

Carey, Peter; Tanewski, George

Article

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Journal of Accounting and Management Information Systems (JAMIS)

Provided in Cooperation with:

The Bucharest University of Economic Studies

Suggested Citation: Carey, Peter; Tanewski, George (2013) : Voluntary Demand for Auditing by Farm Businesses: An Australian Perspective, Journal of Accounting and Management Information Systems (JAMIS), ISSN 2559-6004, Bucharest University of Economic Studies, Bucharest, Vol. 12, Iss. 2, pp. 213-234

This Version is available at:

<https://hdl.handle.net/10419/310523>

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VOLUNTARY DEMAND FOR AUDITING BY FARM BUSINESSES: AN AUSTRALIAN PERSPECTIVE

Peter CAREY and George TANEWSKI¹

School of Accounting Economics and Finance, Deakin University, Australia

ABSTRACT

This study investigates voluntary demand for auditing by Australian farm businesses, a significant but relatively unexplored segment of the economy. Most farms operate as family partnerships or sole proprietors and we thus focus on incentives to audit arising from internal sources (owner-manager), controlling for traditional incentives arising from external contractual constraints (i.e., debt), organisational characteristics (i.e., size), and agency conflict. We hypothesise that an external audit assists management in enhancing internal control by complementing the process of profit planning and control (budgeting) and that increased family conflict provides an incentive to engage external audit. Of the 457 survey questionnaire respondents, 27% voluntarily engage an external auditor and 66% conduct some formal written planning. Results from logistic regression analyses support the predicted impact of both size and debt on audit, and further support the hypothesised impact of budgeting. The positive association between budgeting and audit confirms the complementary relationship. More importantly, this relationship is not confounded by the combined impact of size and budgeting and debt and budgeting on voluntary audit. In addition, family conflict has no impact on voluntary demand for auditing by farm business.

 Audit, budgeting, planning, farming, agency theory

JEL codes: M42, O13, Q13

¹ Corresponding author: School of Accounting Economics and Finance, Faculty of Business and Law, Deakin University, 70 Elgar Road, Burwood, Victoria, 3125, Australia.
Email: g.tanewski@deakin.edu.au

INTRODUCTION

This study investigates voluntary demand for auditing by owner managed farm enterprises, a significant but relatively unexplored segment of the economy in the accounting literature. Based on the most recent statistics, the Australian Bureau of Agricultural and Resource Economics and Sciences ABARES (2012) estimates that approximately 11.5 per cent (\$36.4 billion) of total exports is attributable to agricultural products, while the Australian Bureau of Statistics estimates that there are around 135,600 agricultural businesses in Australia (ABS, 2010) employing approximately 306,700 people in 2010-11 (ABS, 2012). In the present study we focus on small and medium size owner managed farm enterprises, as these are the predominant structure in Australia (ABS, 2003). Most Australian farms are family partnerships or sole proprietors with only a fraction operating as large public enterprises (Wright & Kane 1997). Lloyd and Malcom (1997) explain that because of cost advantages over both small and large farms, the typical Australian farm enterprise is of medium size and operated by a couple plus some casual labour and in other cases a permanent employee.¹ Despite the importance of farming to the economy, few empirical studies have investigated the use of accounting by farm businesses (see Argiles, 2001; Luening, 1989), and to the best of the authors' knowledge no study has considered demand for external auditing by owner-managed farms.

Farm businesses provide a unique environment to study demand for auditing because it is possible to eliminate the impact of both the statutory requirement to audit and agency conflict; and thus focus on incentives arising from internal sources (i.e., owner-manager), while controlling for contractual constraints (i.e., lenders) and organisational characteristics (i.e., size). Prior research investigating voluntary demand for auditing has focused on contractual constraints expected to increase the likelihood of a business engaging the services of an auditor, in particular lender constraints (e.g., Chow, 1982; Abdel-khalik, 1993; Blackwell *et al.*, 1998; Carey *et al.*, 2001; Allee & Yohn, 2009), agency conflict (e.g., Chow, 1982; Carey *et al.*, 2001; Hope *et al.*, 2012), or voluntary demand arising from the size of the organization (e.g., Chow, 1982; Abdel-khalik, 1993; Blackwell *et al.*, 1998; and Carey *et al.*, 2001).

Chow *et al.* (1988) argue that internal management is a further source of demand for audit. This argument follows Wallace's (1980) contention that audited financial information can improve the financial data used by managers internally. Indeed, Indjejikian and Matejka (2009) provide support for this contention and find that high-quality attested financial information is relevant for evaluation of managerial performance and compensation. Meanwhile, assuming that loss of control is caused by reduced observability in hierarchies, thus giving rise to risk of moral hazard and opportunism, Abdel-khalik (1993) seeks to explain the benefit of external auditing to owner-managers as a way of compensating for 'loss of control' associated with increased organizational hierarchy. His study finds that number of employees

(proxy for hierarchy) is associated with external audit for the 103 owner-managed private companies (Abdel-khalik, 1993).²

Accordingly, the current study investigates the incentive to audit arising from internal management where it is argued that a financial statement audit complements the firm's system of control. Controlling for factors traditionally associated with demand for auditing (i.e., debt and size) in an environment where there is little to no agency conflict, we propose that an owner-manager might demand an external audit to complement profit planning and control (budgeting). An audit will enhance the credibility of financial information used in the budgeting process and the auditor's expertise provides the owner manager with an opportunity to learn and improve processes.

The incentives for an owner-manager to voluntarily engage in budgeting will therefore indirectly explain demand for auditing. Factors found to be associated with budgeting include size (e.g., Aram & Cowen, 1990), debt, internal locus of control (Begley & Boyd, 1987; Miller & Toulouse, 1986; Miller *et al.*, 1982) and environmental uncertainty (Matthews, 1991; Bracker & Pearson 1986; and Bourgeois, 1985). Our study therefore examines the association between budgeting and farm size, debt, the owner manager's internal locus of control and environmental uncertainty.

An additional contribution of this study is to investigate whether personal conflict between owner-managers explains demand for auditing. As previously stated, most Australian farms are owned and managed by families. Adapting the agency theoretical argument, prior research conjectures that personal conflict between family members might provide further incentive to engage the monitoring service of external audit (see Carey *et al.*, 2001). Accordingly, we investigate the impact of family conflict on voluntary demand for auditing.

1. LITERATURE REVIEW AND HYPOTHESIS DEVELOPMENT

Prior research finds that in owner managed firms, voluntary demand for auditing is positively associated with the level of debt (Hope *et al.*, 2011; Carey *et al.*, 2001; Abdel-Khalik, 1993) and that a benefit from external auditing is that owner-managed firms pay a lower interest rate to banks on unsecured loan facilities (Blackwell *et al.*, 1998). Research findings suggest that lenders encourage and/or impose a regime to audit. In an environment where audit is voluntary, lenders extract penalties (e.g., higher interest rates) should the owner choose not to engage financial statement audit services.

Research investigating voluntary demand for external auditing has predicted that contractual incentives associated with non-owner managers (agency conflict) is positively correlated with auditing (e.g., Chow, 1982). For private or family controlled companies, the level of agency conflict and thus audit demand is found

to be associated with the level of outside management and/or ownership (Carey *et al.*, 2001).

Contractual incentives associated with the level of firm debt and agency conflict assume that audited information is used to monitor performance. The professional auditing standards recognise that a financial statement audit opinion enhances the credibility of a financial report (see AUS 202, 2004, paragraph 03) and this information is used to monitor performance. However, in addition to incentives arising from external regulatory requirements or to satisfy contractual constraints, demand for auditing might also be derived from the firms' internal sources (see Indjejikian & Matejka, 2009 and Chow *et al.*, 1988).

With regard to owner-managed firms, Abdel-khalik (1993) argues that in addition to lender requirements, the value of an audit is to assist the owner manager control of the business.³ When the business is small, owner managers control operations by means of direct supervision. However, as the business grows larger, delegation of responsibility gives rise to slippage in the effectiveness of command and control. This "loss of control thesis" suggests the value of an audit is in assisting the owner manager monitor the quality and adequacy of the system of internal control for management.⁴ While intuitive, the prediction has limited empirical support based around a correlation between size (number of employees) and the audit fee and interviews with a small number of owner managers. The process by which the auditor enhances the control system remains unclear.

In this study it is argued that an external audit can enhance internal control through its impact on the budgeting process. Mintzberg (1981, 1994) argues that an organization can be said to plan to the extent that it uses formalized procedures to make and integrate its decisions and then articulates results. Welsh *et al.* (1988) describe budgeting (or Profit Planning and Control) as a process designed to help managers effectively perform significant phases of the planning and control function.

Two explanations for the proposed association between audit and budgeting are provided. First, a financial statement audit will enhance the credibility of financial information used in the organization's budgeting process. By lending credibility to financial information, the audit enhances the quality of information used in (i) setting financial goals or standards and (ii) assessing or measuring performance. As the budgeting process becomes more sophisticated, there is greater incentive on owner/managers to engage the services of an auditor to ensure the credibility of information used in the budgeting process.⁵ Second, adapted from Chenhall and Morris (1993), who describe 'post completion audits' as feedback mechanisms providing information to evaluate efficiency in the implementation of investment projects and in assessing the accuracy of basic assumptions about such projects, we contend that the auditors' expertise and knowledge provide the owner manager with an opportunity to learn and improve processes via this feedback loop. The auditor's evaluation of the system of internal controls is likely to facilitate an

objective assessment of the farm's financial goals and standards and provides a performance feedback mechanism by which the owner manager is able to assess congruence between the budget strategy and outcomes.

1.1 Budgeting

The incentives for an owner manager to voluntarily engage in budgeting provide the backdrop for indirectly explaining demand for auditing. By understanding precisely which antecedents have an impact on budgeting will assist in explaining demand for voluntary audits. In addition, an understanding of these antecedents will also determine which variable(s), combined with budgeting, should be specified in relation to voluntary audit, that is, which third variable potentially provides a moderating influence on the association between budgeting and demand for audit, thus obviating model misspecification as well as confounding residual effects. Accordingly, the budgeting literature is briefly reviewed and some of the antecedents of budgeting are synthesized.

The extent to which the owner managed farm business utilizes the formal budgeting process as an internal control mechanism is unexplored. There is considerable research by management accountants investigating the link between budgeting and performance and factors that might moderate this link (Shield, 1997). Normative models of management accounting prescribe that budgeting contributes positively to the resource allocation process (e.g., Horngren *et al.*, 2011), but to the best of the authors' knowledge there is a paucity of accounting research outlining factors associated with budgeting.

However, there is an abundance of studies in the management literature that examine budgeting (i.e., both operational and strategic), and this process is primarily researched in the context of contingency theory and resource dependence (see Pearce *et al.*, 1987; Schwenk & Shrader, 1993). These theories argue that a firm's survival is dependent on its ability to adapt successfully to a changing environment, and provide deterministic explanations of organisational phenomena through structural factors (e.g., Perrow, 1970) such as technology and environment on the one hand, and explanations of organisational phenomena through the personalities (e.g., internal locus of control) and capacities of owner-managers (e.g., Miller *et al.*, 1982; Miller & Toulouse, 1986) on the other hand.

Research (e.g., Bourgeois, 1980, 1985; Lindsay & Rue, 1980) also shows that environmental uncertainty impacts on decision making and planning. For example, Lindsay and Rue (1980) found that large firms increase planning in the face of turbulent environments, whereas Matthews (1991) found that small firms prefer to plan under low uncertainty. Correspondingly, Robinson and Pearce (1984) argued that, owing to resource constraints and limited strategic options, small enterprises are less likely to plan, particularly in turbulent times.

Thus the current study examines the association between budgeting and the variables size (LnSIZE) and debt (DEBT), budgeting and personal characteristics such as internal locus of control (INLC) and family conflict (FAMCONF), as well environmental uncertainty (ENUN1) (see Appendix A). These variables have been chosen in an attempt to determine which combination of environmental and firm-specific variables will provide adequate explanations for voluntary demand for budgeting.

1.2 Hypotheses

Undertaking an analysis of voluntary demand for auditing among farm businesses allows for the identification of incentives arising from internal sources (owner manager). This study suggests that a potential benefit of external audit is to enhance internal control, specifically the budgeting process. A positive correlation between the sophistication of the budgeting process and external auditing is predicted. Thus the preceding argument is summarized in the following hypothesis:

H1: *In an unregulated farm business environment, demand for auditing will be positively associated with profit planning and control (budgeting).*

Derived from predictions in agency theory, we argue that personal conflict between owner-managers might explain demand for external audit. As previously stated, most farms are owned and managed by families, and conflict between family members might drive demand for monitoring and control. Prior research conjectured that personal conflict between family members might provide further incentive to engage the monitoring service of external audit (see Hope *et al.*, 2012; Carey *et al.*, 2001). Accordingly we predict that more strained personal relations between family members will provide an incentive to engage external audit. The preceding argument is summarized in the following hypothesis

H2: *In an unregulated farm business environment, voluntary demand for auditing will be positively associated with conflict among farm owners.*

2. DATA AND METHODS

2.1 Data Collection Procedure and Sample

Data subject to analysis comprised 457 Australian farm businesses drawn from a database of 748 broadacre and dairy farms compiled for a larger national study of farm management practices.⁶ This national survey, which randomly selected 4,080 farm establishments on the basis of Australian Bureau of Statistics (ABS) 1996-97 annual listing of key characteristics and industry information (i.e., farm establishments with an estimated value of agricultural operations of \$22,500 or

more were selected by state and sector), was conducted by the Family Business Research Unit, Monash University in 1999-2000.⁷

The national study used a questionnaire which comprised eight sections: Strategic and Operational Planning, Risk and Uncertainty, Farm Business Objectives, Business and Life Outcomes, Entrepreneurship, Family Functioning, Background of Farm Business, and Farm Owner Characteristics. This paper reports findings drawn from four sections of the questionnaire: Background of Farm Business, Strategic and Operational Planning, Business and Life Outcomes, and Family Functioning. Background of Farm Business assesses factors including the farm industry type, state in which the establishment resides; current value of farm; annual average change in total assets over 5 years; total income; current level of gearing; whether the farm establishment was a family farm; age of farm; generation of ownership; number of full-time employees; amount of dollars spent on casual employees' wages; whether farm business is subject to an annual financial report audit; and, major reasons for conducting an audit. Strategic and Operational Planning gauges the sophistication of business planning conducted by farm owners. Business and Life Outcomes measures the farm owner's internal locus of control, whereas Family Functioning assesses the extent of communication in family relationships.

Tests of responses revealed that respondents are comparable to the ABS population statistics for five of the six states, and for four of the six industries. Respondents are under-represented in New South Wales as well as in the wheat & other crops, and beef industries. Further comparisons against other ABS distributional data, such as education, age, and gender suggest that the sample is comparable to the population. Moreover, comparisons of average total income and average asset value of farm figures with those compiled by Australasian Agribusiness Services (1997) also suggest comparability.

Respondents confirmed that most Australian farms are family managed and controlled employing few staff. Over 88% of respondents view their farm as a family farm, and 92.4% indicate that more than 50% of the farm's share capital is owned by the family. Similarly, 88.7% of respondents indicate that they make more than 80% of farm management decisions. Of the 7.6% non-family owned farm enterprises, 0.2% are publicly owned. Approximately 53% of broadacre farm businesses have full-time employees, with the average having one full-time farm employee. However, 26.7% of farms indicate that they employ two or more full-time employees, and of these, only 5.5% employ four or more full-time employees. The median expenditure on casual employee wages for the financial year ending 30th June 1999 is \$4,000, with average casual wages highest for the sheep (\$14,813) and mixed livestock-crops (\$10,963) industries. Farm enterprises are largely free from agency conflict arising from the separation of ownership and control typical in listed public companies and among many private companies.

The typical family farm business has been owned for 58 years, with the age of farms ranging from one to 170 years. Median size of farms is 781.5 hectares, with the primary business activity being mixed livestock (35.7%), followed by sheep-beef producers (14.7%), beef (14.0%), and dairy farmers (13.6%). Reported median value of properties is approximately \$0.8 million, with total farm income averaging approximately \$284,000. The average gearing ratio of broadacre and dairy farmers is 20.4% (median 20%), ranging from 0% to a gearing ratio of 100%. Approximately 35% of farmers indicate gearing of 10% or less, an additional 40% a ratio of between 11 and 20%, and 25% gearing greater than 20%.

From the database of 748 broadacre and dairy farms, 291 businesses were deleted for the following reasons: (1) 97 responses were deleted to eliminate the potentially confounding effect of a regulatory requirement to audit; (2) two deleted to eliminate the effect of contractual requirements to audit; and (3) the remaining 192 responses were deleted where there were missing values for any one of the variables in the model. To assess whether deleted respondents differed significantly to our usable response group ($n=457$), they were compared on three key characteristics (i.e., current value of farm, total income, state, and industry). Independent samples t -tests indicate that there were no systematic differences between the two groups on current value of farm ($t = 0.95$, $df = 746$, $p = 0.3410$) and total income ($t = 1.46$, $df = 746$, $p = 0.1450$). Similarly, chi-square tests similarly reflect no systematic differences between the two groups on state characteristics ($\chi^2 = 8.84$, $df = 5$, $p = 0.1155$), but significant differences exist between the two groups on industry characteristics ($\chi^2 = 12.99$, $df = 5$, $p = 0.0235$), suggesting that sheep farmers were under-represented in this study.

2.2 Model Specification and Variables

A logistic regression analysis was used to predict discrete outcomes (i.e., to determine the probability of whether a farm business was subject to an annual financial report audit or not) on the basis of three continuous variables and one ordinal explanatory variable. The model was estimated to assess prediction of farms' voluntarily adopting an audit on the basis of size of farm business (LNSIZE), gearing (DEBT), budgeting (PLAN2), and family conflict (FAMCONF).

$$\ln \left[\frac{P}{1-P} \right] \text{Audit} = \beta_0 + \beta X_{LnSize} + \beta X_{Debt} + \beta X_{Plan2} + \beta X_{FamConf} + u \quad (1)$$

where,

AUDIT is a dichotomous variable, where 1 = the farm business is subject to an annual financial report audit, 0 = Otherwise;

LnSIZE is measured by the value of the farm's total assets, which includes land, buildings, livestock, supplies and equipment. A transformed measure of farm size (using the natural log) was included in the logistic regression analyses;

DEBT is a measure of the farm's gearing, defined as the proportion of a farm's total sales price retained after all debts had been paid;

PLAN2 is a composite variable comprising 6 items measured on an ordinal scale with the following classification: *No Planning*, *Some Informal Unwritten Planning*, *Some Formal Written Planning*, and *Sophisticated Formal Written Planning*. Adapted from Matthews and Scott (1995), it assesses the extent and sophistication of operational planning practiced by farm owners. Examples of items are: *Budgets are developed for cashflow* and *Budgets are better developed for equipment purchases*. Internal level of consistency for *Budgeting* is $\alpha = 0.87$;

FAMCONF is a 10-item composite measure of family conflict, which primarily gauges the extent of misunderstanding, interference, and difficulty in solving problems and making plans within a family unit. Adapted from Noller, Seth-Smith, Bouma, and Schweitzer (1992), items are measured on 6-point Likert scales ranging from 1=Totally Disagree to 6=Totally Agree. The reliability coefficient is $\alpha = 0.82$.

In addition to the logistic regression model described above, ordinal responses (No Planning, Some Informal Unwritten Planning, Some Formal Planning, and Sophisticated Formal Planning for budget planning) were predicted on the basis of five continuous variables and one dummy explanatory variable. Thus the second model assessed prediction of budget planning using an ordinal response logistic regression on the basis of size of farm business (SIZE), gearing (DEBT), internal locus of control (INLC), family conflict (FAMCONF), operational uncertainty (ENUN1) and whether the farm was subject to an annual financial statement audit (AUDIT).

$$\text{logit}[P(\leq j | x)]PLAN2 = \beta_0 + \beta X_{LnSIZE} + \beta X_{DEBT} + \beta X_{INLC} + \beta X_{FAMCONF} + \beta X_{ENUN1} + \beta X_{AUDIT} + u \quad (2)$$

where,

INLC is a 7-item instrument that measures the farm owner's internal locus of control (e.g., Working out the strengths of my farm business in some detail can often give me useful leads for the future). Adapted from Kaine et al. (1998), it assesses the degree of control people believe they have over their environment, and relates to beliefs about behavior, success, and failure. This measure was specifically

designed for mixed-farming operations such as broadacre and dairy farming. Assessed on 6-point Likert scales ranging from 1=Totally Disagree to 6=Totally Agree, the internal consistency is $\alpha = .73$.

ENUN1 is an 8-item measure, adapted from Matthews and Scott (1995, pp. 41-42), which assesses owners' perceptions of environmental or state uncertainty. That is, the ability of owners to understand or to predict the state of the operational environment within the context of limited information. Items (e.g., obtaining resources such as equipment) are measured on 6-point Likert scales ranging from 0=N/A; 1=Very Low Certainty to 5=Very High Certainty, and the internal consistency of operational uncertainty is $\alpha = .82$; and all other variables are as defined above.

3. RESULTS

3.1 Descriptive Results – Audit

Table 1 presents a basic summary of the survey results. Of the 457 observations, 121 (26%) farm establishments voluntarily engaged in an annual financial statement audit and 336 (74%) did not. The predominant reason offered by farm owners for conducting an audit was lender requirement (56%), followed by owner requirement (30%), and “other” (14%). Panel A in Table 2 presents basic univariate statistics. A univariate comparison of farm establishments revealed significant differences (SIZE ($t(423) = -2.73$, $p < 0.007$) and DEBT ($t(444) = 3.91$, $p < 0.000$)) in the expected direction for the two measures capturing size and debt of the farm business. As hypothesized, the level of gearing (DEBT) was higher for farm businesses that indicated *Yes* to an audit ($\bar{X} = 26.08\%$) compared with farms that indicated *No* to an external audit ($\bar{X} = 18.19\%$). With regard to farm size (SIZE), group comparisons revealed farm establishments that engaged an audit were significantly larger than farm businesses that did not ($\bar{X} = \$1,722,013$ versus $\bar{X} = \$1,262,409$, respectively).

A significant difference was observed for budget planning on demand for audit ($t(450) = -5.68$, $p < 0.000$), but no significant difference was observed for family conflict ($t(404) = -0.65$, $p > 0.05$). These results suggest that farm owners who conduct more sophisticated business planning ($\bar{X} = 3.44$) are more likely to demand an audit compared with owners who conduct less sophisticated business planning ($\bar{X} = 2.73$), whereas family conflict does not have an impact on their decision to conduct an audit.

Table 1. A Summary of Survey Results - Farm Businesses' Demand for Audit and Budgeting (Planning)

Farm Businesses' Demand for Audit			
	AUDIT		
	NO	YES	TOTAL
TOTAL	336 (73.5%)	121 (26.4%)	457
Farm Businesses' Demand for Budgeting (Planning)			
	PLAN2		
	f	%	
No Planning	25	5.5%	
Some Informal	143	31.8%	
Some Formal	133	29.6%	
Sophisticated	149	33.1%	
Total	457	100.0%	
Farm Businesses Demand for Audit by Demand for Budgeting (Planning)			
	AUDIT		
BUDGETING	NO	YES	TOTAL
No Planning	24	1	25 (5.6%)
Some Informal	107	36	143 (31.8%)
Some Formal	78	55	133 (29.6%)
Sophisticated	92	57	149 (33.1%)
Total	301 (66.9%)	149 (33.1%)	450 (100.0%)

Table 2. Univariate Statistics - Demand for Audit and Budgeting (Planning)

Panel A: Audit				
Variables ^a	All Observations (n = 457)	Yes Demand an Audit (n = 121)	No Demand an Audit (n = 336)	t-Value
	Mean (SD)	Mean (SD)	Mean (SD)	
SIZE	\$1,421,378 (\$1,466,487)	\$1,722,013 (\$1,845,032)	\$1,262,409 (\$1,193,441)	-2.73 (p < 0.007)
DEBT	20.86% (19.71%)	26.08% (21.94%)	18.19% (19.19%)	3.91 (p < 0.000)
PLAN2	2.97 (1.38)	3.44 (1.14)	2.73 (1.43)	-5.68 (p < 0.000)
FAMCONF	2.39 (0.84)	2.43 (0.85)	2.37 (0.84)	-0.65 (p > 0.05)

Panel B: Budget Planning						
Variables ^a	All Observations (n = 418)	No Planning (n = 22)	Some Informal Planning (n = 131)	Some Formal Planning (n = 123)	Sophisticated Planning (n = 142)	F-Value
	Mean (SD)	Mean (SD)	Mean (SD)	Mean (SD)	Mean (SD)	
SIZE	\$1,421,378 (\$1,466,487)	\$802,136 (\$763,586)	\$908,961 (\$968,385)	\$1,498,373 (\$1,409,771)	\$1,948,696 (\$1,774,525)	13.96 (p < 0.0005)
DEBT	20.4% (19.71%)	7.8% (17.8%)	17.5% (19.0%)	19.7% (19.4%)	26.2% (19.3%)	9.44 (p < 0.0005)
INLC	4.19 (0.76)	3.45 (0.84)	3.88 (0.69)	4.25 (0.72)	4.54 (0.67)	27.18 (p < 0.0005)
FAMCON F	2.39 (0.84)	1.97 (0.88)	2.46 (0.76)	2.44 (0.88)	2.33 (0.86)	2.21 (p > 0.05)
ENUN1	3.59 (0.99)	2.08 (1.39)	3.46 (0.97)	3.64 (0.91)	3.92 (0.76)	28.97 (p < 0.0005)

3.2 Descriptive Results - Budgeting

Approximately 6% (25) of farm establishments surveyed did not conduct any planning, 31.8% (143) conducted some informal unwritten planning, 29.6% (133) conducted some formal written planning, and 33.1% (149) conducted sophisticated formal written planning (see Table 1). The predominant reason offered by farm owners for conducting business planning was lender requirement (46.4%), followed by owner requirement (26.1%), contractual requirements with buyers and suppliers (3.3%), and “other” (19.5%). A univariate comparison of farm establishments revealed significant differences (SIZE ($F(417) = 13.96$, $p < 0.0005$) and DEBT ($F(435) = 9.44$, $p < 0.0005$)) in the expected direction for the two measures capturing size and debt of the farm business (see Panel B, Table 2). As hypothesized, the level of gearing (DEBT) was higher for farm businesses that indicated *Sophisticated Formal Written Planning* ($\bar{X} = 26.2\%$) compared with farms that indicated *No Planning* ($\bar{X} = 8\%$). With regard to farm size (SIZE), group comparisons revealed farm establishments that conducted planning were significantly larger than farm businesses that did not ($\bar{X} = \$1,948,696$ versus $\bar{X} = \$802.136$, respectively).

Internal locus of control (INLC) and operational uncertainty (ENUN1) were both significantly associated with planning, $F(416) = 27.18$, $p < 0.0005$) and $F(439) = 28.97$, $p < 0.0005$) respectively, but no significant difference was observed for family conflict $F(404) = 2.21$, $p > 0.05$). These results suggest that

farm owners with higher internal locus of control and those who perceive increasing certainty in their operational business environment are significantly more likely to use business planning procedure, and thus are more likely to demand an audit compared with owners who conduct less sophisticated business planning, whereas family conflict does not have an impact on their decision to conduct either budgeting or auditing.

Finally, AUDIT was found to be significantly associated with planning, χ^2 (3, N=450) = 19.49, $p < 0.000$), suggesting that planning and audit are complementary monitoring mechanisms.

3.3 Logistic Regression Results – Audit

AUDIT with its respective predictors was subjected to a sequential logistic regression analysis, first on the basis of size of farm and level of gearing, followed by the addition of budget planning and family conflict. Table 3 presents the results. An examination of the model on the basis of size of farm and level of gearing indicates that the two predictors adequately distinguished demand for audit among farm establishments, χ^2 (2, N=375) = 23.31, $p < 0.000$. After addition of budget planning and family conflict, model results were: χ^2 (4, 375) = 36.42, $p < 0.000$. Comparison of log-likelihood ratios for the model with and without budgeting and family conflict showed reliable improvement with the addition of the two variables, χ^2 (2, N = 375) = 13.12, $p < 0.001$. The overall correct classification rate for the first two variables in the model was 66.7%, whereas with the addition of budgeting and family conflict an overall classification rate of 71.0% was achieved.

According to the Wald criterion, LnSIZE and DEBT significantly predicted voluntary demand for audit ($z = 5.048$, $p < .001$ and $z = 8.966$, $p < .001$, respectively). With the addition of budgeting and family conflict in the model, budgeting was significantly associated with voluntary demand for auditing ($z = 15.259$, $p < .0001$), with LnSIZE and DEBT remaining significant ($z = 4.10$, $p < .05$ and $z = 8.292$, $p < .001$, respectively). This result confirms previous findings as to the impact of enterprise size and debt on voluntary demand for auditing (see Hope et al., 2012; Carey et al 2001; Blackwell et al 1998). However, demand for auditing is further explained by the sophistication of a farm's budgeting processes. This result provides some support to the relevance of a financial statement audit to an owner-manager and establishes the importance of the internal management incentive as an explanation for voluntary demand for auditing. (Table 3 shows regression coefficients and Wald statistics for each of the predictors).

Table 3. Logistic Regression Analysis of Voluntary Audit

AUDIT	Est Coeff.	S.E.	Wald test (z-ratio)
STEP # 1			
LnSIZE	0.252	.112	5.048***
DEBT	0.019	.006	8.966***
Constant Only Model	-2 Log Likelihood = 481.89		
Full Model	-2 Log Likelihood = 458.59		
Model Chi-Square	$\chi^2 = 23.31$, df = 2, p = .0000		
"Pseudo" R ² = .09			
STEP # 2			
LnSIZE	0.3068	.0748	4.10*
DEBT	0.018	0.006	8.292**
FAMCONF	0.027	0.137	0.038
PLAN2 ^a			15.259***
NO PLANNING	0.129	0.244	0.282
SOME INFORMAL	-0.611	0.256	5.688**
SOME FORMAL	-2.699	1.034	6.609**
CONSTANT	-3.485	2.020	2.976
Constant Only Model	-2 Log Likelihood = 481.89		
Full Model	-2 Log Likelihood = 445.47		
Model Chi-Square	$\chi^2 = 36.42$, df = 4, p = .0000		
Model Chi-Square	$\chi^2 = 13.12$, df = 2, p = .001		
(Model Improvement)			
"Pseudo" R ² = .09			

* p < .05; ** p < .01; *** p < .001

^aPLAN2 is an ordinal variable.

3.4 Ordinal Logistic Regression Results – Budgeting

To better understand the planning process of farm owners, *Budgeting* with its respective predictors was subjected to an ordinal logistic regression analysis on the basis of seven background characteristics: Size of farm, level of gearing, internal locus of control, operational uncertainty, family conflict, and audit. Table 4 presents the results. An examination of the model indicated that the predictors, as a set, adequately distinguished demand for budget planning, χ^2 (6, N=346) = 133.26, $p < 0.000$. An overall prediction rate of 75.0% for *Budgeting* was achieved.

According to the Wald criterion, LnSIZE and DEBT significantly predicted demand for budgeting ($z = 10.13$, $p < 0.0001$ and $z = 24.64$, $p < 0.0001$, respectively). Table 4 shows regression coefficients and Wald statistics for each of the predictors. Internal locus of control and operational uncertainty were also significantly associated with planning ($z = 33.12$, $p < 0.0001$ and $z = 6.98$, $p < 0.0001$, respectively), but not family conflict ($z = 0.25$, $p > 0.05$). These results

suggest that farm owners, who view themselves as having greater control over changes in their operating environments and hold higher levels of certainty, are more likely to conduct sophisticated business planning. Finally, AUDIT was found to be significantly associated with planning ($z = 5.67$, $p < 0.0001$). The incentive for an owner manager to voluntarily engage an external audit is explained by incentives to budget.

Table 4. Ordinal Logistic Regression Analysis of Voluntary Budgeting

PLAN2	Est Coeff.	S.E.	Wald test (z-ratio)
Dependent Variable			
NO PLANNING ^a	-1.280	0.967	1.751
SOME INFORMAL	11.080	2.040	29.512***
SOME FORMAL	12.797	2.067	38.316***
Covariates			
LnSIZE	0.696	0.139	24.949***
DEBT	0.030	0.006	23.119***
INLC	0.932	0.164	32.511***
FAMCONF	-0.062	0.135	0.212
ENUN1	0.332	0.147	5.080***
AUDIT	-0.579	0.243	5.675***
Constant Only Model -2 Log Likelihood = 837.11			
Full Model -2 Log Likelihood = 703.85			
Model Chi-Square $\chi^2 = 133.26$, df 6, $p = .000$			
"Pseudo" $R^2 = .32$			

* $p < .10$; ** $p < .05$; *** $p < .01$

^aAn ordinal variable with j categories requires a set of $j - 1$ dummy variables to capture all the distributional information contained in the original set of distinctions. The rationale for including $j - 1$ dummy variables for a variable of j categories follows directly from the requirements of the classical regression model. In particular, the presumption of no perfect collinearity among independent variables requires that none of the explanatory variables can be written as perfect linear combination of remaining explanatory variables in the model. Thus, a variable with four categories requires three dummy variables to represent all the information contained in the original ordinal variable. The fourth category, which serves as the reference group, is excluded from analysis.

3.5 Sensitivity Analysis

A possible explanation for the association between AUDIT and PLAN2 is the confounding and combined impact of LnSIZE and PLAN2 and DEBT and PLAN2 on voluntary audit. In untabulated analysis, additional analyses using logistic regression with interaction effects (LnSIZE by PLAN2 and DEBT by PLAN2) on AUDIT was conducted to ascertain the significance of this potential combined effect. An examination of the interaction model demonstrates that the association between voluntary audit and budgeting is not dependent on farm size (LnSIZE by PLAN2, $z = 2.610$, $p > 0.05$) or debt (DEBT by PLAN2, $z = 2.481$, $p > 0.05$). These results provide further confirmation that the sophisticated budgeting process and voluntary demand for audit are complementary mechanisms, and that this association is not confounded by the impact of farm size and debt on budgeting.

DISCUSSION AND CONCLUSIONS

This paper develops and tests two models of voluntary demand for audit and budgeting among a sample of farm owners in an unregulated environment. Results from our demand for audit model are consistent with findings from prior empirical research which demonstrates that demand for audit is positively associated with farm size and debt (see Hope *et al.*, 2012; Carey *et al.*, 2001; Abdel-Khalik, 1993; Blackwell *et al.*, 1998; Chow, 1982). While controlling for contractual constraints (i.e., Debt) and organisational characteristics (i.e., size), in an environment where agency conflict is at a minimum, we find support for H1 that audit is positively associated with budgeting. This relationship is consistent with audit enhancing internal control by playing a complimentary monitoring role in the farm enterprise. We find that farm owners who conduct more sophisticated business planning are more likely to voluntarily engage an external audit compared with owners who conduct less sophisticated business planning.

As most Australian farms are owned and managed by families, this study also examined whether personal conflict between owner-managers explained demand for auditing. Derived from predictions in agency theory, prior research has conjectured that personal conflict between family members might provide further incentive to engage the monitoring service of external audit. However, family conflict does not have a significant impact on the farmer's decision to conduct an audit, thus providing no support for H2.

In addition, results from our demand for budgeting model show that budgeting is not only positively associated with demand for audit (providing further support for H1), but is positively associated with farm size, debt, the owner-manager's internal locus of control, and environmental uncertainty. These results suggest that owners of larger farms who have a strong belief about their success and who perceive

greater environmental certainty are significantly more likely to utilize sophisticated business planning processes. This finding is in line with contingency theory, suggesting that variables such as environmental uncertainty and firm size are important variables for explaining voluntary budgeting.

While our study provides evidence that farm size, debt, and budgeting play an important role in voluntary auditing, the antecedent conditions of voluntary auditing and budgeting remain poorly understood. We recommend that further research into voluntary auditing and budgeting should include an in-depth examination of the internal processes of farm enterprises such as owners' individual business skills, core human resource competencies or capabilities, communication characteristics between generations, and the attitudes, values, and goals of significant other family members. Rigorous evaluation of these factors will enable the development of fine-grained benchmarking and best-practice resource-based models, which farm owners and professionals can use for competitive advantage.

Findings should be considered in the light of the following limitations. While tests of responses revealed that respondents are generally comparable to the ABS population, respondents are under-represented in New South Wales as well as in the wheat and other crops, and beef industries. The under-representation places constraints on the generalizability of findings to these groups. Replication studies are necessary to validate the present findings.

ACKNOWLEDGEMENTS

The authors acknowledge the helpful support of the Rural Industries, Research & Development Corporation (RIRDC) for providing funding support (Project No. UMO-20A).

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APPENDIX A: Definitions of Variables

AUDIT was a dichotomous variable, where 1 = the farm business is subject to an annual financial report audit, 0 = Otherwise;

LnSIZE⁸ is measured by the farm's total assets, which includes land, buildings, livestock, supplies and equipment. A transformed measure of farm size (using the natural log) was included in the logistic regression analyses;

DEBT is a measure of the farm's gearing, defined as proportion of a farm's total sales price retained after all debts had been paid;

PLAN2 is a composite variable comprising 6 items measured on an ordinal scale with the following classification: *No Planning, Some Informal Unwritten Planning, Some Formal Written Planning, and Sophisticated Formal Written Planning*. Adapted from Matthews and Scott (1995), it assesses the extent and sophistication of operational planning practiced by farm owners. Examples of items are: *Budgets are developed for cashflow* and *Budgets are better developed for equipment purchases*. Internal level of consistency for *Budgeting* is $\alpha = 0.87$.

FAMCONF is a 10-item composite measure of family conflict, which primarily gauges the extent of misunderstanding, interference, and difficulty in solving problems and making plans within a family unit. Adapted from Noller *et al.* (1992), items are measured on 6-point Likert scales ranging from 1=*Totally Disagree* to 6=*Totally Agree*. The reliability coefficient is $\alpha = 0.82$.

INLC is a 7-item instrument that measures the farm owner's internal locus of control (e.g., *Working out the strengths of my farm business in some detail can often give me useful leads for the future*). Adapted from Kaine *et al.* (1998), it assesses the degree of control people believe they have over their environment, and relates to beliefs about behaviour, success, and failure. This measure was specifically designed for mixed-farming operations such as broadacre and dairy farming. Assessed on 6-point Likert scales ranging from 1=*Totally Disagree* to 6=*Totally Agree*, the internal consistency is $\alpha = 0.73$.

ENUN1 is an 8-item measure, adapted from Matthews and Scott (1995: 41-42), which assesses owners' perceptions of environmental or state uncertainty. That is, the ability of owners to understand or to predict the state of the operational environment within the context of limited information. Items (e.g., *obtaining resources such as equipment*) are measured on 6-point Likert scales ranging from 0=*N/A*; 1=*Very Low Certainty* to 5=*Very High Certainty*, and the internal consistency of operational uncertainty is $\alpha = 0.82$.

¹ This optimal structure has endured despite the pressures of globalisation. However, the size and scale of farms has increased dramatically due to technological innovation, particularly during the latter part of the 20th century and into the 21st century.

- ² Abdel-khalik (1993: 35) argues that “in small companies with one level of hierarchy, the owner (manager) controls operations primarily by means of direct supervision and personal observation”. This conjecture suggests that auditing is unlikely among small owner managed organisations.
- ³ This is analogous to internal management demanding the services of an external audit as suggested by Chow *et al.* (1988).
- ⁴ “Indeed, a primary function of external audits is to evaluate the quality and adequacy of internal control systems” Abdel-khalik (1993: 37-38).
- ⁵ The audit also provides indirect assurance to the credibility of non-financial data. The audit process, and in particular the new audit methodologies, place increasing reliance on non-financial information as audit evidence. The auditor does not explicitly report on the credibility of non-financial information, but in relying on non-financial information during the audit process there is indirect assurance as to its credibility. The audit therefore complements the non-financial dimension to profit planning and control.
- ⁶ The study of farm management practices was commissioned by the Rural Industries, Research & Development Corporation (RIRDC).
- ⁷ Details of procedures used in the national study are reported in Tanewski *et al.* (2000).
- ⁸ Abdel-khalik (1993) uses employees as a proxy for firm size in non-agricultural enterprises. However, in our agricultural sample approximately 50% of respondents indicated they did not employ full-time employees and over 25% stated they only employed one full-time employee. Moreover, farm businesses “typically [involve] two to three people” (Lloyd & Malcolm, 1997: 74) and indeed most family farms tend to use only family members to contribute to the labour of the enterprise (see Alston, 1997 and Lees, 1997).