

# Transfer pricing, earnings management and tax avoidance of firms in Ghana

Transfer  
pricing

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## Abstract

**Purpose** – This paper aims to investigate how transfer pricing (TP) and earnings management affect tax avoidance of firms in Ghana.

**Design/methodology/approach** – The authors use a panel data set from 2008 to 2015 to further shed light on transfer pricing-tax avoidance nexus by examining the complex interaction of three key variables: transfer pricing, earnings management and tax avoidance.

**Findings** – The results show that almost all the sample firms have engaged in some form of transfer pricing strategies and the manipulation of earnings to avoid tax during 2008-2015. There is evidence to suggest that non-financial multinational corporations manipulate more earnings than the financial firms while financial firms also use more TP than non-financial firms. The overall results suggest that the sensitivity of tax avoidance to transfer pricing decreases as firms increase their earnings management. By extension, these results have important policy implication for policymakers in assessing the effectiveness of tax laws relating to transfer pricing.

**Originality/value** – The authors investigate how transfer pricing and earnings management affect the avoidance of firms operating in Ghana.

**Keywords** Tax avoidance, Earnings management, Developing country, Transfer pricing

**Paper type** Research paper

## 1. Introduction

Globalization allows flow of the financial resources from developed countries into the emergent economies (Tomedi and Schreiber, 2014). The rising pace of globalization has driven the concept of nations and states due to flexibility of transfer pricing and its role in avoiding taxes by redirecting public revenue to shareholders (Sikka and Willmott, 2010). Globalization has come to eliminate the limitations of territorial jurisdiction of corporations and has paved an easier way of establishing subsidiaries, affiliate joint ventures, special purpose entities and trusts in jurisdictions with favourable conditions to benefit from low tax havens. Accordingly, Chang and Lin (2010) show that multinational corporations (MNCs) derive various benefits from international trade, including trade expansion, job opportunities, transfer of technology, flow of international market information, frequent promotion of industries, technical research and development, economic growth and increased taxes. Therefore, the MNCs attempt to embrace these benefits with the ultimate goal of maximizing global profit and minimizing their global taxes by locating their affiliates in countries with very low or zero tax rate. In an attempt to achieve the goal of global profit maximization and tax minimization, the multinational firms have resorted to several tax avoidance mechanisms which have led to revenue losses of both tax haven countries and developing countries attempting to operate as tax haven with low tax rate.

Research on international tax avoidance practices suggest that MNCs avoid international taxes by means of transfer pricing manipulation, thin capitalization, tax haven utilization,



payment of intangibles, income shifting and financing structure of affiliate (Jacob, 1996; Chang and Lin, 2010; Taylor and Richardson, 2012; Henn, 2013; Brock and Pogge, 2014). More so, most of these studies reveal that transfer pricing manipulation is the main avoidance mechanism used by these corporations in an attempt to achieve their goal of global profit maximization and tax minimization objectives (Gravelle, 2009; Pendse, 2012; Janský *et al.*, 2013)[1]. The manipulation of this transfer pricing occurs when a company in an attempt to either purchase or sell to an affiliated entity under-price or over-price the goods or service for the reason that the two companies are located in a variable different tax jurisdictions (Clausing, 2003; Dyreng and Lindsey, 2009; Slemrod and Wilson, 2009; Cristea and Nguyen, 2013; Brock and Pogge, 2014). This manipulation then offers an opportunity to the MNCs to relocate profit from countries that these profits originated to countries with lower tax rates. This effect is frequently observed in the developing economies as a result of their human capital inadequacies to deal with the complex nature of transactions undertaken within affiliated entities and inadequate policies to eliminate such practices. Also, transfer pricing has the propensity to reduce the entitlement of domestic shareholders and employees due to the under reporting of profit.

Strands of literature show that tax avoidance behaviour serves as motivation for earnings management (Graham *et al.*, 2012; Wang and Chen, 2012). Studies on earnings management have professed that devices such as changes in accounting procedures, taking a bath, income maximization and income smoothing are the major instruments that managers use in managing earnings (Healy, 1985). However, the literature on earnings management stipulates that in an attempt to manage earnings, firms structure their transaction in a way that create differences in the taxable profit and the accounting income (Hanlon and Heitzman, 2010). These empirical studies have outlined that managers manage earnings so as to report lower profit to pay less tax (Dhaliwal *et al.*, 2004; Desai and Dharmapala, 2006; Desai and Dharmapala, 2009). These avoidance mechanisms result in loss of revenue which hinders the ability of the government to undertake its social and economic responsibilities (Sikka and Willmott, 2010; Otusanya, 2011; Taylor and Richardson, 2012). According to Desai and Dharmapala (2009), tax avoidance mechanisms give room for opportunistic managers to pursue self-seeking objectives and manage earnings in ways that provide benefits to managers and that do not benefit shareholders. Thus, managers managing earnings are more likely to insulate themselves by avoiding more taxes as avoidance provides them shield from shareholder scrutiny. Again, minimized tax payment leaves excess "after tax" cash flow that can either be distributed as extra dividends or invested in profitable projects. Although various studies have analysed the variables of interest and have established relationships among them, these relationships have been examined independently in most cases. Prior studies have failed to exploit how the relationship between transfer pricing and earnings management can jointly influence tax avoidance behaviour of MNCs. Therefore, the study seeks to examine how transfer pricing and earnings management influence tax avoidance of MNCs operating in developing countries. It is analysed within the Ghanaian context.

The contribution of this study is in two folds: first of all, it examines the prevalence of transfer pricing and earnings management as it pertains to MNCs operating the developing countries. This serves as a response to the calls by prior research for more research on earnings manipulation and transfer pricing in different economic settings (Healy and Wahlen, 1999). Second, the study examines the effect of the interaction of the transfer pricing and earnings management on tax avoidance.

The rest of the paper is organized as follows. Section 2 reviews relevant literature on transfer pricing, earnings management and tax avoidance. Section 3 discusses the research

methodology, the measurement of key variables used in the study, as well as data. Section 4 discusses the regression results and sensitivity tests, and finally, Section 5 provides the conclusions and policy implications.

## 2. Literature review

This section reviews the literature on the subject matter. We begin with the theoretical principles underlying transfer pricing, earnings management and tax avoidance. We then discuss the empirical literature on the variables that affect the relationship of interest.

### 2.1 Theoretical overview

We discuss two major theories that underpin our study, i.e. the agency theory (Ross, 1973; Jensen and Meckling, 1976) and the stakeholder theory (Freeman, 1984). The agency theory was initiated by Ross (1973) from the economic perspective. Ross economic theory of agency concerning the problem faced by the principal was one of choosing a compensation system that will induce an agent to exhibit behaviour consistent with the principal's preference in a contractual relationship between an agent and his principal. This theory was later extended by Jensen and Meckling (1976). In the research paper of Jensen and Meckling (1976), an agency relationship exist where one party (the principal) engages another party (an agent) and delegate work and some decision making authority to the agent who then accomplishes such work on behalf of the principal. The theory postulates that when both parties are utility maximizers then the agent will refuse to take actions in line with the principal's interest. This brings about the conflict of interest between insider manager and the outside stockholders of public corporations. Hence, the theory postulates that instituting a compensation contract will help to align the interest of managers with that of their shareholders. This compensation contract is based on accounting earnings. Therefore, the theory posits that accounting numbers play a central role in mitigating the conflict of interest between managers and stockholders (Jensen and Meckling, 1976).

The theory of agency attempts to define such association using an allegory of contract (Jensen and Meckling, 1976). The theory explains that an organization is a nexus of contracts having a set of contractual relationship with providers of funds, suppliers, customers, creditors and so on. As stock ownership is far and remote from control, shareholders are unable to manage their entities on their own and hence the shareholders hire managers to manage the firm on their behalf. Therefore, managers should take decisions that maximize shareholders value. Nevertheless, this dominant view has not been without criticisms. Freeman (1984/2004) argued that managers should pay attention to all constituencies that can affect the firm. Thus managers' decisions should not consider only the interest of shareholders but include all other stakeholders such as the employees, customers, creditors and the community (Freeman, 1999/2005). Freeman (1984) further indicated that the other stakeholders play a very vital role in the life of the organization and hence their interest should be given equal relevance as given to the shareholders.

Corporate managers have the responsibility to run the affairs of the corporation and therefore have thorough information about the corporation. If such information is not made available to the stakeholders would result in information asymmetry. Information asymmetry occurs when managers have information that stakeholders do not have any knowledge of (Ross, 1973). Such privilege information held by managers increases their ability to exploit benefits from other stakeholders leading to the agency problem (Jensen and Meckling, 1976; Donaldson and Davis, 1991; Healy and Palepu, 2001). According to Eisenhardt (1989), the agency theory focuses on resolving two main agency problems that are likely to occur in the agency relationship. The first problem befalls when the goal of the

agent differs substantially from that of the principal. The second problem also arises when the principal finds it difficult or expensive to confirm the actual performance of the agent. In our study, we identify the shareholder and the tax authority to suffer from lack of adequate information about the transfer pricing activities and earnings management practices of the firm. To prevent such problems from occurring, the shareholder and the tax authority have to incur some cost to limit the conflicting interest which exist between them and the managers of the firm (see, [Jensen and Meckling, 1976](#); [Crutchley and Hansen, 1989](#)).

Earnings management is defined as the active manipulation of accounting information to create an altered impression of the firm's financial performance, as measured by its earnings. Earnings are managed through income minimization, taking a bath, income maximization and income smoothing ([Healy, 1985](#)). However, [Donaldson and Davis \(1991\)](#) documented that the practice of earnings smoothing with the aim of meeting market expectation and earnings target does not create value for the firm but rather results in decisions that destroy firm value. The aim of every company is to maximize its stock market value and hence managers who are hired to manage the affairs of the firm on behalf of shareholders are responsible for achieving that aim. Therefore, the decisions and actions of managers should result in value enhancement ([Jensen and Meckling, 1976](#); [Fama and Jensen, 1983](#); [Jensen, 2002](#)). Tax avoidance is value enhancing, however, managers refuse to undertake such activity as a result of the conflicting interest that exists between managers and shareholders as stipulated by the theory, hence managers only engage in avoidance activities when they stand to gain some private benefit from engaging in such activities. Therefore, managers in charge of taking avoidance activities consider only those decisions that yield them some personal advantage. This then supports the assumption underpinning the agency theory that human beings are self-interested characters acting reasonably to maximize their own private gains ([Donaldson and Davis, 1991](#); [Crutchley and Hansen, 1989](#); [Jensen, 2005](#)). Having recognized that one of the value maximization activities is tax avoidance, the opportunistic behaviour of managers induce them to engage in avoidance practices with the intension of diverting proceeds into their own pocket.

## 2.2 Empirical review

This section seeks to review the empirical literature of the study.

*2.2.1 Transfer pricing and tax avoidance review.* The growing rate of globalization with the benefits of foreign direct investment has necessitated cross boarder and international trade among business corporations ([Abdallah and Maghradi, 2009](#); [Chang and Lin, 2010](#)). However, when MNCs are deciding whether to invest at home or abroad to embrace such benefits, the level of tariffs, tax laws and regulations are taken into consideration to achieve the goal of global tax minimization and profit maximization by embracing the benefits of low tax rate and tax free polices of the host country ([Bartelsman and Beetsma, 2003](#); [Borkowski, 2010](#); [Olibe and Rezaee, 2011](#); [Muhammadi and Ahmed, 2016](#)).

To achieve the global profit maximization and the tax minimization objectives, MNCs have resorted to several tax avoidance mechanisms as a means for shifting taxable income from high tax jurisdiction to low tax jurisdiction to reduce their corporate tax liabilities. These mechanisms include transfer pricing, tine capitalization, tax haven utilization, financing structure of affiliates (debt financing), contract manufacturing and the strategic location of asset and overhead cost ([Grubert and Mutti, 1991](#); [Choi and Day, 1998](#); [Bartelsman and Beetsma, 2003](#); [Dharmapala, 2008](#); [Gravelle, 2009](#); [Pendse, 2012](#); [Janský et al., 2013](#); [Rossing and Rohde, 2014](#)). Notwithstanding, it has been identified in the extant literature that out of the numerous avoidance practices, transfer pricing is the main mechanism that multinational firms use for their profit shifting practices which result in tax

avoidance (Grubert and Mutti, 1991; Choi and Day, 1998; Dharmapala, 2008; Dyreng and Lindsey, 2009; Slemrod and Wilson, 2009; Taylor and Richardson, 2012; Cristea and Nguyen, 2013; Janský *et al.*, 2013; Brock and Pogge, 2014; Muhammadi and Ahmed, 2016).

In line with the identification of TP as the main international tax avoidance mechanism, the literature has examined the role of TP and has stated that TP is used for resource allocation and tax avoidance (Sikka and Willmott, 2010), is used to achieve higher divisional profit if managerial compensation is based on such profit and also used to shift income (Borkowski, 2010), is a financial management mechanism that allows MNCs to move funds internationally (Rossing, 2013; Chan *et al.*, 2015), is used to obtain goal congruence, assist in evaluating subsidiaries performance, to maximize profit and to minimize taxes (Clausing, 2009; Chang and Lin, 2010) and is a means by which the actions or parts of the organization are integrated and differentiated and to assess their individual performance (Cools *et al.*, 2008; Rossing and Rohde, 2014).

The literature has also discussed in details some factors that affect the choice of a particular transfer pricing method. These factors influence managers to choose a particular TP method at a particular point in time as against the others. Including the numerous factors are enterprise overall operating profit, host country's subsidiary's interest and host country's demand for maintaining appropriate cash flows (Tang, 2016), demographic and behavioural variables (Borkowski, 2010), tax regulation (Rossing and Rohde, 2014) and differences in transfer pricing regulation of the respective countries (Borkowski, 1997). However, the literature has group these factors into two main categories namely external and internal factors.

The Ghana Transfer Pricing Regulations 2012 (LI 2188) and the Organization for Economic Cooperation and Development (OECD) have indicated that for the purpose of tax consequences, related party transactions should be based on the arm's length principle. The arm's length principle states that transactions between related parties should be carried out as if those parties are unrelated. In line with the arm's length principle, the regulation requires MNCs to evaluate their intra-firm transaction using the arm's length principle in line with the following transfer pricing methods; the comparable uncontrolled price methods (CUPM), the resale price method (RPM), cost plus method (CPM), transactional net margin (TNM) method and profit split method (PSM).

**2.2.2 Earnings management.** Earnings management occurs when managers use judgment in financial reporting and in structuring transactions to alter financial reports to either mislead some stakeholders about the underlying economic performance of the company or to influence contractual outcomes that depend on reported accounting numbers (Healy and Wahlen, 1999). Literature on earnings management suggests that earnings management occurs when managers have the desire to achieve an earnings target. The literature concludes that management of earnings actually results in recording more profit in one accounting period as against other accounting periods. Studies on why firms or managers manage earnings include that of Jones (1991), Healy (1985), Healy and Wahlen (1999), Beneish (2001), Bergstresser and Philippon (2004), Nagata (2013) and Yang *et al.* (2016). These authors have indicated that managers manage earnings to increase their compensation and job security; to present higher profit to hide the deterioration of performance; to benefit from import relief, to window-dress financial statement prior to public security offerings; to avoid the payment of corporate taxes; to avoid violating lending contract; to meet analysts and investors earnings expectations and maintain reputation; to reduce regulatory cost or increase regulatory benefits; and for the purpose of making initial public offerings. Aside these underlying motives which drive managers to undertake earnings manipulation activities, prior studies have also outlined the various devices or

instruments which are used for the earnings management. These include; changes in accounting procedures, taking a bath, income minimization, income maximization and income smoothing.

*2.2.3 Earnings management and tax avoidance.* Literature on earnings management and tax avoidance has not received much attention. However, the little empirical studies have documented that tax avoidance serves as motivation for earnings management. These studies specifically outline that managers manage earnings so as to report lower profit to pay less tax. For example, in assessing the level at which Special Payment Account tax policy encourages private companies in Portugal to engage in earnings management. [Marques et al. \(2011\)](#) considered 6,652 firms from 2001 to 2002. Their finding suggested that the desire to minimize taxes induce managers to manipulate earnings. [Desai and Dharmapala \(2006\)](#) examined the relationship between incentive compensation, governance structures and corporate tax avoidance. They used a simple model of managerial behaviour for a very large sample of companies from 1993 to 2002 and showed that equity based incentives and tax avoidance associate negatively. Their result indicated that the negative relationship applies only to firms with weaker shareholder rights and minor intuitional ownership. A review of tax research conducted by [Hanlon and Heitzman \(2010\)](#) stated that in managing earnings firms structure their transaction in a way that create differences in the taxable profit and the accounting income. He further indicated that managers use three related tax items to manage earnings. The items are the valuation allowance, the tax contingency reserve and the amount of foreign earnings designated as permanently reinvested. [Dhaliwal et al. \(2004\)](#) investigated whether companies use income tax expense to manipulate earnings and documented that tax expense indeed offers an opportunity for managers to achieve earnings target. The study used the GAAP ERT information as proxy for tax avoidance. Scott stated that the main reason for managing earnings is income taxation. Additionally, [Frank et al. \(2009\)](#) found that managers who engage in taxable profits and financial profits manipulation simultaneously manage their book income upwards and also manipulate downwards their taxable profit in the same accounting year.

### 3. Methodology

This section seeks to address the source of data collection, measurement of estimation variables and the empirical method.

#### 3.1 Data source

The study draws its sample from both financial and non-financial MNCs. The data were generated from the audited annual reports of the companies selected for the study. The audited Annual reports of sampled manufacturing, petroleum, oil and gas and the service companies were downloaded in soft copy format from their official websites. However, the soft copies of some annual reports of the above-mentioned companies downloaded online did not contain the notes to the accounts, which contain vital variables such as, the breakdown of the total tax expense, tax payable, depreciation/amortization and the related party transactions used to construct the transfer pricing index. As a result, hard copies of audited annual reports were also obtained directly from headquarters of specific companies whose annual reports were unavailable both online and the Registrar General Department.

Using annual reports to examine the abuses of transfer pricing techniques and earnings management practices from 2008 to 2015, the study exploits the panel data techniques to provide insight on the effects of transfer pricing aggressiveness and earnings management practices on tax avoidance among the Ghanaian multinational firms. Panel data estimation appears to provide more convincing results than the classical time series and cross sectional

analysis as it exploits the advantages of time series and cross-sectional data and, at the same time, corrects the weakness of the latter two estimation techniques mentioned. It also helps to control for omitted variables and firm specific effects and also allows for both long and short run effects thereby overcoming the shortcomings of the cross sectional and time series estimation technique (Stock and Watson, 2001).

### 3.2 Variable measurement

*Tax avoidance* is broadly defined as the reduction of explicit taxes (Hanlon and Heitzman, 2010, p. 137). Yorke *et al.* (2016), and Taylor and Richardson (2012), also define tax avoidance as the difference between statutory tax rate (STR) and effective tax rate (ETR). A resultant positive figure means tax savings which is an indication of tax avoidance and a negative figure implies extra tax liability which the firm has to pay. Therefore, tax savings would always be higher if the difference between ETR and STR is wider. The ETR information is used due to its numerous advantages, which include easy accessibility to data and data alteration impossibilities, and finally, the ETR inherently reflects the permanent book-tax differences and all other statutory adjustments made (Frank, Lynch, and Rego, 2009). However, the disadvantage associated with the use of the accounting tax expense is that the measurement includes both the current and the deferred tax expenses, where the latter may have been estimated from various adjustments made to the deferred tax component (Hanlon, 2005). According to Hanlon and Heitzman (2010), ETR is defined as the total income tax expense per the pre-tax accounting. Taylor and Richardson (2012) and Noor and Fadzillah (2010) in their respective studies computed the ETR as the total corporate tax expense divided by net profit before tax. However, Yorke *et al.* (2016) contested this definition of ETR and argue that the definition by Hanlon and Heitzman (2010), only seek to imply that tax planning is just about minimizing the tax burden. They then argue that tax avoidance goes beyond the minimization of tax burden but also seek to postpone the payment of taxes. With this argument, Yorke *et al.* (2016) modified the numerator by deducting the deferred taxes from the total tax expense. This modification was done to cater for the deferment objective of tax planning. The study then employs the ETR information to proxy for the measurement of tax avoidance. Following Yorke *et al.* (2016), the study measures ETR as total corporate tax expense minus deferred tax expense and divide the result by Net profit before corporate tax. With regard to the statutory rate, adjustment is required for all reliefs and rebates applicable to the firm in question. As these reliefs and the rebates have the likelihood of reducing the general statutory tax rate, it is necessary for the needed adjustment to be done to arrive at the actual difference between the STR and the ETR to enhance the validity of the result.

Different mechanisms have been used as a proxy for *transfer pricing*, including prices charged on intra-firm transactions, Clausing (2003). Exporters price charge for related entities in arm's length transaction Bernard *et al.* (2006), differences in tax rate between countries Desai and Dharmapala (2006), absence of immediate market to determine the value of intangibles assets (Muhammadi and Ahmed, 2016). We pull out three factors from the above existing research to construct a five item index as a proxy to measure transfer pricing aggressiveness (TP) of the selected firms or to measure the level at which the selected firms are likely to manipulate their international transfer prices. In line with the use and application of corporate governance and disclosure related indexes in previous research, the higher (lower) the overall score for TP, the higher (lower) is the level of transfer pricing aggressiveness or the level of possibility of transfer pricing manipulation. The index includes:

- having a subsidiary or a sibling subsidiary located in a tax haven jurisdiction;
- transacting with the subsidiary or a sibling subsidiary located in a tax haven jurisdiction for the financial year under consideration;
- having a parent, a subsidiary or a sibling subsidiary located in a country with a different tax rate other than a tax haven jurisdiction;
- transacting with the related party located in a country with a different tax rate for the financial year under review; and
- payment of royalties associated with intangible assets between related parties for the financial year under review.

Each of the item is scored 1 if presents and 0 otherwise. A total score of five is an indication of a higher transfer pricing manipulation and a score of 0 indicates that the firm does not manipulate its transfer prices. Transfer pricing is projected to relate positively with tax avoidance.

*Earnings management* is measured in line with prior studies. These study used the discretionary accrual proxy as a measure of earnings management (Jones, 1991; Dechow et al., 1995; Rusmin, 2010; Marques et al., 2011; Nagata, 2013). The above studies also discuss how the total accrual is decomposed into discretionary and non-discretionary components. The total accrual is then estimated as;

$$TAC_{it} = (\Delta CA_{it} - \Delta Cash_{it}) - (\Delta CL_{it} - \Delta LTD_{it} - \Delta ITP_{it}) - DPA_{it} \quad (1)$$

Here,  $TAC_{it}$  is the total accrual for firm  $i$  in time period  $t$ ;  $\Delta CA_{it}$  is the change in current assets for firm  $i$  in time period  $t-1$  to  $t$ ;  $\Delta Cash_{it}$  is the change in cash balance for firm  $i$  in time period  $t-1$  to  $t$ ;  $\Delta CL_{it}$  is the change in current liabilities for firm  $i$  in time period  $t-1$  to  $t$ ;  $\Delta LTD_{it}$  is the change in long-term debt included in current liabilities for firm  $i$  in time period  $t-1$  to  $t$ ;  $\Delta ITP_{it}$  is the change in income tax payable for firm  $i$  in time period  $t-1$  to  $t$ ; and  $DPA_{it}$  is the depreciation and amortization expense for firm  $i$  in time period  $t-1$  to  $t$ . The non-discretionary and discretionary accruals are the constituents of the total accrual. The non-discretionary accrual depends on the firm's level of activity while the discretionary accruals reflect the subjective accounting choices made by managers. Thus managers exercise their discretion over accounting methods and estimate and over the timing to recognized accruals. Hence, the study adopts the discretionary portion of the total accruals to proxy for earnings management. This study employs the modified Jones model which according to Dechow et al. (1995) is the most powerful test of earnings management. The total accruals are then regressed on gross property, plant and equipment and the changes in revenue adjusted for changes in receivables. This is done in line with (Yang et al., 2008; Rusmin, 2010; Liu et al., 2014; Amidu et al., 2016).

$$\frac{TAC_{it}}{TA_{it-1}} = \alpha_0 \left[ \frac{1}{TA_{it-1}} \right] + \beta_1 \left[ \frac{\Delta REV_{it} - \Delta REC_{it}}{TA_{it-1}} \right] + \beta_2 \left[ \frac{PPE_{it}}{TA_{it-1}} \right] + \varepsilon_{it} \quad (2)$$

Here,  $TAC_{it}$  is the total accrual for firm  $i$  in year  $t$ ;  $TA_{it-1}$  is total asset for firm  $i$  at the end of  $t-1$ ;  $\Delta REV_{it}$  is change in net sales for firm  $i$  between years  $t-1$  and  $t$ ;  $\Delta REC_{it}$  is the change in receivables for firm  $i$  between years  $t-1$  and  $t$ ;  $PPE_{it}$  is the gross property plant and equipment for firm  $i$  in year  $t$  and  $\varepsilon_{it}$  is the error term. The normal accrual  $NAC_{it}$  is removed from equation (2) leaving the residual portion which is the discretionary accruals  $DCA_{it}$  (i.e.  $TAC_{it} - NAC_{it}$ ). The discretionary accruals  $DAC_{it}$  for firm  $i$  at year  $t$  is the absolute value of



the residual from the above estimation model. Earnings management is expected to relate positively with tax avoidance.

To measure earnings management for the financial firms, the study proxy for earnings management using the discretionary loan loss provision (DLLP) in line with earlier empirical studies of Beaver and Engel (1996), Ahmed *et al.* (1998), Cornett *et al.* (2006), Adams *et al.* (2009) and Amidu and Ransome (2015). These studies have described how the loan loss allowance (reserve) and the loan loss provision have been used for earnings management by the financial firms. Following the above authors, the current studies uses the loan loss provision information to measure banks earnings management. The loan loss provision is a combination of the non-discretionary loan loss provision and the discretionary loan loss provision. Hence, to obtain the discretionary loan loss provision which according to literature is the best measure of earnings management in the financial institutions, a two stage approach is used. The first step estimates the normal loan loss provision by regressing the LLP on the loan loss allowance (*LLA*), net charge off (*CHGOFF*), growth in loans (*GLOAN*), change in loans outstanding ( $\Delta LOAN$ ), total loans (*LOANS*), non-performing loans (*DNPA*), earnings before taxes and profit (*EBTP*) and year dummies (*YEARDUMMY*). Additionally, *LLA* and *CHGOFF* are scaled by average loans, *LLP* scaled by total loans while  $\Delta LOAN$ , *LOANS* and *EBTP* are scaled by total assets. Year dummies are introduced to control for the effect of technological changes (Amidu and Ransome, 2015; Adams *et al.*, 2009). This estimated figure is the normal loan loss provision. According to the above authors, this non-discretionary loan loss provision is that portion of the loan loss provision that brings the loan loss allowance to an acceptable level.

The second step is to deduct the estimated LLP from the actual LLP to arrive at the discretionary LLP. Hence, the discretionary loan loss provision (DLLP) is the difference between the actual loan loss provision (LLP) and the non-discretionary loan loss provision-NDLLP (based on the coefficient from the first stage regression) which is presented as  $DLLP = LLP - NDLLP$ . The literature stipulates that bank managers manipulate reported earnings through the discretionary loan loss provision to achieve an earnings target. The expected LLP is then estimated as;

$$LLP_{it} = \beta_0 + \beta_1 LLA_{it} + \beta_2 CHGOFF_{it} + \beta_3 GLOAN_{it} + \beta_4 \Delta LOANS_{it} + \beta_5 LOANS_{it} + \beta_6 DNPA_{it} + \beta_7 EBTP_{it} + \gamma YEARDUMMY_{it} + \varepsilon_{it} \quad (3)$$

Here,  $LLP_{it}$  is the actual loan loss provision scaled by total loans for bank *i* in period *t*,  $LLA_{it}$  is the loan loss allowance scaled by average loans of a bank *i* in period *t*,  $CHGOFF_{it}$  is the net charge off scaled by average loans of bank *i* in period *t*,  $GLOAN_{it}$  is the growth in loans of bank *i* in period *t*,  $\Delta LOAN_{it}$  is the change in total loans outstanding scaled by total assets of bank *i* in period *t*,  $LOANS_{it}$  is the loan portfolio scaled by total assets of bank *i* in period *t*,  $DNPA_{it}$  is a dummy variable representing one if the value for non-performing loan is missing and zero if otherwise,  $EBTP_{it}$  is earnings before taxes and profit scaled by total assets of bank *i* in period *t* and  $YEARDUMMY_{it}$  is a year dummy taking care of technological changes. The residual from equation (3) is the discretionary loan loss provision.

We use a number of additional control variables which prior studies have shown to affect the relationship among transfer pricing, earnings management and tax avoidance. The logarithm of total assets is used as a proxy for firm size. *Leverage* is total debt scaled by total assets. *Firm performance* (ROA) is the ratio of firm profit before tax to total assets. *Asset tangibility* measures the physical property of the firm and is used as asset structure. Firm's

*growth potential* is measured as the difference between current year's and previous year's revenue over the previous year's revenue. Lai (2009) indicated that firms with increased growth opportunities have less incentive to report discretionary accruals especially when they experienced increased monitoring. *Firm liquidity* (LIQ) is measured as current assets over current liabilities. Liquidity is expected to positively relate to tax avoidance. *Age* measures the number of years the firm has been in existence and is used as a proxy for experience.

#### 4. Empirical method

Our empirical method conditions corporate tax avoidance on transfer pricing and earnings management. Taking guidance from this and controlling for other variables, we model corporate tax avoidance as a function of transfer pricing and earnings management. Guided by our objective, we use three separate econometric models as follows:

$$CTA_{it} = \alpha_0 + \beta_1 TP_{it} + \beta_2 SIZE_{it} + \beta_3 LEV_{it} + \beta_4 ROA_{it} + \beta_5 GP_{it} + \beta_6 TANG_{it} + \beta_7 LIQ_{it} + \beta_8 AGE_{it} + \varepsilon_{it} \quad (4)$$

$$CTA_{it} = \alpha_0 + \beta_1 EM_{it} + \beta_2 SIZE_{it} + \beta_3 LEV_{it} + \beta_4 ROA_{it} + \beta_5 GP_{it} + \beta_6 TANG_{it} + \beta_7 LIQ_{it} + \beta_8 AGE_{it} + \varepsilon_{it} \quad (5)$$

$$CTA_{it} = \alpha_0 + \beta_1 TP_{it} + \beta_2 EM_{it} + \beta_3 (TP_{it} * EM_{it}) + \beta_4 LEV_{it} + \beta_5 ROA_{it} + \beta_6 GP_{it} + \beta_7 TANG_{it} + \beta_8 LIQ_{it} + \beta_9 AGE_{it} + \varepsilon_{it} \quad (6)$$

Here,  $CTA_{it}$  is the level of tax avoidance of firm  $i$  in period  $t$ .  $TP_{it}$  is the transfer pricing index of the firm based on the sum of five different transfer pricing items divided by five of firm  $i$  in period  $t$ .  $EM_{it}$  is the earnings management proxy of firm  $i$  in period  $t$ .  $(TP_{it} * EM_{it})$  is the interaction between transfer pricing and earnings management of firm  $i$  in period  $t$ .  $LEV_{it}$  is the leverage of firm  $i$  in period  $t$ .  $ROA_{it}$  is the performance of firm  $i$  in period  $t$ .  $GP_{it}$  is the growth potential of firm  $i$  in period  $t$ .  $TANG_{it}$  is the asset tangibility of firm  $i$  in period  $t$ .  $LIQ_{it}$  is the liquidity of firm  $i$  in period  $t$ .  $AGE_{it}$  is age of firm  $i$  in period  $t$ .  $\alpha$  is the constant term.  $\beta$ 's are the parameter vectors and  $\varepsilon_{it}$  is the error term.

##### 4.1 Estimation strategy

To identify which of the estimation technique to be used, the Hausman's test was executed where the null hypothesis indicates that the random model is suitable and the alternative hypothesis stated that the fixed effect model is appropriate. As depicted by the Hausman's test where  $[\chi^2(9) = 5.02$  with  $p$ -value = 0.8325], we fail to reject the null hypothesis. Therefore, the result recommended the use of the random effect model. The study in attaining its objective of investigating the impact of transfer pricing on tax avoidance and the impact of earnings management on tax avoidance among the Ghanaian multinational firms uses the random model to establish the existence of this relationship. Firstly, the study analyses the relationship between transfer pricing and tax avoidance, it further examine the relationship between earnings management and

tax avoidance, and finally investigate the sensitivity of transfer pricing and earnings management on tax avoidance.

## 5. Data analysis and interpretation of result

### 5.1 Descriptive statistics

Table I presents the summary statistics on the variables used to attain the objectives of the study covering periods between 2008 and 2015 in Ghana.

Table I presents the summarized details of the variables used in this study non-financial multinational firms in Ghana from 2008 to 2015 by reporting the mean, maximum, minimum and standard deviation. Corporate tax avoidance (CTA) was used as an outcome variable. Hence, on the average, 5.95 per cent of non-financial MN firms in Ghana engage in tax avoidance. It is observed that some of the firms recorded minimum and maximum of  $-213.86$  and  $77.53$  per cent, respectively. This is an indication that avoidance varies quite greatly across the sampled non-financial MN firms. Transfer pricing is on the average 53.49 per cent which the firm with the maximum transfer pricing recorded 80 per cent manipulation of transfer prices for tax avoidance. Again, earnings management measured as the discretionary component of total accrual is 28.21 per cent on the average. However, it is evident that a non-financial MN firm in a particular year recorded a maximum earnings management of 89.17 per cent implying that such firm is more aggressive in earnings manipulation. Return on Asset (ROA) which is a measure of a firms' profit potentials is averagely 11.19 per cent, while some banks recorded minimum and maximum return on asset of  $-11.82$  and  $39.47$  per cent, respectively. This is an indication that profitability varies quite moderately across the non-financial MN firms. Leverage is about 15 per cent on the average. More so, asset tangibility, which measures the use of property plant and equipment, is averagely 45.54 per cent. This implies that non-financial MN firms in Ghana on the average use about 45.54 per cent of their total assets as property plant and equipment.

Variable	Obs	Mean	SD	Min	Max
CTA	82	0.0595	0.3317	-2.1386	0.7753
TP	83	0.5349	0.1254	0.4000	0.8000
EM	75	0.2821	0.1586	0.0422	0.8917
ROA	87	0.1119	0.1169	-0.1182	0.3947
LEV	82	0.1483	0.2115	0.0026	0.9159
TANG	93	0.4554	0.2502	0.0615	0.9657
GP	74	0.1676	0.2239	-0.5122	0.7770
LIQ	93	0.2845	0.6188	-2.6485	0.9572
SIZE	93	119.8229	191.1709	0.0703	993.6
AGE	117	49.0769	24.2182	5	90

**Notes:** CTA is corporate tax avoidance measured as the difference between statutory tax rate and effective tax rate; TP is transfer pricing index of the firm based on the sum of five different transfer pricing items divided by five. EM is earnings management estimated as the difference between total accrual and non-discretionary accrual. ROA is return on assets measured as earnings before interest and taxes deflated by total asset. LEV is leverage estimated as total debt scaled by total asset. TANG is asset tangibility measured as non-current asset scaled by total assets. GP is growth potential computed as year on year growth in sales. LIQ is liquidity estimated as current assets over current liabilities. SIZE is firm size measured as the natural logarithm of total assets and AGE is firm age measured as the difference between the year in which the firm commenced operation and the year under which the financial statement is considered

**Table I.** Variables' summary statistics (non-financial multinational firms)

It is also observed that, a firm in year had its property plant and equipment peaking to 91 per cent of total asset.

Sale growth is on the average 16.76 per cent indicating that non-financial MN firms in Ghana averagely increases sales by 16.76 per cent. This is an indication of poor sales growth among the sample firms. However, it is observed that a particular firm in one year recorded a maximum value of 77.7 per cent. Liquidity is on the average 28.45 per cent implying that the firms in this category on the average can convert 28.45 per cent current asset into cash when the need arises. A standard deviation of 61.88 per cent, minimum of -264.85 per cent and maximum of 95.72 per cent indicate a higher level of disparity among the firms level of liquidity. Firm size which measures the amount of total asset a firm has is averagely €120m. A standard deviation of €191m reveals a higher variation among the sample firms with respect to their total assets. Firm age is on the average 49 years. A standard deviation of 24.2182 indicates a high disparity in the sizes of the sampled firms. The study used the Shapiro-Wilk (SW) Test (Table AI) to check the distribution of the variables around their mean. The SW test reported that the variables were normally distributed around their mean.

Table II presents the summary statistics for all the variables used in this study for the financial multinational firms. The summary statistics cover mean, standard deviation, minimum and maximum values of all the variables. From the summary statistics table, corporate tax avoidance is on the average 8.73 per cent. However, a maximum of 62.7 per cent indicates that the samples multinational (MN) financial firms are highly involved in avoidance activities. Transfer pricing is on the 47.53 per cent implying that almost 48 per cent of the firms in this group engage in transfer pricing abuses. It is also observed that a firm in a year recorded a maximum value of 80 per cent which depicts that some of the firms in this group engage massively in transfer pricing manipulation. Earnings management which measures earnings manipulation is averagely 6.05per cent. A recorded maximum value of 92 per cent denotes aggressive earnings manipulation of some firms in this group. Return on Asset (ROA) which is a measure of a banks' profit potentials is averagely 3.8 per

Variable	Obs	Mean	SD	Min	Max
CTA	137	0.0873	0.1123	0.0005	0.6527
TP	154	0.4753	0.1411	0.2000	0.8000
EM (LLP)	94	0.0605	0.1084	0.0009	0.9182
ROA	141	0.0380	0.1348	-0.5954	0.7089
LEV	139	0.4855	0.2516	0.0008	0.9285
TANG	145	0.0540	0.0679	0.0007	0.4759
GP	101	0.2703	0.3586	-0.9613	0.9366
LIQ	140	0.5781	0.0829	0.1583	0.6493
SIZE	146	498.9177	756.1859	0.6349	4113.812
AGE	101	27.07921	35.04588	1	119

**Notes:** CTA is corporate tax avoidance measured as the difference between statutory tax rate and effective tax rate; TP is transfer pricing index of the firm based on the sum of five different transfer pricing items divided by five. EM is earnings management estimated as the difference between total accrual and non-discretionary accrual. ROA is return on assets measured as earnings before interest and taxes deflated by total asset. LEV is leverage estimated as total debt scaled by total asset. TANG is asset tangibility measured as non-current asset scaled by total assets. GP is growth potential computed as year on year growth in sales. LIQ is liquidity estimated as current assets over current liabilities. SIZE is firm size measured as the natural logarithm of total assets and AGE is firm age measured as the difference between the year in which the firm commenced operation and the year under which the financial statement is considered

**Table II.**  
Variables' summary  
statistics (financial  
multinational firms)

cent while some banks recorded minimum and maximum return on asset of  $-59.54$  and  $70.89$  per cent, respectively. This is an indication that profitability varies quite greatly across the multinational financial firms.

Leverage is on the average  $48.55$  per cent which implies that  $49$  per cent of the sample firm use more debt to equity in their capital structure. Asset tangibility which measures the usage of property plant and equipment is averagely  $5.4$  per cent. This is an indication that financial firms by nature are more liquid and hence use less of property plant and equipment. Furthermore, sale growth is on the average  $27.03$  per cent, indicating that multinational financial firms in Ghana averagely increase sales by  $27.03$  per cent which is an indication of poor performance. However, it is interesting to observe that a particular firm in a year increased its sales by  $93.66$  per cent. Liquidity is on the average  $57.81$  per cent which implies that  $57.81$  per cent of the sample firm have enough current asset that could pay their current liabilities when due. Firm size on the average is  $\text{¢}499\text{m}$ . A standard deviation of  $\text{¢}756\text{m}$  indicates a higher variation of the total asset held by each firm in the sample. Finally, firm age is averagely  $27$  years.

### 5.2 Pearson correlation analysis

This section reports the correlation matrix between the various variables that are able to explain the variation in corporate tax avoidance from literature. The table mainly exhibits the Pearson's correlation matrix which serves as a test for the collinearity of each variable compared with the other variables needed to achieve the set objectives. In this paper, we set a threshold of  $0.8$  for the Pearson's correlation to be considered as the existence of high collinearity between a variable and other variables. Hence, the results presented in [Table III](#) show no evidence of multicollinearity. The magnitude of the relationship is determined by the absolute value while the sign indicates the direction of the relationship. The upper right

	Financial multinational firms										
	CTA	TP	EM	ROA	LEV	TANG	GP	LIQ1	SIZE	AGE	
CTA	1	0.0614	0.0003	-0.3019	0.043	-0.0276	-0.1505	-0.2582	-0.003	0.1241	
TP	-0.0328	1	-0.0476	0.2404	-0.016	0.0437	-0.0604	-0.0675	0.0059	0.1633	
EM	0.1742	-0.2367	1	0.0262	-0.0077	-0.0253	0.1349	0.0035	0.1304	-0.0515	
ROA	-0.0765	0.3068	-0.057	1	-0.1158	-0.2878	0.0438	0.199	0.0431	0.0556	
LEV	0.1151	-0.1667	0.3355	-0.3652	1	-0.0277	0.3612	-0.0056	0.053	-0.0678	
TANG	0.2499	-0.253	0.4855	-0.1285	0.3498	1	-0.0103	-0.6881	-0.2156	-0.1363	
GP	0.2804	0.1593	-0.0429	0.2176	-0.0669	-0.1498	1	0.0507	0.24	-0.0883	
LIQ	-0.0381	0.0444	-0.4997	0.1061	-0.4263	-0.4456	0.0994	1	0.0691	-0.0673	
SIZE	0.1029	-0.1252	0.0408	0.1126	0.3536	0.1021	0.0501	-0.1255	1	0.4515	
AGE	-0.1059	-0.0905	0.1671	-0.1208	0.4942	0.216	0.216	-0.1692	0.1546	1	
Non-financial multinational firms											

**Notes:** CTA is corporate tax avoidance measured as the difference between statutory tax rate and effective tax rate; TP is transfer pricing index of the firm based on the sum of five different transfer pricing items divided by five. EM is earnings management estimated as the difference between total accrual and non-discretionary accrual. ROA is return on assets measured as earnings before interest and taxes deflated by total asset. LEV is leverage estimated as total debt scaled by total asset. TANG is asset tangibility measured as non-current asset scaled by total assets. GP is growth potential computed as year on year growth in sales. LIQ is liquidity estimated as current assets over current liabilities. SIZE is firm size measured as the natural logarithm of total assets and AGE is firm age measured as the difference between the year in which the firm commenced operation and the year under which the financial statement is considered

**Table III.**  
Correlation matrix  
(for financial and  
non-financial  
multinational firms)

hand provide correlation matrix for financial multinational firms while the bottom left hand show correlation for the non-financial multinational firms.

The correlation results show that EM, is as expected positively correlated with tax avoidance. This suggest that more earnings manipulation result in more avoidance activities. This result is not different from that of previous studies (Desai and Dharmapala, 2009; Amidu *et al.* 2016). However, the other interest variable TP, correlate negatively with tax avoidance which contradicts the findings of earlier studies. The control variables are also positively correlated with the dependent variable except ROA, LIQ and AGE. The positive correlation between LEV, TANG, GP and CTA reveals that highly leverage non-financial firms with more physical assets and have growth potentials are highly involved in avoidance activities. ROA, LIQ and AGE correlate negatively with tax avoidance implying that profitable firms with more years of existence and are highly liquid have less incentive to engage in avoidance activities. With respect to the financial firms, the dependent variable (CTA) is positively correlated with the key variables of interest (TP and EM). This result is at par with the result of other studies (Dhaliwal *et al.*, 2004; Taylor and Richardson, 2012) and consistent with the view that transfer pricing manipulation and earnings manipulation facilitate tax avoidance. For the control variables, LEV and AGE correlate positively with tax avoidance which suggests that highly leverage financial firms with more years of existence engage more in tax avoidance. ROA, TANG and GP had negative correlation with tax avoidance which implies that highly profitable financial firms with more physical assets and have the potential to grow are less attractive to avoidance activities. Finally, LIQ and SIZE correlate negatively with tax avoidance suggesting that financial firms with more assets and are highly liquid have less scope to avoid payment of taxes.

### 5.3 Impact of transfer pricing on tax avoidance

This section presents the regression estimation result on the impact of transfer pricing on tax avoidance. The study used tax avoidance (the difference between statutory tax rate and effective tax rate) as dependent variable explained by the independent and the control variables. The independent variable is transfer pricing (TP) and the control variables include performance (ROA), leverage (LEV), asset tangibility (TANG), growth potential (GP), liquidity (LIQ) and natural log of total assets (SIZE). Notwithstanding, only the variable of interest and other significant variables are discussed.

The results of the study as presented in Table IV show a positive relationship between transfer pricing and tax avoidance for both firm groups and the combined sample. A coefficient of 0.037 for non-financial firms and 0.074 for financial firms indicate that financial firms avoid more taxes through the manipulation of transfer prices than the non-financial firms. We also observed from the coefficient of the combined sample that when MNCs increase their transfer pricing manipulation by 100 per cent they will end up avoiding taxes by 4.54 per cent. This suggest that MNCs avoid taxes through the manipulation of transfer prices. This finding is consistent with existing empirical studies of Bartelsman and Beetsma (2003), Sikka and Willmott (2010); Taylor and Richardson (2012); Janský *et al.* (2013), who documented that transfer pricing manipulation facilitates tax avoidance.

For the control variables, the regression result shows a direct relationship between asset tangibility (TANG) and tax avoidance (CTA). More so, the result indicated that both non-financial and financial firms avoid taxes through the use of property plant and equipment. For the entire sample, the result depicts that a unit increase in asset tangibility leads to 0.6154 units increase in tax avoidance which implies that as MNCs use more of property plant and equipment (PPE), they end up charging more depreciation which is deducted before the taxable income is obtained. This means that MNCs avoid taxes through the use of

**Table IV.**  
Transfers pricing on tax avoidance

Sample	Non-Financial	Financial	Combined
Constant	-0.3336 (0.2719)	-0.0297 (0.5209)	-0.2063 (0.6392)
TP	0.0374 (0.0423)	0.0738 (0.0752)	0.04329 (0.1389)
ROA	-0.1403 (0.3456)	0.0016 (0.0027)	0.0014 (0.0035)
TANG	0.3531** (0.1303)	-0.7426** (0.0268)	0.6154*** (0.0731)
LIQ	-0.2345 (0.0175)	0 0	0.0000*** (0)
SIZE	0.0236 (0.0292)	0.111 (0.0387)	-0.0043 (0.0777)
R <sup>2</sup>	0.0741	0.0038	0.0044
Pro > F	0.000	0.000	0.000
No. of Obs.	81	136	217

**Notes:** CTA is corporate tax avoidance measured as the difference between statutory tax rate and effective tax rate; TP is transfer pricing index of the firm based on the sum of five different transfer pricing items divided by five. EM is earnings management estimated as the difference between total accrual and non-discretionary accrual. ROA is return on assets measured as earnings before interest and taxes deflated by total asset. LEV is leverage estimated as total debt scaled by total asset. TANG is asset tangibility measured as non-current asset scaled by total assets. GP is growth potential computed as year on year growth in sales. LIQ is liquidity estimated as current assets over current liabilities. SIZE is firm size measured as the natural logarithm of total assets and AGE is firm age measured as the difference between the year in which the firm commenced operation and the year under which the financial statement is considered

PPE. Thus, when the tax rate is applied the tax liability generated become small implying that majority of the tax liability has been take out as depreciation. This finding is interesting as asset tangibility is statistically significant at 1 per cent and 5 per cent across all the sample categories. However, the finding contradicts that of [Yorke, et al. \(2016\)](#) who found a negative insignificant relationship. For the financial firms TANG recorded a negative significant relationship with CTA. This could mean that the financial firms may be avoiding taxes but not through the use of PPE. It is also observed that though, liquidity was not statistically significant for both non-financial and financial companies, it was statistically significant for the entire sample.

#### 5.4 The effect of earnings management on tax avoidance

This section shows the regression estimate results on the impact of earnings management on tax avoidance for only non-financial firms. The study used tax avoidance as an outcome variable explained by an independent variable and other control variables. The independent variable is earnings management (EM) and the control variables include return on asset (ROA), leverage, asset tangibility (TANG), growth potential (GP), liquidity (LIQ), natural log of total assets (SIZE) and firm age (AGE). However, only the variable of interest and other significant variables are discussed.

From the regression result in [Table V](#), earnings management (EM) is positively related to tax avoidance (CTA) for both financial and non-financial firms. The positive relationship depicts that the firms avoid taxes through the manipulation of earnings. This finding confirms existing studies of ([Dhaliwal et al., 2004](#); [Desai and Dharmapala, 2009](#); [Amidu et al.2016](#); [Yorke et al., 2016](#)). The findings also support the assumption underpinning the agency theory that individuals are self-seeking actors acting to maximize their own personal economic gains. The agency relationship between owners and managers requires that the latter take decisions that maximize the interest of the former. However, the conflict of interest between shareholders and managers induces managers such that those delegated to take tax decisions take decisions that reflect their private ambitions to the detriment of

Sample	Non-Financial	Financial
Constant	-0.0159 (0.2893)	2.0911*** (0.3998)
EM	0.6734 (0.8508)	0.0800** (0.0341)
ROA	-0.3143 (0.3247)	-1.7607*** (0.4741)
LEV	-0.3800*** (0.1339)	-0.0608 (0.089)
TANG	0.8468* (0.4671)	2.3863*** (0.5596)
GP	0.6039*** (0.2191)	-0.0065 (0.0416)
LIQ	-0.2904 -0.4406	1.4867*** (0.3319)
SIZE	-0.0002 (0.0282)	0.0015 (0.035)
AGE	1.0680** (0.4652)	0.0004** (0.0003)
R <sup>2</sup>	0.1819	0.5898
Pro > F	0.0000	0.0000
No. of Obs.	71	61

**Notes:** CTA is corporate tax avoidance measured as the difference between statutory tax rate and effective tax rate; TP is transfer pricing index of the firm based on the sum of five different transfer pricing items divided by five. EM is earnings management estimated as the difference between total accrual and non-discretionary accrual. ROA is return on assets measured as earnings before interest and taxes deflated by total asset. LEV is leverage estimated as total debt scaled by total asset. TANG is asset tangibility measured as non-current asset scaled by total assets. GP is growth potential computed as year on year growth in sales. LIQ is liquidity estimated as current assets over current liabilities. SIZE is firm size measured as the natural logarithm of total assets and AGE is firm age measured as the difference between the year in which the firm commenced operation and the year under which the financial statement is considered

**Table V.**  
Earnings  
management on tax  
avoidance

shareholders. This relationship is highly significant for the financial firms under 1 per cent significance level with a coefficient of 0.08 as against a coefficient of 0.67 for the non-financial firms implying that non-financial firms engage more in earnings manipulation than the financial firms.

With regards to the control variables, return on asset (ROA) is negatively related to tax avoidance for both firm categories which depicts that higher profitable firms avoid less tax. Notwithstanding, the relationship is statistically significant for only financial firms under 1 per cent significance level. With a coefficient of -0.3143 and -1.7607, we found that highly profitable non-financial firms are less attractive to avoidance activities than profitable financial firms. Our results however, contradict the findings of prior research of [Dechow et al. \(1995\)](#), [Kothari et al. \(2005\)](#) and [Yang et al., 2008](#) that firms with higher performance manipulate more of their earnings to avoid taxes. However, the above studies found a positive relationship between ROA and CTA with the focus on only non-financial firms. Therefore, the relationship between ROA and CTA for the non-financial firms contract the above findings and at the same time statistically insignificant. For the financial firms, the relationship is negatively and statistically significant which confirms the findings that profitable banks are more in the public eye and are also more scrutinized by analyst and hence are less likely to engage in avoidance activities.

From the regression result, LEV shows a negative statistically significant relationship with tax avoidance under 1 per cent significance level for non-financial firms. The relationship was also negative for financial firms but statistically insignificant. This result contradicts the findings of previous studies that highly leverage firms engage more in tax avoidance ([Rusmin, 2010](#) and [Amidu et al.2016](#)). The negative significant relationship for the non-financials firms could be intuitively explain to mean that the firms could be avoiding taxes alright but the medium for their avoidance is not debt financing. Asset tangibility



(TANG) is positive and significantly associated with tax avoidance under 10 per cent significance level for the non-financial firms. TANG, however, is negative and highly significant with tax avoidance for the financial firms. Intuitively, the positive significant relationship for the non-financials could be explained to mean that companies that use more non-current assets are expected to avoid more taxes because the depreciation charge reduces the taxable profit.

Again, the result reveals that growth potential (GP) is positively and significantly related to tax avoidance under 1 per cent significance level for the non-financial firms which is contradictory to the study expectation that firms with increased growth opportunities are more likely to report less discretionary accruals when they experience increased monitoring. Hence, such monitoring provides them with less incentive to avoid taxes (Cornett *et al.*, 2006; Leventis and Dimitropoulos, 2012). Additionally, the result depicts a negative relationship between liquidity (LIQ) and tax avoidance (CTA) for both firm categories. This relationship is statistically significant at 1 per cent significance level for the financial firms. In line with expectation, the negative significant relationship confirms that banks by nature of operation are highly liquid and the intention is not for avoidance purposes. Finally, AGE is positively and significantly at 5 per cent significance level with tax avoidance for both firm categories. The findings suggest firms that have existed for more years avoid more taxes as they become more experienced to avoidance techniques. The coefficient of 1.0680 and 0.0003 indicate that non-financial firms that have existed for more years avoid more taxes than the comparative aged financial firms.

#### 5.5 The sensitivity of transfer pricing and earnings management on tax avoidance

The result on the third objective, investigating the sensitivity of transfer pricing and earnings management on tax avoidance is presented in this section. The study employs tax avoidance as a dependent variable explained by the independent and the control variables. The independent variables include the interaction term between transfer pricing and earnings management (TP\*EM), transfer pricing (TP) and earnings management (EM) while the control variables comprise return on asset (ROA), leverage (LEV), asset tangibility (TANG), growth potential (GP), liquidity (LIQ) and natural log of total assets (SIZE). The section also discusses only the variables of interest and other significant variables.

Table VI projects the regression result on the sensitivity of transfer pricing and earnings management on tax avoidance. The result in this table suggests that the presence of the interactive term (TP\*EM) does not influence the direction of the relationship between earnings management (EM) and tax avoidance (CTA) for both firm groups. However, the coefficient of EM for both firm categories in Table VI with the interactive term as compared to the coefficient in Table V without the interactive term indicates that the sample firms engage more in earnings manipulation which results in higher avoidance with the presence of the interactive term.

Also, the study found transfer pricing to relate positively and significantly with tax avoidance for both firm groups with the introduction of the interactive term. This relationship though was positive but insignificant in Table IV for both firm categories. This indicates that the interactive term strengthens the relationship between TP and CTA. Similar to the findings of EM, the study found that the coefficient for TP for both firm groups in Table VI with the interactive term is higher than the coefficient of TP in Table IV without the interactive term. This finding also suggests that both firm groups become more aggressive to transfer pricing abuses which lead to higher tax avoidance with the introduction of the interaction between TP and EM.

Sample	Non-Financial	Financial
Constant	-0.8662 (0.6216)	0.8299* (0.6631)
TP	0.2004* (0.1069)	0.1454*** (0.0425)
ROA	-0.2278 (0.4153)	-2.1413*** (0.3939)
EM	0.8514 (0.6081)	0.4077*** (0.1295)
TP * EM	-0.6551* (0.4332)	-1.6497*** (0.5616)
LEV	-0.3115** (0.1589)	0.1002 (0.0842)
TANG	0.8956** (0.4252)	-1.3941* (0.8051)
GP	0.5830*** (0.2287)	-0.0008 (0.0351)
LIQ	-0.3158 (0.4601)	-0.6558 (0.5581)
SIZE	0.0238 (0.0393)	0.0305 (0.0357)
AGE	0.0004 (0.0017)	0.0006* (0.0004)
R <sup>2</sup>	0.2012	0.6914
Pro > F	0.0000	0.0000
No. of Obs.	71	61

**Notes:** CTA is corporate tax avoidance measured as the difference between statutory tax rate and effective tax rate; TP is transfer pricing index of the firm based on the sum of five different transfer pricing items divided by five. EM is earnings management estimated as the difference between total accrual and non-discretionary accrual. ROA is return on assets measured as earnings before interest and taxes deflated by total asset. LEV is leverage estimated as total debt scaled by total asset. TANG is asset tangibility measured as non-current asset scaled by total assets. GP is growth potential computed as year on year growth in sales. LIQ is liquidity estimated as current assets over current liabilities. SIZE is firm size measured as the natural logarithm of total assets and AGE is firm age measured as the difference between the year in which the firm commenced operation and the year under which the financial statement is considered

**Table VI.**  
Sensitivity of  
transfer pricing and  
earnings  
management on tax  
avoidance

With the introduction of interactive term, both relationships which were not significant in Tables IV and V all became significant in Table VI. However, the interactive term itself is negative and highly significant for both firm groups. These findings indicate that the two independent variables can comfortably be used in the same model. It further depicts that the two independent variables are separate determinant of tax avoidance. This is evidenced by the negative coefficient recorded by the interaction term. Thus, if the interaction term had recorded a positive coefficient, it would have meant that transfer pricing and earnings management tell the same story and for that matter one has to be dropped from the model but in this case where the interactive term is negative it implies that the two independent variables are not perfectly correlated and are independent such that each of them can explain a variation in the dependent variable. Again, the finding denotes that transfer pricing does not override on earnings management and vice versa. This findings contribute to knowledge and reveal to literature another determinant of international tax avoidance which is earnings management. From the international tax avoidance literature, mechanisms such as transfer pricing, profit shifting, thin capitalization, tax haven utilization and the financing structure of affiliate have been identified as determinant of international tax avoidance.

In addition, a TP coefficient of 0.2004 for the non-financial firms and a coefficient of 0.1454 for the financial MN firms indicate that non-financial MN firms manipulate their transfer prices more than the financial MN firms. More so, a coefficient of 0.8514 for EM for the non-financial MN firms to a coefficient of 0.4077 for the financial MN firms also depicts that the non-financial firms engage in more manipulative activities than the financial firms. These findings could be attributed to the fact that banks are in general more regulated and more closely monitored institutions by regulators and hence, have less incentive to engage in manipulative activities.

Also, for the control variables, ROA is negatively related to tax avoidance for both firm groups. However, for the financial MN firms the relationship is statistically significant under 1 per cent significant level. This result suggests that profitable banks are less attractive to tax avoidance because they experience increased monitoring from regulators and analysts. LEV is inversely and significantly related to tax avoidance for non-financial MN firms. This contradicts the findings of existing literature that more leverage firms avoid more taxes (Rusmin, 2010). Again, the findings depict that TANG is significant and associates positively with tax avoidance for the MN non-financial firms indicating that these firms avoid more taxes through the use of property, plant and equipment with its related depreciation which takes majority of the profit after tax to the expense account as depreciation. For the financial MN, TANG recorded a negative and significant relationship with tax avoidance. Additionally, the result projected that GP is positively related to tax avoidance for non-financial MN firms. Finally, AGE is positive and significant for only financial MN firms.

## 6. Conclusion

The study investigates the relationship between transfer pricing, earnings management and tax avoidance. The study draws its sample of 40 firms from both non-financial and financial multinational firms listed on Ghana Stock Exchange, as well as the non-listed multinational firms. To achieve the overall objective of the study, the panel regression approach specifically, the random fixed effect model was developed. To establish the existence of this relationship, the study first examines the relationship between transfer pricing and tax avoidance. It further analyses the relationship between earnings management and tax avoidance and finally investigates the sensitivity of transfer pricing and earnings management on tax avoidance.

The results suggest that Ghanaian multinational firms use both transfer pricing and earnings manipulative activities to aggressively reduce their corporate tax liabilities. Specifically, the study finds that the use of transfer pricing (TP) abuses and earnings manipulation (EM) are positively related to corporate tax avoidance (CTA). More so, based on the degrees of the regression coefficient, financial MN firms engage more in transfer pricing manipulation than non-financial MN firms while the latter were found to be aggressive in earnings manipulation than the former. The study also finds the interaction between TP and EM to have no influence on the direction of the relationship between TP and CTA and between EM and CTA for both firm groups. Notwithstanding, the magnitude and the significance of the regression coefficient suggest that the presence of the interactive term induce managers of both firm groups to become more aggressive to the manipulation of TP and EM. The results revealed a negative and significant relationship between the interactive term and tax avoidance. Hence, this result suggests that TP does not override EM and that both are independent that could explain their individual variation in tax avoidance. Further, the study finds corporate tax avoidance to relate positively and significantly with asset tangibility, sales growth and age while at the same time, it relate negatively and significantly with leverage. The result in the descriptive statistics indicates that the sample firms in both groups are not highly leveraged and this could explain the negative relationship between leverage and avoidance that the firms could be avoiding taxes through other mediums other than debt financing. For the financial MN firms the result suggests that corporate tax avoidance associate negatively and significantly with profitability, asset tangibility and liquidity. This suggests that because the banks are closely monitored and have more public eye they are less attractive to avoidance activities.

This study brings into existence two policy implications: First and foremost, it contributes to existing literature on the implication of earnings manipulation on corporate tax avoidance

with evidence from multinational firms in Ghana. Finally, the study also reveals the implication of transfer pricing manipulation on tax revenue. This study is timely as it places value on the report from the Tax Justice Network Africa, 2017 that the government of Ghana lost an amount of GHC 2bn from transfer pricing abuses from the extractive sector. Hence, it was identified that there are a lot of loop holes in the Ghanaian transfer pricing regulation which the multinationals exploit to their advantage resulting in tax revenue losses to the state. Therefore, the study recommends that the transfer pricing unit of GRA should equip its personnel through effective training and at the same time institute effective strategies such that the MNCs would submit a transfer pricing documentation for each intra firm trade that takes place between the related parties. The documentation should outline the jurisdiction for the parties involved, the tax rate applicable for each jurisdiction and estimate the difference in the tax rate, methodology used and a justification for that method, a justification for the price charge and provide comparative analysis for which such price was charged. The study further recommends that submission of the documentation should not be done on yearly or quarterly or monthly basis but rather for each intra firm transaction that takes place. This will help to keep track of every intra firm trade and the acceptable price to be charged irrespective of the related parties' jurisdiction.

#### Note

1. Transfer pricing is said to be the medium by which Multinational Companies (MNCs) arrive at a price for goods and services that are traded within the related entities located in variably different tax jurisdictions (OCED 2014). Therefore, the taxable profits that are generated in each of the country the MNCs operate are extremely affected by these international transfer prices set by the multinationals.

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Variable	Obs.	W	V	Z	Prob > z
CTA	82	0.66271	23.626	6.939	0.00000
EM	81	0.73997	18.031	6.341	0.00000
TP	83	0.96714	2.324	1.852	0.03202
ROA	92	0.97485	1.937	1.460	0.07210
TPEM	79	0.84770	10.347	5.116	0.00000
LEV	92	0.53788	35.597	7.888	0.00000
TANG	93	0.93517	5.039	3.573	0.00018
GP	74	0.95327	3.009	2.403	0.00812
LIQ	80	0.77207	15.645	6.026	0.00000
SIZE	92	0.93020	5.377	3.714	0.00000

**Table AI.**  
Shapiro-Wilk Test  
for Normality (non-  
financials)

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