Accounting, Organizations and Society 35 (2010) 757–774

Contents lists available at ScienceDirect

Accounting, Organizations and Society

journal homepage: www.elsevier.com/locate/aos

The effect of depreciation method choice on asset selling prices ☆

Scott B. Jackson [a,*], Theodore C. Rodgers [b], Brad Tuttle [a]

[a] University of South Carolina, Moore School of Business, Columbia, SC 29208, USA
[b] Emory University, Goizueta School of Business, Atlanta, GA 30322, USA

ABSTRACT

In this study, we examine whether an accounting choice that firms make for external financial reporting purposes influences the selling prices that managers seek to obtain when they dispose of used capital assets. From a normative perspective, managers should obtain the highest possible selling prices for used capital assets regardless of the firm's depreciation method choice. However, theory predicts that depreciation method-induced differences in accounting book values will cause managers to systematically deviate from this normative prescription. Using multiple contexts, methodologies, and participant groups, we consistently find that managers sell used capital assets that have been depreciated using accelerated depreciation for lower prices than identical used capital assets that have been depreciated using straight-line depreciation. This effect even endures in the presence of fair value information about the asset being sold. We also provide theory-consistent evidence that depreciation method-induced differences in accounting book values influence managers' asset selling price decisions because of the mental accounting process that they employ. Our study has economic efficiency implications for an array of situations in which depreciable assets are commonly sold.

Introduction

This study examines whether an accounting choice that firms make for external financial reporting purposes influences the selling prices that managers seek to obtain when they dispose of used capital assets. Firms sell used capital assets in connection with divestitures, spinoffs, restructurings, reorganizations, downsizings, liquidations, fire sales, declining efficiency, plant and subsidiary disposals, productivity shifts, refocusing efforts, resource shortfalls, routine asset replacements, and earnings management.[1] In peak expansion years during the period 1974–1992, approximately 7% of plant assets changed ownership through mergers, acquisitions, and outright asset sales (Maksimovic & Phillips, 2001). When selling used capital assets, managers

☆ We are grateful to two anonymous reviewers, Arthur Allen, Wendy Bailey, Tim Doupnik, Louis Fayard, Bud Fennema, Vicky Glackin, Erin Hamilton, Noah Jackson, Kelvin Liu, Tom Lopez, Elaine Mauldin, Molly Mercer, Terence Pitre, Tammie Rech, Leigh Salzsieder, Bryan Stewart, Carlton Tartar, Scott Vandervelde, Rich White, Jennifer Winchel, Yi-Jing Wu, and workshop participants at Brock University, Florida State University, the University of Nebraska-Lincoln, the University of South Carolina, the 2008 American Accounting Association Annual Meeting, and the 2009 New England Behavioral Accounting Research Series for helpful comments.

* Corresponding author. Address: School of Accounting, Moore School of Business, University of South Carolina, Columbia, SC 29208, United States. Tel.: +1 803 777 3100; fax: +1 803 777 0712.

E-mail address: scott.jackson@moore.sc.edu (S.B. Jackson).

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doi:10.1016/j.aos.2010.09.004

[1] Studies that examine contexts in which used capital assets are sold include Ahn and Denis (2004), Atanassov and Kim (2009), Bartov (1993), Bates (2005), Colak and Whited (2007), Dittmar and Shivdasani (2003), Gaumnitz and Emery (1980), Herrmann, Inoue, and Thomas (2003), Hillier, McColgan, and Werema (2009), Hite, Owers, and Rogers (1987), Howe and McCabe (1983), John, Lang, and Netter (1992), John and Ofek (1995), Kang and Shivdasani (1997), Lang, Poulsen, and Stulz (1995), LoPucki and Doherty (2007), Maksimovic and Phillips (1998), Maksimovic and Phillips (2001), Mauer and Ott (1995), Pulvino (1999), Schlingemann, Stulz, and Walkling (2002), Warusawitharana (2008), and Yang (2008). These studies generally adopt an economics-based theoretical framework, which does not address whether and why psychological factors influence managerial decision making with respect to asset selling prices. Indeed, the aforementioned studies do not focus on the possible connection between accounting book values and managers' asset selling price decisions. Our psychology-based theoretical framework suggests that such a connection may exist.

should attempt to obtain the highest possible selling prices. This objective is simple and intuitively appealing, but our results suggest that it may be difficult to follow.

There are at least two factors that managers should ignore when making asset selling price decisions—historical costs and accounting depreciation (Blocher, Stout, Cokins, & Chen, 2008; Garrison & Noreen, 2003; Hilton, 2002; Horngren, Sundem, & Stratton, 2005; Titard, 1993). Historical costs are irrelevant because they relate to the past and cannot be changed regardless of any current decision. Likewise, accounting depreciation is irrelevant because it represents a method of cost allocation, not asset valuation (Kieso, Weygandt, & Warfield, 2007; Libby, Libby, & Short, 2007). Indeed, reductions in an asset's book value need not (and usually do not) mirror the deterioration profile of the asset or changes in its fair value.[2] As a result, depreciation method-induced differences in accounting book values are irrelevant when making asset selling price decisions, and these differences are even more clearly irrelevant when fair value information about the asset being sold is simultaneously available.

This study draws upon research on mental accounting (Prelec & Loewenstein, 1998; Thaler, 1985, 1999) and mental depreciation (Gourville & Soman, 1998; Heath & Fennema, 1996) to predict that depreciation method-induced differences in an asset's accounting book value will influence managers' asset selling price decisions.[3] Specifically, we contend that structural and relational similarities between mental depreciation and accounting depreciation will cause managers to apply mental accounting processes from the consumer domain of their lives to seemingly parallel situations involving depreciable business assets. If so, managers may be psychologically predisposed to sell used capital assets that have been depreciated using accelerated depreciation for lower prices than *identical* capital assets that have been depreciated using straight-line depreciation. Further, because mental accounting is spontaneous and may occur with minimal effort (Kahneman & Tversky, 1984), we expect that depreciation method choice will have a robust effect on managers' asset selling price decisions even when managers simultaneously receive fair value information about the asset being sold.

To test our prediction, we conduct five separate experiments using: (i) multiple decision contexts (sales through trade publication, trade-in, auction, and consignment), (ii) multiple methodologies (experiments with and without financial incentives), and (iii) multiple participant groups (practicing managers, experienced MBA students, and accounting students who have in-depth accounting knowledge). In each experiment, we manipulate the firm's depreciation method choice, which causes the asset's accounting book value to vary. At the same time, we hold the asset's historical cost and physical attributes constant. We also manipulate the asset's fair value in order to examine the possibility that participants use accounting book value as a proxy for fair value. If participants use book value in this manner then depreciation method-induced differences in accounting book values should have no effect on managers' asset selling price decisions in the presence of fair value information.

Our experiments reveal a robust depreciation method choice effect even when there are compelling reasons to expect that it will be absent. In each experiment, participants sell used capital assets that have been depreciated using accelerated depreciation for significantly lower prices than used capital assets that have been depreciated using straight-line depreciation. Even when participants simultaneously receive fair value information, our experiments reveal that depreciation method-induced differences in the asset's accounting book value continue to exert a strong influence on participants' asset selling price decisions. These findings arise even though participants hold equivalent beliefs about the asset's physical condition. In addition, our experiments provide theory-consistent evidence that mental accounting processes at least partly underlie the depreciation method choice effect that we document. Finally, we provide an array of tests that help rule out alternative explanations for our experimental findings.

This study makes two main contributions to the accounting literature. First, our study provides initial evidence, which is consistent across contexts, methodologies, and participant groups, that the price for which managers sell used capital assets is influenced by an accounting choice that firms make for external financial reporting purposes. A number of studies argue that decision errors and biases arise because individuals fixate on summary accounting numbers without paying adequate attention to the accounting methods that were used to generate those numbers (Arunachalam & Beck, 2002; Hand, 1990; Luft & Shields, 2001). In contrast to these studies, we provide evidence consistent with the view that depreciation method-induced differences in accounting book values influence managers' asset selling price decisions not because managers fail to pay attention to accounting methods, but because of the particular meaning that managers ascribe to accounting information.[4] Indeed, the close

[2] It is common to see significant gains and losses on asset disposals in firms' financial statements. Such occurrences are evidence that the accounting book values of assets frequently diverge from their fair values. However, what cannot be determined from financial statement data is whether accounting book values influence managers' asset selling price decisions.

[3] Bowen, DuCharme, and Shores (1995) find that 68.7% of firms use the straight-line method only, 25.1% use a combination of the straight-line method and an accelerated method, and 4.9% use an accelerated method only. The remaining 1.3% of firms use an unclassified method or their method is missing.

[4] In addition to this literature, researchers have also explored whether firms' depreciation method choice has market-related consequences (Archibald, 1972; Beaver & Dukes, 1973; Kaplan & Roll, 1972), contracting consequences (Holthausen, 1981; Holthausen & Leftwich, 1983; Leftwich, 1981; Ricks, 1982; Watts & Zimmerman, 1986), and capital investment consequences (Jackson, 2008; Jackson, Liu, & Cecchini, 2009). Studies on market-related consequences suggest that investors correctly decipher the valuation implications of different depreciation methods (Ricks, 1982). Studies on contracting consequences indicate that a firm's depreciation method choice may be value relevant even in the absence of market-related consequences because earnings influence how the cash flows of the firm are divided among contracting parties (Watts & Zimmerman, 1986). Studies on capital investment consequences suggest that accelerated depreciation is associated with larger capital investments than straight-line depreciation (Jackson, 2008; Jackson et al., 2009). However, none of these studies examine whether a firm's depreciation method choice influences managers' asset selling price decisions.