to countries and communities thousands of kilometres away.

A series of laws have been established in this regard to regulate many of these inherent laxities in the financial operational environment. Some of the applicable regulatory instruments in South Africa are the Banks Act of 1990, the Prevention of Organized Crime Act (POCA) of 1998, the Electronic Communication and Transaction Act (ECT Act) of 2002, the Promotion of Access to Information Act of 2000, and the Financial Intelligence Centre Act (FICA) of 2001 (Maphakela & Pottas, 2005). Although a number of these Acts have been credited for effectively serving as deterrents to the inherent fiduciary risks in the global financial sector, evidence suggests that inherent laxities in the proclamation and the application of a few others (such as FICA) have been worrying.

More specifically, some of these regulatory instruments distort the credit attractiveness and the risk portfolios of some sectors whose performances are critical to the overall performance of the economy (such as the automobile industry in South Africa).

Pragmatically, the risk appetite in the automobile industry is mainly savored by offshore multinationals. These investors are usually enervated by regulations that put the movement of their investments under close scrutiny, thereby contributing to the volatility of the capital structure of the affected sectors (for example, the recent financial rattling in the Euro zone was further unnerved by the fear that China, the main government bond holder in the Euro zone, is about to liquidate her bonds). Using regression analysis, this article posits that the year-effect/time-split of FICA on the shareholders' interest in the South African automobile industry was significant. It is, thus, suggested that the application of such a policy should be strategically guarded with sector singularity without compromising the consorted objective of such a regulatory instrument.

This article begins with an overview of the identified implication of FICA on business, with specific reference to the automobile industry. It also presents a synoptic appraisal of the dynamics in the automobile industry across the world, as well as the specific importance of this industry to the South African economy. This is followed by the data analysis, interpretation of result, as well as the conclusion and recommendation.

1. The provisions of FICA – a synopsis

The focus of this research is on the Financial Intelligence Centre Act (FICA) – Act 38 of 2001 (hereafter referred to as the Act). According to the preamble of this Act, it is envisaged to regulate the accumulation and appropriation of the proceeds of unlawful activities. The Act establishes two main organs, namely a Financial Intelligence Centre (hereafter referred to as the Centre) and a Money Laundering Advisory Council (hereafter referred to as the Council). The Act charges these organs with distinct responsibilities to regulate financial operational offences.

The Act charges the Centre with the responsibility to "assist in the identification of the proceeds of unlawful activities and the combating of money laundering activities" (Chapter 1 of the Act). The main function of the Council is to render related advices to the Centre, and to serve as a conduit through which "the Centre, associations representing categories of accountable institutions, organs of state and supervisory bodies[1] can consult one another" (Chapter 2 of the Act).

As a regulatory instrument, the main empowering clause of the Act is contained in Chapter 3, part 1 of the Act. This section of the Act provides that "an accountable institution[2] may not establish a business relationship or conclude a single transaction with a client unless the accountable institution has taken the prescribed steps:

(a)   to establish and verify the identity of the client;
(b)   if the client is acting on behalf of another person, to establish and verify:

i   the identity of that other person; and
ii   the client's authority to establish the business relationship or to conclude the single transaction on behalf of that other person...".

Section 29 of the Act encapsulates a set of conducts that could incriminate a manager of a business, provided the manager knows or suspects that – "the business has received or is about to receive the proceeds of unlawful activities". The Act goes further to indicate that a manager is liable to unlawful behavior if the manager or anyone in charge of a business knows or suspects that "a transaction or series of transactions which the business is a party:

i   facilitates or is likely to facilitate the transfer of the proceeds of unlawful activities;
ii   has no apparent business or lawful purpose;
iii   is conducted for the purpose of avoiding giving rise to a reporting duty under this Act; or
iv   may be relevant to the investigation of an evasion or attempted evasion of a duty to pay any tax, duty or levy imposed by legislation administered by the commissioner for the South African Revenue Services...".

The main points of discourse here are items (iii) and (iv), which deal with 'reporting' and tax related issues. The Johannesburg Securities Exchange (the JSE) is a supervisory body in terms of the Financial Intelligence Centre Act and the JSE's authority to supervize compliance by its members with the requirements of FICA is provided for in the Act. The JSE, along with other 'accountable' institutions, is, therefore, charged by the Act to monitor compliance by its members with FICA. It, thus, becomes an onus on the JSE to scrutinize every source of its Stock, as well as their application.

A major and growing problem facing multinational enterprises is the issuance of their accounting/documentation procedure to indicate compliance with transfer pricing rules and regulations that subsists across multiple jurisdictions (PWC, 2009). Aided by globalization and other global regulatory

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[1] See Appendix A for the list of supervisory bodies.

[2] See Appendix B for the list of accountable institutions.

frameworks, more than 60% of world trade takes place within multinational enterprises (Neighbour, 2008). This signals the need to scrutinize the tax structure of multinational organizations, and their compliance in this regard to the established regulatory instruments.

The process of regulating transfer pricing of multinational organizations necessitates countries to establish documentation rules and regulations that demand companies to state clearly and with supporting evidence why their transfer pricing policies comply with the arm's length standard[1], or they risk the imposition of 'justifiable' pricing by the tax authority. The general application of transfer pricing rules to multinational organizations is intensified by the complex nature of the operations of these firms as well as their cost structures. While it may be easier to cost tangible materials and assets, allocating a generally acceptable price to intangible assets may be difficult.

However, the contribution of multinational firms to economic development and growth cannot be over-emphasized. First, they provide investible capital – by tapping on their broad capital base, and they stimulate the application of state-of-the-art technology, all that enhance economic growth in the receiver country (Caves, 1996; Dunning, 1993; Smarzynska, 2002; Tomohara, 2004). Second, they augment the skills of the host nation and, thus, stimulate growth through the infusion of superior managerial and labor skills, coupled with corporate-supported employee career development and training (Blomstrom & Sjoholm, 1999; de Mello, 1999). Third, the multinational enterprises (MNEs) promote technological upgrading, improved managerial processes, and efficient allocation of resources (de Mello & Sinclair, 1995; Markusen & Venables, 1999). Thus, MNEs are regarded as catalysts to the host nation's economic growth and development as they utilize their competitive advantages of technological capability and wide capital base to facilitate technological progress, and promote industrial development in tandem (Asheghian, 2004).

Despite their major contributions to economic growth and development, there is a general perception that multinational organizations exist mainly to reap location specific advantages, which centre on the comparative advantage of certain business locations over another (Wells, 1972; Vernon, 1974). Improper preparation of documentation to ascertain compliance to the existing transfer pricing regula-

tory instruments, and due diligence in the application of these rules have allegedly bemoaned the operations of multinational organizations. To ameliorate its adverse effects, this kind of behavior is statutorily regulated both at the global and national levels (Neighbour, 2008).

For instance, the Organization for Economic Co-operation and Development (OECD) Transfer Pricing Guidelines for Multinational Enterprises and Tax Administrations in 2001 precipitated the South African Financial Intelligence Centre Act in the year that follows. These regulatory instruments prescribe the acceptable level of financial behavior to forestall financial opportunistic behaviors and improper recording, aimed at circumventing remitting appropriate tax to the host nation of a multinational organization[2]. The global supply chain network, coupled with the international economic sensitivity of the automobile industry arouse research interest in the practical application of these rules (with specific focus on FICA), especially in a developing country like South Africa.

FICA is deemed appropriate in this regard, as South Africa has no specific rules in place to combat transfer pricing. The South African Revenue Services (SARS) relies heavily on the South African Income Tax Act, especially sections 31 (1, 2), 64 C, 74 read with section 74 A, and prosecution under section 75. These rules are supported by the guidelines provided by the Transfer Pricing Practice Note 7. The Transfer Pricing unit within SARS is of increasing focus and greater interest in upholding the arms' length principle, with special focus on the retail and automotive industry (Rhyn, 2009), the latter being the focus of this article.

2. The automobile industry

The automotive industry is generally acknowledged as an indication of a country's mastery of modern technological advancement (Flatters, 2002). This industry is synonymous with a national identity, status symbol, and an ebullience of sophisticated advancement (Odaka, Ono & Adachi, 1988). In Japan, for instance, the industry demonstrates the watershed in the 'socio-economic transformation' that characterized the rapid economic growth of the country between the Korean War and the 'Nixon Shock' of the early 1970s (Nakamura, 1981; Kosai, 1986). The industry is also renowned for its contribution to a local economy's employment capacity, as well as other socio-economic developments (Heneric, Licht, Lutz & Urban, 2005).

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[1] The "arm's-length principle" of transfer pricing states that the amount charged by one related party to another for a given product must be the same as if the parties were not related. i.e. an arm's-length price for a transaction should reflect the actual price of such a transaction in the open market (OECD, 2001).

[2] These rules are not exclusively to multinational organizations.

The automotive industry is generally characterized by complexities, not only in the structural formation of the production system, but also because of the complexity that characterizes the final product itself (Shimokawa, 1994). The industry revolves around the close tie-ups that subsist between the automobile manufacturers (the original equipment manufacturers − OEMs), the part suppliers (the original equipment suppliers – OES), and the independent aftermarket (CBI, 2004). This manufacturer-supplier integration powers the industry to its current high-level innovative technologies and structural efficiency. The competitive nature of the industry that results from increasing research and development (R&D) has culminated in both profitability and increasing efficiency of automotive products across the world (Wilks, 1984; Flatters, 2002; CBI, 2004).

Of late, the global automotive industry is undergoing an unprecedented level of instability that emanates, inter alia, from continued expression in a tightened credit market and declining consumer confidence (PWC, 2009). This situation is further exacerbated by the increasing volatility in the costs of input materials and complementary products, such as fuel prices, increasing agitation for environmental friendly vehicles, and tighter government regulations (Heneric, Licht & Sofka, 2005). While the oligopolistic nature of the final automobile manufacturers, coupled with the growing number of mergers and acquisitions (M & As) allude to the paucity of government control over the industry, the effect of regulations on the industry remains noticeable.

Until recently, the focus of government intervention in the automotive industry has been labor remuneration and compensation, equitable pricing of automotives and increasing clamor for eco-efficiency (Heneric et al., 2004). The continued need for countries (especially developing countries) to widen their tax bases towards achieving a sustainable fiscus precipitates a further scrutiny of the activities of multinational organizations. These organizations are of special interest to government considering their financial prowess as well as the significance of their contribution to the tax revenue (Tomohara, 2004).

Because of the growing expansion of foreign subsidiaries of automobile manufacturers (especially to developing countries), it is expedient for government to regulate moderately the accounting and recording methods of this sector in order to increase the tax revenue that is derivable from the automotive manufacturer. It is equally important to ensure conformity to the national standard/globally-acceptable standard (the arms' length standard), thereby, reducing the level of a possible opportunistic behavior that may arise from costs padding of inter-subsidiary materials (transfer pricing).

Evidence suggests that original equipment suppliers (OES) which supply automotive manufacturers (the original equipment manufacturers – OEMs) with parts within their global supply chain networks have regularly increased volumes of spare parts supplies worldwide through their innovativeness and costs cutting. Consequently, the overcapacity that results from this process has culminated in the global production capacity growth of automobiles, outpacing the customer demand for motor vehicles. This has particularly driven the continually lower automobile prices across the globe, as well as in South Africa (PwC, 2009).

Before the recent global economic meltdown, the automotive components suppliers as well as the completely built-up units (CBUs) have fuelled the growth in the South African automotive industry (Lamprecht, 2006). These sectors have become major contributors to the South African industrial exports over time, with increasing profitability despite the generally unfavorable market conditions that characterize the industry (ibid). The strategic importance of this sector to the South African economy, precipitates probing the effect of FICA as regards the interests of investors in this sector.

3. The automotive industry in South Africa

The establishment of automotive industry in South Africa began in 1924 when Ford established its first subsidiary in the country to assemble completely built-up vehicles from completely knocked-down kits, a move that was replicated by General Motors in 1926 (DTI, 2004). Since then, most of the global automotive manufacturers have established presence in the country via either assembly lines or component manufacturing. This sector contributed R1 995 billion to the South African gross domestic product (GDP) in 2007, about 7 percent of the country's GDP for the year (AIEC, 2008).

This source further suggests that the contribution of automotive sector to South Africa's total GDP has steadily increased in the last decade. The same source further reiterates that the contribution of this sector to the general South African exports has been tremendous, far greater than the gold exports contribution. It was argued that the gold exports rose from R21, 484 billion in 1995 to R39, 898 billion in 2007 while the automotive exports rose from R4, 218 billion to R67, 600 billion over the same period (AIEC, 2008).

The South African government adopted a series of policy initiatives in order to improve the competitiveness of the automotive industry in the international market. Prominent among these reforms is the motor industry development program (MIDP) launched in 1995. This policy was envisaged as a blueprint to achieving the export strategy for the automobile industry (DTI, 1999). This program is purely customs-duty-

driven and as such, all participants in the program especially the OEMs and the OES, are required to comply with many provisions of the customs and excise Act as administered by the custodian of the policy – the department of trade and industry (the DTI). The processing of these duty rebates through the Import Rebate Credit Certificate (IRCC) claim form through the South African Revenue Services (SARS), provides necessary mechanism for the revenue collection organ to monitor and scrutinize the financial activities of these multinationals[1], and their network that operates within the borders of South Africa.

4. Empirical research

4.1. Methodology. This research adopts a time series analysis. The pooled time series data were generated from the protected McGregor BFA Research Domain. Due to the unique nature of time series data as regards the possibility of data generation errors, a series of error correction statistical techniques were applied to ensure reliability, validity and consistency of findings. The same level of error correction techniques was applied to cater for a series of statistical errors that may emanate from disregards for statistical assumptions. In this analysis, Statistical Analysis System (SAS) package was used based on its statistical power and level of reliability. For analytical purposes, the firms used in this research are depicted as firms 1 to 6[2]. In addition, years from 1995 to 2008 are depicted as years from 1

to 14, respectively. The general econometric model suggested here follows from Ilmolelian (2005). Based on available data, the model reads:

$MC = f(SI, CE, TL, DS)$, where
MC = Market capitalization of firms;
SI = Shareholders' interests (R '000);
CE = Capital employed ('000);
TL = Total liability;
DS = Distress ratio.

4.2. Data analysis and results. The data used in this research cover the financial variables that are susceptible to changes in policy, thereby fuelling speculations. These variables include the total capital employed by the organizations, total liability and distress ratio, and the shareholders' interests. Distress ratio is included in the variables under considerations because it signals the financial strength of an organization. In essence, a rising distress ratio generally bespeaks an increasing urgent need for capital injection by the organization. Although if accompanied by a credit crunch such as the experience of 2008, it is potentially a herald to higher defaults (Taub, 2007). The following represents the statistical analyses as well as their corresponding interpretations. The first procedure in correlation/regression analysis is to generate a simple statistical table that depicts the variables tested and their measures of dispersion. This is done in Table 1.

Table 1. Simple statistical table

Simple statistics							
Variable	N	Mean	Std Dev	Sum	Minimum	Maximum	Label
SI	83	2708029	5570202	224766425	23672	28028000	SI
Year	83	7.42169	4.01558	616.00000	1.00000	14.00000	Year
CE	83	3366131	6762754	279388898	29988	32802000	CE
TL	83	1608653	2504133	133518201	26317	9588000	TL
DS	83	0.86510	1.56397	71.80300	-1.80000	10.37000	DS

Table 1 indicates the level of variation among the variables tested in this article. With 83 observations, the standard deviation for shareholders' interest (SI) is R5.6 billion, while the figure stood at 1.6 for the distress ratio. The total capital employed by these (6) organizations over the 14-year period amounted to about R3 trillion, while their total liability amounted to about R1.3 trillion and the total shareholders' interest was more than R2.2 trillion.

4.3. Correlation between dependent variable (SI) and independent variables. As an initial step, correlations were calculated. The purpose of correlation

matrix is to discover whether independent variables (Year, CE, TL, and DS) are related to dependent variable (SI) and to investigate whether collinearity between the independent variables exists (essentially to deduce whether they are highly correlated). One of the assumptions of the regression analysis technique is that the independent variables are not (highly) correlated, otherwise the regression is not considered 'stable'.

Scatter plots of all independent variables on the dependent variable, SI, were drawn to obtain an exploratory overview of the way in which independent variable is related to SI (this analysis is not included in this report). The result of the scatter analyses suggests that the effect of year seems to indicate a curvilinear relationship between SI and year. The second-degree polynomial effect of year was, therefore, introduced into the model to cater for the possibility of collinearity. Using Pearson correlation coefficient, Table 2 contains results of the correlation analysis.

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[1] For detailed information on the working of the MIDP, see a series of the International Trade and Administration Commission (ITAC) publications since 1995. Similar information is also contained in the MIDP blueprint – Motor Industry Task Group (MITG) Report and Recommendations: Development Programme for passenger cars and light commercial vehicles. Pretoria. MITG.

[2] There are only six listed automotive firms on the JSE.

Table 2. Pearson correlation coefficient

Pearson correlation coefficients, N = 83 Prob > |r| under H0: Rho = 0					
	SI	Year	CE	TL	DS
SI SI	1.00000	0.22615 0.0398	0.99638 <.0001	0.89663 <.0001	0.18652 0.0913
Year Year	0.22615 0.0398	1.00000	0.20513 0.0628	0.13418 0.2265	0.20989 0.0568
CE CE	0.99638 <.0001	0.20513 0.0628	1.00000	0.92684 <.0001	0.16479 0.1366
TL TL	0.89663 <.0001	0.13418 0.2265	0.92684 <.0001	1.00000	0.04275 0.7012
DS DS	0.18652 0.0913	0.20989 0.0568	0.16479 0.1366	0.04275 0.7012	1.00000

The correlation matrix indicates that SI is significantly correlated with all variables on at least the 10% level of significance (with DS at 10%, with CE at 1%, and with TL at 1%). The level of correlation between year and other variables is also significant, with the highest significance with SI at 5%. This is an indication of a strong relationship among the variables, in support of the null hypothesis, which posits an effect of the regulatory environment on the swings that is experienced in the capital structure of the firms considered in this research, as indicated by the variables tested.

However, the high correlation that exists between the independent variables, CE and TL (0.92684) is very significant (at 1% error level), which implies that collinearity will be a problem if both these independent variables are included in the multi-variate linear regression. In essence, one of the variables was removed because of collinearity consideration, given that the assumptions of regression have been satisfied. In the subsequent regression models, either the effect of CE or TL was, thus, investigated in combination with year, firm and DS. The analysis contained in Table 2 further suggests that there is a good measure of the strength of linear dependence between variables considered in this research. Being all positive correlation, one can posit that the relationship that exists between these variables is positive, and that an increase in the distress ratio will unsettle the total capital employed, as well as the capability of the firms to borrow money (TL).

In order to obtain a unique regression equation for the relationship between the dependent variable, SI, and the independent variables, year, CE, TL and DS, the models of best fit of the regression techniques of forward selection, backward elimination and stepwise regression were all calculated on the data and compared against one another. A unique regression equation exists if the solutions of the three approaches agree. This approach was followed for the subsets of variables, (SI, TL, Year^2, DS) and (SI, CE, Year^2, DS). Quite a number of other regression models were also investigated but are not presented in this report. These included regression

models with year (and not the squared of year included) and the effect of TL and CE interchangeably entered into the model. The regression model which rendered a model of best fit, a unique regression equation, and, complied with the regression assumption of normally distributed residuals are presented below. The results of the stepwise approach to multivariate linear regression are discussed later in the article.

The analysis in Table 2 indicates a significance level of 1% for the model. This is an indication that the variable (CE) is an important contributor to the predictability of the model. In essence, the contribution of CE in this model is significantly relevant. There was a significant relationship between the capital employed and shareholders' interests in the automobile firms considered over the period under consideration. Tests for normality are performed by the Normal Probability Plot that is presented in Figure 2.
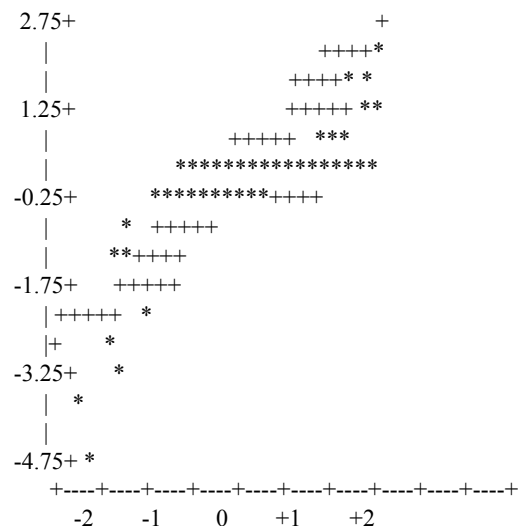

Fig. 2. Normal Probability Plot

The Plot depicted in Figure 2 indicates that the residuals in the regression are normally distributed, which is an assumption of regression analysis. This Plot is more or less a linear line. These indications are confirmed by the normality tests of Shapiro-Wilk, Kolmogorov-Smirnov and Cramer-von Mises conducted on the residuals and presented in Table 3.

Table 3. Tests for normality

Tests for normality				
Test	Statistic		p-value	
Shapiro-Wilk	W	0.696516	Pr < W	<0.0001
Kolmogorov-Smirnov	D	0.249646	Pr > D	<0.0100
Cramer-von Mises	W-Sq	1.675318	Pr > W-Sq	<0.0050
Anderson-Darling	A-Sq	8.846116	Pr > A-Sq	<0.0050

Significance (on at most the 1% level of significance) established for each of the normality tests in Table 3 implies that the residuals are normally distributed. Departures from this normal distribution (straight line) would have indicated departures from normality. This indicates that the data set used in this research is well modelled by a normal distribution.

Table 4. Summary of stepwise regression to indicate the significance of the variables entered/removed from the regression model

Summary of stepwise selection									
Step	Variable entered	Variable removed	Label	Number vars In	Partial R-Square	Model R-Square	C(p)	F-value	Pr > F
1	CE		CE	1	0.9928	0.9928	11.6923	11121.5	<.0001
2	Year 2			2	0.0006	0.9934	5.9364	7.48	0.0077
3	DS		DS	3	0.0003	0.9937	4.0000	3.94	0.0507

In Table 4, all variables are included in the model, and their contributions to explaining variability in the data are all significant at the 0.15% level (CE is significant at 1% level, Year at 1% level, and DS at 5% level). This indicates that all variables considered are at least significant at 95% confidence level, which is a clear indication of their valid contribution to the predictability of the behavior of the Shareholders' Interests (the independent variable). From the analyses presented above, the regression equation that depicts the predictability of the variables tested reads as follows:

$$SI = -228147 + 0.81431*CE + 65499*DS + 1949.33*year^2$$

4.4. Year / split effect of FICA (Multivariate regression). According to Ronald (2002), the argument can be generalized from the example of one dependent and one independent variable in a simple linear regression, as follows:

$$y = a_1 + a_2x. \tag{1}$$

In equation (1), a_1 and a_2 represent the regression coefficients and x (for example 'year') and y (for example, SI) represent the independent and dependent variables. To cater for split effects in the analysis, there is the need to differentiate between the period prior to the event ('dum' 0) and the period after the event ('dum' 1). The introduction of dummies in this regard denotes the values of 'x' ('0' or '1'). In this case, the values of 'x' range from 1995-2002 in which case 'dum' will assume the value of '0', and values of x range from 2003-2008, in which case 'dum' will assume the value of '1'. The effect of these dummies is reflected in the regression equation by changing the regression model to:

$$y = a_1 + a_2x + a_3dum + a_4(x).(dum). \tag{2}$$

However, in the case of the multivariate linear regression, the same principle applies, but the 'x' vari-

able is replaced by the effect of all independent variables in the model, thus:

$$y = a_1 + a_2 [b_1(year) + b_2(TL) + b_3(DS) + b_4(TL.DS)] + a_3dum + a_4[b_5(dum.TL) + b_6(dum.DS) + b_7(TL.DS.dum)], \tag{3}$$

if dum = 0, then the regression equation becomes:

$$y = (a_1) + year (a_2 b_1) + TL.(a_2 b_2) + DS.(a_2 b_3) + TL.DS.(a_2 b_4). \tag{4}$$

and if dum = 1, the regression equation becomes:

$$y = (a_1+a_{3a}) + year (a_2 b_1) + TL.(a_2 b_2) + DS.(a_2 b_3) + TL.DS.(a_2 b_4) + TL.yr.(a_2 b_5) + DS.yr.(a_2 b_6 0) + TL.DS.yr(a_2 b_7). \tag{5}$$

Using equation (5), the regression tests whether the interaction effect with 'dum'/year-split-effect is significant. This is done to make it possible to uncover whether the split in years (2002) had a significant effect on the relationship between SI in conjunction with the effect of years, TL and DS. All the terms indicated in equation (5) were entered into a linear, multivariate regression analysis. The effects entered into the model, thus, included:

year, TL, DS, TL.DS, dum.TL, dum.DS, dum.TL.DS.

Of all the effects listed above, it is only those that proved to be significant that were retained in the model and the other effects were dropped. R-sq and adjusted R-squared values further acted as indicators to decide on the model of best fit (since the R-squared value indicates the proportion of the total variation in the data explained by the model). Moreover, the model of best fit was obtained for the regression model that included the significant effects of: **Year, TL, TL.dum, TL.DS.dum.** Table 5 contains the result of the analysis of variance (ANOVA) that was conducted.

Table 5. Analysis of variance

Source	DF	Sum of squares	Mean square	F-value	Pr > F
Model	4	2.455168E15	6.137921E14	537.58	<.0001
Error	78	8.905802E13	1.14177E12		
Corrected total	82	2.544226E15			
Root MSE		1068536	R-square		0.9650
Dependent mean		2708029	Adj R-Sq		0.9632
Root MSE		1068536	R-square		0.9650
Coeff var		39.45807			

The analysis of variance that is contained in Table 5 with a Pr-value of 0.001, is a strong indication that the variables used in the model have a strong predictive ability of the model validity. In essence, these variables exhibit no strong error level in their predictive ability. From the adjacent table that follows, the coefficient of determination (R-squared), which depicts the proportion of variability in a data set that is accounted for by the specified statistical model, yielded a value of 0.97 (indicating that 97% of the variation in the data was explained by the model).

The adjusted R-squared, which is a modification of R-squared adjusted for the number of explanatory terms in a model, was 0.96. This suggests that the variables contained in the model will increase only if the introduction of any of these variables improves the predictability of the model more than would be expected by a game of chance. The R-squared, which indicates 97% proportion of variability of the model, further reinforces the validity of this variation pattern, given that the possibility of a statistical shrinkage has been captured (Everitt, 2006). Table 6 (parameter estimates) depicts the predictive ability of the variables included in this model.

Table 6. Parameter estimate

Variable	Label	DF	Parameter estimate	Standard error	t-value	Pr > |t|
Intercept	Intercept	1	386050	275263	1.40	0.1647
Year	Year	1	-101123	33887	-2.98	0.0038
TL	TL	1	1.22681	0.06262	19.59	<.0001
tl_yr		1	0.85102	0.17914	4.75	<.0001
tl_ds_yr		1	0.02424	0.00517	4.68	<.0001

According to Table 6, the t-value suggests that all regression coefficients proved to be significantly different from zero on the 0.1% level of significance (except for year, which carries a negative value (-2.98). TL appears to indicate a stronger non-zero probability with a value of 19.59, given that the higher the value, the better (Ronald, 2002). Also, for all the variables included in this analysis, there is a strong indication that the actual value of parameters cannot be zero. For instance, the variable that indicated the highest chances of a zero parameter (Year) suggests that there is only 3.8 chances in 1000 that the parameter could be zero, while the rest others (TL, tl_yr, tl_ds_yr) indicate 1 chance of a zero parameter in 10 000. The intercept, which is only significant at the 16% level, indicates that there is a 16% chance that the value of the parameter can be zero, thereby suggesting the significance of the intercept is relatively weaker. This result indicates that none of the term of the regression equation containing the parameters in Table 6 can be eliminated without significantly affecting the accuracy of the regression. This, therefore, reinforces the predictive ability of the model specified (equation (5)). The significant effect of the time-split, thus, yielded two regression equations as follows:

1) before 2003:

$$SI = 386050-101123.(year) + 1.22381.(TL) + 0.85102.(0) + 0.02424.(0), \qquad (6)$$

(Given that TL.dum and TL.DS.dum = 0 for year < 2003);

2) after 2002:

$$SI = 386050-101123.(year) + 1.22381.(TL) + 0.85102.(TL) + 0.02424.(TL.DS) = 386050 - 101123.(year) + (1.22381+0.85182).(TL) + 0.02424. (TL.DS). \qquad (7)$$

The fact that interaction terms with the dummy variable proved to be significant, confirmed that the period split in the year 2002 had a significant effect on SI. This may validly conclude that the application of FICA in 2003 significantly reduced the risk appetite of offshore investors in the locally listed South African automotive industry between 2003 and 2008.

Conclusion

This article discusses the challenges posed to the regulatory bodies across the world by the integration of the global financial system. Despite the obvious contributions of technological advancement towards

easing the global financial operations, the increasing associated fiduciary risks are of concern to most of the stakeholders, especially the policy makers. To curb the excesses of multinational corporations in financial opportunistic behaviors, governments apply a series of complementary regulatory instruments, such as FICA. Although, the aims of these regulations are plausible, the crafting and the way in which these policies were implemented appear to have been counter-productive.

The analysis contained in this research suggests that the variables introduced into the model are correlated, and significantly relevant to the statistical tests. The model specified has a high predictive ability. That is, the variables contained in the model significantly explain the variability in the swings espoused in the analysis. The introduction of dummy/time split effects into the model further reinforces the impact of time/split in this analysis. The fact that the time/split analysis yields a significant result proposes that the implementation of FICA in 2003 triggered a significant distortion in the capital structure of the firms under consideration. The result indicates that shareholders' interest reduced drastically in the firms under consideration as soon as FICA was implemented, suggesting an instantaneous negative reaction.

The implication of this Act on multinationals in South Africa, especially the automotive industry appears to be substantial. Considering the level of scrutiny that this Act proposes, financial practitioners, investors and securities traders on the JSE (among other accountable institutions) may be enervated by the inherent dangers posed by the stringency of this policy. One may conclude that the proposed FICA Amendment Act of 2008, which has not been made effective yet, should accommodate some of the provisions that appear to be problematic to investors and other stakeholders.

In conclusion, the Act and similar policy initiatives should be tamed with sector singularity in order to achieve the necessary financial stability that the country ideates. Although financial misdemeanours should be addressed, it should be done carefully, without shying away from the global competitive drives that provide motivational incentives for offshore investors, essentially multinational organizations. Arguably, the application of FICA is commingled with peculiar challenges that should be addressed through policy amendments and other relevant interventions. Further research is required to understand the specific impact of FICA on investors in the other sectors of the economy in South Africa, as well as the effects of similar policies in other parts of the world. Research could also be directed towards combating some of the recent "cyber financial crimes" (such as naked short selling and naked credit-default swaps of government bonds as well as shares at midnight). These financial practices have recently furthered exceptional volatility in the financial markets, and its first cousin, financial crises.

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Appendix A. List of supervisory bodies

The Financial Intelligence Centre Act, 2001; Schedule 2: List of supervisory bodies
1. The Financial Services Board established by the Financial Services Board Act, 1990 (Act 97 of 1990).
2. The South African Reserve Bank as defined in the South African Reserve Bank Act, 1989 (Act 90 of 1989).
3. The Registrar of Companies as defined in the Companies Act, 1973 (Act 61 of 1973).
4. The Estate Agents Board established in terms of the Estate Agents Act, 1976 (Act 112 of 1976).
5. The Public Accountants and Auditors Board established in terms of the Public Accountants and Auditors Act, 1991 (Act 80 of 1991).
6. The National Gambling Board established in terms of the National Gambling Act, 1996 (Act 33 of 1996).
7. The JSE Securities Exchange South Africa.
8. The Law Society of South Africa.

Appendix B. List of accountable institutions

Financial Intelligence Centre Act, 2001; Schedule 1: List of accountable institutions
1. An attorney as defined in the Attorneys Act, 1979 (Act 53 of 1979).

2. A board of executors or a trust company or any other person that invests, keeps in safe custody, controls or administers trust <u>property</u> within the meaning of the Trust Property Control Act, 1988 (Act 57 of 1988).
3. An estate agent as defined in the Estate Agents Act, 1976 (Act 112 of 1976).
4. A financial instrument trader as defined in the Financial Markets Control Act, 1989 (Act 55 of 1989).
5. A management company registered in terms of the Unit Trusts Control Act, 1981 (Act 54 of 1981).
6. A person who carries on the "business of a bank" as defined in the Banks Act, 1990 (Act 94 of 1990).
7. A mutual bank as defined in the Mutual Banks Act, 1993 (Act 124 of 1993).
8. A person who carries on a "long-term insurance business" as defined in the Long-Term Insurance Act, 1998 (Act 52 of 1998), including an insurance broker and an agent of an insurer.
9. A person who carries on a business in respect of which a gambling licence is required to be issued by a provincial licensing authority.
10. A person who carries on the business of dealing in foreign exchange.
11. A person who carries on the business of lending money against the security of securities.
12. A person who carries on the business of rendering investment advice or investment broking services, including a public accountant as defined in the Public Accountants and Auditors Act, 1991 (Act 80 of 1991), who carries on such a business.
13. A person who issues, sells or redeems travellers' cheques, money orders or similar instruments.
14. The Postbank referred to in section 51 of the Postal Services Act, 1998 (Act 124 of 1998).
15. A member of a stock exchange licensed under the Stock Exchanges Control Act, 1985 (Act 1 of 1985).
16. The Ithala Development Finance Corporation Limited.
17. A person who has been approved or who falls within a category of persons approved by the Registrar of Stock Exchanges in terms of section 4 (1) (a) of the Stock Exchanges Control Act, 1985 (Act 1 of 1985).
18. A person who has been approved or who falls within a category of persons approved by the Registrar of Financial Markets in terms of section 5 (1) (a) of the Financial Markets Control Act, 1989 (Act 55 of 1989).
19. A person who carries on the business of a money remitter.