



Accounting for complex entities: implications for ARMS

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complex entities

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Abstract

Purpose – The purpose of this research is to examine the effect of accounting for complex organizational forms on data collection with the Agricultural Resource Management Survey (ARMS).

Design/methodology/approach – This research reviews the literature from accounting theory along with the goals of data collection for policy analysis to draw conclusions about the applicability of accounting pronouncements.

Findings – Historically, the financial data collected in ARMS were based on financial accounting standards which were adequate for most purposes. However, this study develops the fact that many of these financial accounting standards were created to provide information for equity market transactions. The complexities of accounting for consolidations will provide valuable information, but implementing these standards will require accounting sophistication that is not prevalent in agriculture.

Originality/value – By drawing accounting theory together with the targeted use of data, this study offers guidelines to improve the data quality for a growing complex US agriculture.

Keywords Accounting for consolidations, Generally Accepted Accounting Principles (GAAP), Accounting Principles Board Opinion 16, Agriculture, Accounting, United States of America

Paper type Research paper

The question of collection of financial data under the Agricultural Resource Management Survey (ARMS) points to several primary conflicts in data collection for policy purposes. The policy goals of ARMS are laid out in the National Academies Report on the technical sampling aspects of the survey:

The Agricultural Resource Management Survey (ARMS) is the federal government's primary source of information on the financial condition, production practices, and resource use on farms, as well as the economic well-being of America's farm households. ARMS data are important to the U.S. Department of Agriculture (USDA) and to congressional, administration, and industry decision makers when they must weigh alternative policies and programs that touch the farm sector or affect farm families (National Research Council, 2007, p. 1).

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Thus, the mission statement of ARMS as defined by this report of the National Academies of Sciences is multifaceted. ARMS includes questions on production practices and resource use that contribute to the analysis of environmental policies in addition to its questions on the financial position and performance of the farm business and household. The scope of this review of ARMS is focused primarily on the effect of agricultural, environmental, and macroeconomic policy on the financial condition of the farm business and the well-being of the farm household. This paper further defines this general analysis to questions involving “complicated” business firms. Specifically, the classical sole-proprietor organization of historical US agriculture has given way to a variety of ownership forms from traditional partnerships, joint ventures, and corporations to more esoteric contractual arrangements in livestock marketing to wholly owned subsidiaries for owning equipment and land.

On accounting and measurement

What advantages does he derive from the system of bookkeeping by double-entry! It is among the finest inventions of the human mind (Johann Wolfgang von Goethe, Wilhelm Meister, 1824 (Quoted by King, 2006, p. 1))

Most would agree that measures based on accounting principles are relevant for measuring the effects of alternative agricultural, macroeconomic, and environmental policies on the farm firm and, probably to a lesser degree, on the farm household. These accounting principles may be modified slightly for specific characteristics of the farm firm as discussed by the Farm Financial Standards Council *Financial Guidelines for Agricultural Producers* (1997). Most notably, using historical costs to value farmland may significantly understate the equity of the farm firm; understating the firm’s credit worthiness. However, while accounting measures provide a basis for measurement of certain financial concepts, the realities of a survey and the policy-maker user of the information may require modifications to a variety of accounting concepts. Even with these caveats, the accounting implications of other accounting considerations such as accounting for consolidations may be policy relevant.

The presentation of accounting as a business study has changed significantly in the eyes of the public over time. Students of accounting in the 1980s viewed accounting as the only discipline in the college of business with a well-recognized certification (the American Institute of Certified Public Accountants (AICPA) administered the AICPA examinations primarily focusing on financial accounting standards) which would lead to a legal sanction to make statements on accounting documents. This linkage between the AICPA examination and the Certified Public Accounting license made the accounting major popular among sophomores and juniors. However, courses like financial accounting, auditing, accounting for federal taxation, fiduciary and governmental accounting and accounting for consolidations lessened most students’ enthusiasm for the discipline. Students engaged in the more rigorous courses understood that the structure of the accounting programs was to prepare the student for the AICPA exam. Thus, the courses tended to be long on understanding the promulgated rules of accounting and short on theory. Regardless of this friction between accounting as a discipline and accounting as a pursuit of certification, accounting was held in high regard by students, business professionals, and the public at large through the early 1980s. Starting in the middle of the 1980s, accounting began to be rocked by a series of high profile failures:

On Sunday, April 8, 1984, the phone rang in my Hoboken apartment. A Big Eight audit manager, my boss's boss, shared in a raspy voice that we had an accounting crisis [...] The manager had learned that a client had amassed a sizeable lend position and sustained adverse interest rate changes. Financial statements recently filed with the Securities and Exchange Commission (SEC) made no mention of the investment or holding loss [...] Two decades later, accounting scandals reached American business. In just 12 months, industry giants Enron, Global Crossing, and WorldCom imploded. Arthur Anderson & Company – their auditor, my [T.A. King's] employer, and once the planet's mightiest certified public accountant (CPA) firm ceased to exist. And Congress enacted the most sweeping securities law since the Great Depression (King, 2006, p. 1).

This meltdown of the accounting industry led to the reduction of the Big 8 accounting firms first to the Big 6 and eventually to four major accounting entities providing the majority of auditing services particularly for public traded companies and government entities.

Apart from the structure of the accounting industry, the well publicized "accounting crisis" lifted the veil around accounting. It provided the public a better understanding of the possible roles of accounting and the possible short-falls of accounting information. The crisis also accelerated the movement to develop a theory of accounting, which had been stalled in a host of voluntary organizations charged with the development of accounting standards (i.e. generally accepted accounting principles (GAAP)).

This manuscript draws on four themes from accounting, economics and mathematics:

- (1) Who are the relevant users of accounting or sample information?
- (2) What effects will complicated ownership of operational firms have on the classical information?
- (3) What are the most important ownership or operational complexities emerging in US agriculture?
- (4) How could these complexities affect data collected for agricultural policy?

Users of accounting and economic information

In discussing the users and the types of accounting information generated, King emphasized four general groups of users:

- (1) Individuals involved in ownership transactions whose data requirements are the subject of GAAP manifested currently through the Financial Accounting Standard Board (FASB).
- (2) Users of accounting information internal to the firm – historically referred to as cost accounting, more recently referred to as managerial accounting (Demski, 2008).
- (3) Taxation or the collection of government revenue. This use is codified in the US Tax Code.
- (4) Regulatory users such as government oversight of utilities.

Each use of information is governed by a different set of principles and operates under a different authority. The set of principles taught in business schools (mostly by accounting departments) are the financial standards of accounting. That is

the set of reporting standards that regulates the exchange of business information in an ownership transaction (i.e. the sale of stock or providing debt):

Financial accounting, the primary dialect, allows lenders and investors to access the amount, timing, and certainty of a corporation's future cash flows. Creditors want to know if they'll get their money back; stock investors care about whether they can expect substantial future dividends. Financial accounting principles merged to match revenues with expenses and determines a corporation's ability to pay interest or dividends from business activity in a given period (King, 2006, p. 4).

Most farm businesses in the US fit somewhat irregularly into this mold. The ownership structure of commercial agriculture in the US is largely sole proprietorships with a few closely held partnerships and corporations. Thus, the ability to adequately represent earnings potential (or earnings per share) to possible investors who would purchase newly issued stock or for the enrichment of current owners of common stock is not important for the majority of farms in 2012. (However, there may be a scale bias with larger farms increasingly interested in this dimension). The ownership aspect of interest under the current debt structure is the credit market. Thus, financial statements are important to farmers who want to obtain a mortgage to purchase land, borrow to purchase equipment, or obtain an operating loan to put a crop in the ground. In this transaction, the farmer represents his credit-worthiness to the potential lender or a potential outside equity investor to give evidence of repayment capacity.

This use of accounting is still markedly different from the typical use of formal accounting statements. Most traded companies are required to produce financial statements on a quarterly basis. This requirement implies issuing these statements to the public and formally filing these reports with the SEC. To meet these requirements, corporations either maintain internal accounting systems or contract for bookkeeping firms (which are markedly different in function than CPA firms that issue audit opinions). While the advent of accounting software such as QuickBooks has brought more systematic bookkeeping to the farm sector, there is no rigorous periodic reporting of operating results to a third party (regulatory entity). The creation of financial accounting information by farm firms is sporadic at best. Further, anecdotal evidence still exists of farmers applying for loans with shoeboxes of paystubs and invoices.

The state of farm accounting systems and the lack of a regulator (such as the relationship between commercial banks and the Federal Reserve System) significantly limits readily available financial accounting information for agricultural policy (and is a justification of the ARMS effort). This lack of a rigorous financial reporting system also raises questions about the reporting mechanics of certain advanced accounting concepts such as accounting for consolidations.

Apart from the use in establishing lending contracts, the most prevalent use of accounting in agriculture is for purposes of taxation. A college tax accounting course undertaken by one of the authors during the passage of the Economic Recovery Tax Act of 1981, was notable in that the professor maintained that any similarity between tax accounting and financial accounting (i.e. the other 21 hours of required accounting coursework) was unimportant: "The purpose of most accounting was to depict the financial result of the firm's operations, but the purpose of tax accounting was to collect government revenue". Of course, certain choices in financial accounting placed constraints on tax treatments (i.e. the selection of inventory valuation must be the same in the financial statements and tax statements). However, other aspects, such as

depreciation, may differ. Further, the ability of farm firms to use cash accounting for tax purposes further complicates the interactions. Taken together, the cash basis accounting and the incentive of farmers to reduce tax liability, limit the usefulness of tax results as a farm policy measure. In addition, the effect of complex organizational firms on tax reporting is also problematic particularly where the ownership of the entities differs.

Finally, the usefulness of cost accounting information in the measurement of the effect of complex business firms is also problematic. The role of cost accounting systems is to be useful for making managerial decisions. In the corporate world, cost accounting information informs pricing decisions, provides information on product line creation or retirement, and determines plant investment, replacement, or closure. One dominant theme in these applications is the allocation of plant and overhead costs across product lines. In the difference between the economic paradigm and the accounting approach, the profit margin must be set to cover these unallowable costs for the services of the firm. To their defense, these internal markets for intermediate products between related firms are not "single price" in the same sense as the agricultural commodities. Some efforts toward cost or managerial accounting have occurred in the farm sector (centered on quantifying the return for certain enterprises (e.g. crops)). In fact, some of the movement to complex business structures such as the creation of an entity, which provides harvesting to the firm or a group of firms, may be traced to enterprise accounting embodied in the cost accounting approach. Similarly, the creation of "land trusts" to hold land among a group of heirs that then rents land to the heir remaining in agriculture (either by cash or share rent) could imply the use of cost accounting information.

Financial accounting for consolidations

From a financial accounting standpoint, the effect of complicated ownership forms can be divided into balance sheet effects and the effect of consolidations on income reporting (largely through the recognition of income).

Fischer *et al.* (1982) offer a fairly standard introduction to the accounting problems related to consolidations. As a starting point, they describe a scenario where a company wants to acquire the assets of another company. This acquisition can be accomplished in one of two ways. First, the acquiring company could buy the assets of the acquired company. In this case, the acquired company will cease to exist. As the assets are liquidated, the acquired company pays off its debt and then pays the residual to the stockholders. The corporate charter is retired. A second approach would be for the acquiring firm to purchase a controlling interest or possibly all the voting stock of the acquired firm. In the 1970s and 1980s, the second approach gained popularity. If the acquired firm purchased all the outstanding shares, the resulting organization was referred to as a merger. If the acquiring company purchased more than 50 percent, but less than 100 percent, the acquiring firm is referred to as the parent and the purchased firm is called the subsidiary.

Creation of complex ownership forms in agriculture implies several levels of complexity. Moving from a sole proprietorship to either a corporate form or a more formal partnership would require farmers to move from cash basis accounting to accrual systems (largely impacting their reported income) and from market valued balance sheets to historical cost basis (potentially having a significant effect on their balance sheet).

While these relationships raise a host of accounting considerations, for the purpose of evaluating potential changes to ARMS it is useful to consider the economic incentives for

such acquisitions. One way to think about acquisitions is whether the acquired firms operate in the same industry either as competitors or in an upstream/downstream relationship. The acquisition of peers (horizontal integration) may be motivated by either economies of size (where neither individual firm is sufficiently large to survive on its own) or pursuit of market power. In either case, the announcement of such a merger may result in an inquiry from the Department of Justice under Clayton-Sherman Anti-Trust regulations. An acquisition within an upstream/downstream relationship is typically referred to as vertical integration (as opposed to horizontal integration). At the present time, vertical integration does not raise the same regulatory concern as horizontal integration (unless the vertical integration results in the elimination of a rival in the firm's original market).

In either case, the benefits from integration are typically described in the tradeoff between diseconomies of scope and transaction costs (as described by Coase (1937), Grossman and Hart (1986) and Williamson (1985)). Diseconomies of scope are described as the loss of efficiency due to managing production that is not part of your core business. Transaction costs are typically developed in the context of exploiting market power due to asset specificity (i.e. reducing the marketability by tailoring your product to the needs of a single client). In the case of farm firms, horizontal integration is a common occurrence as firms attempt to capture economies of scale (either real or perceived). Given the competitive nature of agricultural markets, such integrations rarely raise the concern of the Department of Justice.

Vertical integration is less significant, but does arise in specialized livestock operations (cattle feeding, pork production, and poultry operations) and for vegetable production operations such as potato production. Instead of outright ownership, control is usually maintained through contracts. Another case of vertical integration occurs in the case of sugar production (both sugarcane and sugar beets). In such cases, harvest is dependent on swift processing introducing a hold-up problem where the mill owner can enforce terms on the farmer. This structure has resulted in vertical integration between the producer and the sugar mill (Moss and Schmitz, 2002). In fact this integration has extended to the ownership of sugar refineries.

Apart from the scenario where the production relationship justifies the acquisition, another reason for the acquisition of one company by another is to make productive use of capital (either financial, human, or physical). For example, a firm may have captured the maximum share of a "mature market" allowed by regulators (i.e. any expansion would not be allowed under anti-trust regulations). Alternatively, the firm may possess underutilized managerial services, or even to acquire specialized managerial services. Both expansion scenarios are referred to as a conglomeration. In the case of the firm in the mature market, acquiring assets in another industry may yield higher returns than other uses of excess capital. Neither of these scenarios appears significant for agriculture.

Another form of conglomeration occurs when the individual firms are not large enough to access a specialized market. For example, individual dairies may create a corporate or partnership form to build a cheese plant where their combined sizes allow access to a volume market.

Under either scenario (productive merger or conglomeration), the question is the effect of the combination on the balance sheet and the appropriate recognition of income. The balance sheet effects are regulated by Accounting Principles Board Opinion 16. This opinion essentially states that the proper balance sheet representation

would be the same as if the merger had been accomplished by the purchase of assets. Hence, the opinion requires that efforts be made to place a market value on the transferred assets. If the estimated market value of assets was less than the purchase price, a goodwill account for the deficit is created and goodwill is amortized over 45 years. Finally, under certain conditions the book value of the acquired firm could be used after the merger under the terms of a stock swap.

The income statement effects of a merger (as well as either a parent/subsidiary or any ownership greater than 25 percent) is through the recognition of income and expense on inter-firm transactions. Specifically, goods transferred within the integrated firm do not constitute an arms-length transaction so profits on these transactions cannot be recognized. Thus, while the cost of goods sold can be recognized on the balance sheet as the cost of inventory, the profit can only be recognized when the product leaves the integrated firm. The transfer of goods and services between related firms may affect the farm sector. Return to the scenario where the farmer creates an entity that provides custom operations. Presumably, the charge for a custom operation (i.e. custom harvesting) includes both the direct and indirect cost of the service, and a certain amount of profit. In this scenario, the "consolidated farm income statement" would not include this charge for profit.

Changes in consolidations and implications for the farm firm

The accounting intricacies of the consolidated firm culminate in a 13 column balance sheet and considerations of majority and minority interests. However, as previously stated, such considerations are only binding in the audited accounting reports to external users. If the farm firm does not raise capital from the stock market, the reporting requirements are between the farmer and his banker. Typically assets are valued at best market value and debt is valued at the terms of the contract. Further, income may be reported on the cash basis. Thus, the terms of APB 16 do not apply.

In addition, the merger mechanics of the 1970s and 1980s were replaced by the reverse tendency of the leveraged buyout and the corporate raiders of the late 1980s and 1990s. This trend broke apart conglomerations and corporations under the conjecture that the sum of the parts was greater than the whole. Basically, the parts were worth more separately than the stock value of the firm.

Another trend was the use of creative financing through Special Purpose Entities:

[...] Enron exploited a quirk in consolidated accounting rules to make extensive use of the special purpose entity (SPE). Corporations had long used SPEs to carry out specific activities that required the creation of a bankruptcy-remote subsidiary. Typically a sponsoring corporation creates an SPE to support an asset transfer, such as the sale of receivables. The SPE borrows money from third parties, uses the proceeds to buy assets from the selling corporation, and offers divisible interests to investors. Such SPEs ensure investors receive promised cash flows in the event of financial distress suffered by sponsors (King, 2006, p. 190).

Under certain conditions the SPEs were not subject to normal reporting for consolidation (i.e. outside investors provided equity financing for at least 3 percent of the SPEs assets). Enron used unconsolidated SPEs to borrow money that would not appear as debt on its balance sheet: "Chief financial officer Andrew Fastow stretched the 3 percent rule and oversaw a Byzantine network of perhaps 3,500 SPEs under management control" (King, 2006, pp. 190-1). Thus, the popularity of consolidations and other esoteric sub-entities has largely vanished from the business lexicon.

Discussion and implications

The issue of complex entities and ARMS then involves two general groups of issues. The first group of issues are accounting theoretic and sampling issues involved in using financial measures to depict the financial condition of the farm sector. The second group involves the actual policy issues related to complex business organizations.

The preceding analysis lays out the account/measurement issues in some detail. In all likelihood the accounting systems in place in the agricultural sector are not sufficiently sophisticated to appropriately report the implications of complex ownership forms to GAAP standards. Given this fact, what are the potential implications for the reported data? First, intrafirm transactions are probably misstated, most typically in the case where goods or services are transferred between different firms with the same ownership. Thus, income may be understated. The case of intrafirm transactions includes custom harvesting, feed grains or silage transferred from a cropping entity to a livestock entity, and land rentals from a "land trust".

The second major effect is on the balance sheet. At one extreme, we have the valuation of assets acquired in an equity transaction. Given that the corporate form is a rarity in agriculture, this is probably a minor consideration. More problematic may be the message of the special purpose entity (SPE) made famous by the downfall of Enron. Specifically, the creation of a special entity for the purpose of debt financing (for example to buy and operate farm equipment) understates the endemic risk of the agricultural firm. If this organization becomes popular, it has the potential to understate the risk of the sector without recognizing this potential in ARMS. Similarly, the emergence of "land trusts" to hold farmland could understate the asset base of the farm sector.

Regardless of the accounting/measurement issues, the real question is the extent to which the complex organizations affect the policy goals of the US embedded in agricultural policy. At one level the question is simply do these emerging complexities improve the well-being of farm households or the profitability of farm businesses? In a related question, do these activities change the asset base or liabilities of the sector in such a way to make farm household or farm business at higher risk of financial stress (such as those experienced in the 1980s). In our opinion, measuring these changes represents the emerging challenge to the USDA in the ARMS effort.

The problem is that the diversity of emerging ownership forms and enterprises (including value-added enterprises which could be considered outside traditional agriculture) makes a systematic (or one-size fits all) analysis infeasible. It is highly unlikely that a single innovation in ownership is supplanting the traditional, simple sole proprietorship form. Further, diversification into valued added output is more feasible for certain crops and locations. Thus, financial innovations may be particularly well suited to specific farm sizes (large or very large farms), while valued added processing may be spatially important. Additional survey work and sample framing may be required to determine each effect.

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