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The Impact of Tax Investment Incentives: A Review of the Academic Literature

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ABSTRACT

Federal tax policies often have involved tax incentives intended to increase capital spending by businesses and promote economic growth. Bonus depreciation and/or accelerated depreciation, along with investment tax credits and increased Section 179 expense deduction allowances, have been very popular incentives used by Congress in the past few decades to stimulate business spending. Economic theory states that a decline in the total cost of productive assets would spur an increase in the quantity demanded, because, all else equal, lowering the cost of any item increases the quantity demanded of that item. Basically, lowering the cost of an asset is an incentive to invest more and to produce more. Empirical research on the impact of tax incentives on economic growth has proven to be inconclusive, even though Congress is still implementing tax incentives to stimulate economic growth. This article provides a literature review of the results of prior empirical studies that examine the impact of various tax policy incentives on capital investment decisions. This review illustrates why academic research does not inform tax policy discussions. *Key words: Tax incentives, economic growth, tax policy*

Introduction

Economists often recommend increasing capital investment spending by reducing the cost of capital through tax incentives such as accelerated depreciation and the investment tax credit. Federal tax policies often have involved tax incentives intended to increase capital spending by businesses and promote economic growth. Accelerated depreciation was introduced in 1954, followed by the investment tax credit in 1962. Those who framed the 1954 Internal Revenue Code characterized it as a comprehensive revision undertaken “to remove inequities, end taxpayer harassment, and lower tax barriers to economic growth” (Schindler, 1959, 616). Within this framework, accelerated depreciation was designed “to assist modernization and to promote industrial expansion which in turn would foster increased production and a higher standard of living” (Schindler 1959, 616).

In 1981, the Accelerated Cost Recovery System (ACRS) provided sharp increases in depreciation benefits; however, the Tax Reform Act of 1986 modified accelerated depreciation and repealed the investment tax credit. The Job Creation and Worker Assistance Act of 2002 and the Growth Tax Relief Reconciliation Act of 2003 both provided depreciation tax incentives of some kind in the year of acquisition of a long-lived asset. The American Jobs and Creation Act of 2004 extended many of these incentives through December 31, 2005. The Economic Stimulus Act of 2008 provided additional depreciation incentives and increased the Section 179 deduction, and the American Recovery and Reinvestment Act of 2009 extended them. The Small Business Jobs and Credit Act of 2010 substantially increased the incentives. The American Taxpayer Relief Act of 2012 extended bonus depreciation and

Section 179 expensing through 2013. Congress extended the incentives retroactively for 2014 at the eleventh hour with the passage of the Tax Increase Prevention Act of 2014. For tax years beginning after 2014, the increased section 179 expense deduction limit and threshold amount before reduction in limitation will no longer apply (unless Congress acts). Congress intended for these incentives to promote capital investment and to generate economic growth. However, the rules have been changed so frequently and often retroactively as to potentially impact the effectiveness of the incentives.

Such frequent use over the past 50 years suggests that Congress believes that tax incentives are an effective tool for promoting capital investment and economic growth. The theory behind the use of tax incentives is that accelerated tax deductions and other investment tax credits reduce the cost of capital needed to purchase new investments through the time value of money. The Congressional House Committee relied on this theory when implementing the Job Creation and Worker Assistance Act of 2002 and the Growth Tax Relief Reconciliation Act of 2003. The committee felt that bonus depreciation incentives would stimulate equipment purchases and foster economic recovery by increasing employment and expanding business opportunities (U.S. Congress 2003). However, despite the continued use of tax investment incentives by policy-makers, academic research concerning the effectiveness of tax incentives has provided inconclusive findings. The conclusions drawn by researchers examining the sensitivity of investment to changes in the cost of capital are affected by the assumptions, the methods of analysis, and the statistical techniques used by the researchers. Therefore, there are sizable bodies of research on both sides concerning the effectiveness of tax policy investment incentives. The remainder of this article provides a

literature review of the results of prior empirical studies that examine the impact of various tax policy incentives on capital investment decisions. This review illustrates why academic research does not inform tax policy discussions.

Literature Review

The enactment of accelerated depreciation for tax accounting in 1954 drew the attention of academic researchers. The first article that appeared in 1962 was a call for research into this area and a steady stream of studies has followed, albeit with conflicting results.

Early Studies

The first study expressed the hope that academic research on the impact of cost recovery tax incentives would expand and be useful to tax policymakers. In 1962, E.C. Brown wrote an article discussing the investment process and the impact that fiscal policy could potentially have on it. Brown (1962) discusses the modified depreciation adjustments of 1954, and the potential impact of the tax credit recommended by the Kennedy Administration, a tax credit intended to stimulate investment in plant and equipment. Brown discusses the differences between depreciation adjustments and tax credits and analyzes the potential impacts these tax incentives could have on investment behavior. Brown (1962) concludes that investment-stimulating devices, such as depreciation adjustments and investment tax credits, are a fascinating chapter in fiscal policy and deserve detailed study. Brown urges research in this area and he states, “If economists are to be useful to those designing policy, it behooves us to press on with our study of investment decisions to give them breadth and depth comparable to our knowledge of consumer behavior” (Brown 1962, 344).

Prior to the 1967 article, “Tax Policy and Investment Behavior” by Hall and Jorgenson, very little, if any, empirical research concerning the impact of tax policy incentives had been performed. The purpose of their research was to study the relationship between tax policy and investment expenditures using the neoclassical theory of optimal capital accumulation (Hall and Jorgenson 1967). Hall and Jorgenson examined the effects of accelerated depreciation methods adopted in 1954 and the investment tax credit of 1962. They also investigated the depreciation guidelines of 1962 and considered the hypothetical effects of adoption of first-year write-off in 1954 as an alternative to accelerated depreciation.

Hall and Jorgenson (1967) used data on investment expenditures for structures and equipment separately, for both manufacturing and non-farm, non-manufacturing sectors of the U.S. economy for the years 1929–63. Based on their research findings, Hall and Jorgenson (1967) concluded that the effects

of accelerated depreciation were very substantial, especially for investment in structures, and that the depreciation guidelines of 1954 were significant with respect to investments in equipment. Hall and Jorgenson (1967) also concluded that the effects of the investment tax credit of 1962 were dramatic and left no doubt about the impact of tax policy on determining investment behavior. Their overall conclusions were “that tax policy is highly effective in changing the level and timing of investment expenditures” and “that tax policy has had important effects on the composition of investment” (Hall and Jorgenson 1967, 392).

Jorgenson and Siebert (1968) extended the prior research by studying the theory of corporate investment behavior based on the neoclassical theory of optimal capital accumulation in more detail. The neoclassical theory of corporate investment behavior assigns an important role to the cost of capital and also considers the rate of change of the price of investment goods. Changes in this price result in capital gains and losses that must be included in the calculation of economic profit or loss; holding all else constant, a high rate of change of prices of investment goods should provide an incentive to use more capital, while a low rate of change should serve as a disincentive (Jorgenson and Siebert 1968). The price of capital depends on the cost of capital, the price of investment goods, the rate of change in the price of investment goods, and the tax structure (Jorgenson and Siebert 1968). Under this theory, the firm chooses a production plan that will maximize its value. Jorgenson and Siebert (1968) evaluated the effects of inflation on the level of investment, along with other determinants, including the cost of capital, the level of prices on investment goods, and the tax structure.

Jorgenson and Siebert (1968) attempted to avoid biases that could arise from inappropriate homogeneity assumptions by analyzing the data using both time series and cross-sectional models. Jorgenson and Siebert (1968) developed two alternative versions of the neoclassical model of investment. In the first model, the rate of change of the price of investment goods is assumed to influence investment decisions directly. The second model assumes that the rate of change of the price of investment goods is transitory and without direct effect on investment behavior. These two models were used to evaluate investment behavior for 15 large manufacturing firms from a wide variety of industry groups. Jorgenson and Siebert (1968) concluded that inflation does have an impact on investment and should be taken into account when performing research, but they also supported previous research and concluded that the theory of corporate investment behavior based on the neoclassical theory of optimal capital accumulation does suffice to explain corporate investment behavior.

Coen (1968) performed research based on the accelerated depreciation incentives implemented in 1954, the investment tax credit of 1962, and the tax rate reductions provided by

the Revenue Act of 1964. This research utilized two models to investigate the influence of tax incentives on investments. These models provided results that contradicted the earlier findings of Hall and Jorgenson. According to the model developed by Coen, a reduction in the user cost of capital will produce a one-shot increase in the desired stock of capital (Coen 1968, 209). Policies that produced an estimated \$5.1 billion in tax savings in manufacturing from 1954 through mid-1962 increased manufacturing capital expenditures by only \$2.0 billion during the same period, and policies that produced an estimated \$8.6 billion in tax savings from mid-1962 through the third quarter of 1966 increased expenditures by only \$2.8 billion (Coen 1968, 210). Coen (1968) concluded that the performance of the tax incentives has been disappointing but does admit that a decisive judgment on the effectiveness of tax incentives is impossible unless one is willing to accept the merits of his two investment models.

Taubman and Wales (1969) studied the impact of investment tax subsidies in a neoclassical growth model, in particular the 1962 tax credit and the switch from straight-line depreciation to accelerated depreciation. This study developed a new model but does not incorporate the research methods used by Jorgenson and by Coen. Taubman and Wales (1969) concluded that although output is higher after 1962 than would have occurred with no tax incentives, the overall impact of these tax incentives falls short of their intended results.

Several researchers heeded the call for studies on the impact of tax investment incentives in order to influence policymakers. The first empirical study concluded that tax investment incentives were effective in impacting the level, timing and composition of investments. The papers that appeared later in the 1960s reported less positive influences.

Studies in the 1970s

Researchers in the 1970s continued with this line of study and introduced new methods and approaches. A study by Chisholm (1974) examines the effects of tax policy investment incentives on the optimal replacement decisions for farm machinery. This study develops a discrete time period model for evaluating the impact of tax incentives on investments and then applies the model to a case study on the optimal replacement ages for farm tractors in Australia. Results indicated that the tax policy investment incentives did substantially increase the optimal replacement age for farm machinery, providing evidence that tax policy does influence investment behavior. Chisholm (1974) noted, however, that results indicated that changes in the time pattern of the tax-deductibility of depreciation in general will have only minimal influence on optimal replacement decisions.

Coen (1975) attempted to examine the economic impact of depreciation using a new approach: an indirect method that

attempted to infer patterns of economic depreciation from the behavior of actual capital expenditures in 21 manufacturing industries. Results showed that accelerated depreciation methods increased the present values of tax depreciation relative to economic depreciation by about ten percentage points. In general, Coen's findings indicated that tax depreciation incentives do have a positive impact on investment behavior.

Brimmer and Sinai (1976) used simulations based on the 1975 Data Resources, Inc. (DRI) quarterly econometric model of the United States to study the effects of several tax proposals, including increasing the investment tax credit and instituting an inflation allowance for depreciation. Each tax subsidy tested in their research raised business fixed investment, the stock of plant and equipment, and the production capacity of the economy as measured by potential gross national product (GNP). Results also indicated that depreciation investment incentives were superior relative to the investment tax credit. Brimmer and Sinai (1976) concluded that tax reform would bring a significant improvement in capital formation and business liquidity, but tax incentives were not necessarily the most effective strategy for accomplishing these tasks. Brimmer and Sinai believed, "A more effective strategy could be the pursuit of macro-economic policies designed to raise aggregate demand and reduce the excessively high level of unemployment" (1976, 307).

Parker and Zieha (1976) studied the impact of the temporary increase of the investment tax credit introduced by the Tax Reduction Act of 1975. They developed a measurement model to determine the extent to which the Act compensated for the recent changes in the rate of inflation experienced in the United States. Their purpose was to measure the overall incentive toward capital investment provided by these tax provisions under various rates of inflation. Parker and Zieha (1976) applied their measurement model to 572 cases representing various combinations of investment credit rates, asset lives, and rates of inflation. Results indicated that increasing the rate of investment credit from seven percent to ten percent was not sufficient to offset the penalty resulting from tax accounting on an historical cost basis, given recent inflation experience in the United States. However, the results also indicated a sizeable difference in the benefits yielded depending on an asset's useful economic life.

Rennie (1977) examined how the cost of capital influenced investment expenditures in privately owned class A and B electric utilities, which represented 76.4 percent of all electricity sold in the United States during 1969. This study adopted the neoclassical theory of optimal capital accumulation developed by Hall and Jorgenson and researched the impact of the 1954 accelerated depreciation allowances, the investment tax credit of 1962, and the subsequent suspension, re-instatement, and repeal of the investment tax credit in 1966, 1967, and 1969 respectively. His research found that accelerated depreciation

from 1954 resulted in a reduction of the cost of capital of 7.67 percent, causing a 22.4 percent increase in production plant expenditures from 1957 through 1969. Rennie (1977) also determined that the 1962 investment tax credit reduced the rental cost of capital by 2.57 percent and increased the capital stock by 12.72 percent from 1965 through 1969. This study found that the suspension of the investment tax credit in 1966 resulted in decreases of capital stock, the 1967 reinstatement resulted in subsequent increases, and the repeal of 1969 resulted in decreased amounts. Based on his research findings, Rennie (1977) concluded that tax-policy incentives did indeed affect the amount and timing of fixed investments in the private class A and B electric utility industry. Studies in the 1970s saw the introduction of new methods and approaches. In particular, the research focused on specific industries or segments of the economy. The results of these studies showed a generally positive impact from tax investment incentives; although depreciation incentives were found to be superior to the investment tax credit.

Studies After 1981 and Prior to the Tax Reform Act of 1986

The Accelerated Cost Recovery System (ACRS), introduced in 1981, was the most liberal allowance of cost recovery in the history of income taxation in the U.S. For the first time the recovery period allowed for tax purposes was shorter than the economic useful life. In addition, accelerated depreciation was prescribed and investment credits were allowed. These capital recovery allowances amounted to virtual expensing of eligible equipment. With these developments, research continued into the early 1980s.

Coen and Hickman (1984) studied the long-run effects of tax-policy incentives based on simulations using the Hickman-Coen Annual Growth Model. This model was designed to study U.S. economic growth for intermediate and long-run time periods, and analyze business investment, among other items. This study considered four separate scenarios involving changes in tax policies. Coen and Hickman (1984) concluded that changes in personal income taxation do not have permanent effects on economic activity, but that the outcome is strikingly different for a tax-policy incentive directly affecting business investment. Their results indicated that depreciation liberalization under the 1981 tax act raised the level of long-term growth by over one percent and that these tax-policy incentives also foster a permanently higher level of productivity.

Bosworth (1985) investigated the impact of the tax policy changes that occurred in 1981 and 1982 on investment expansion in the early 1980s. Overall, investment spending increased during the sample period. The increases, however, were not correlated with the asset categories receiving the largest tax incentives. Results showed no correlation between the in-

vestment growth in certain asset categories and the relative tax incentives for each category. Bosworth (1985) noted that office equipment and automobiles accounted for almost 93 percent of the growth in this study, but the legislation of 1981 and 1982 provided no changes or incentives for automobiles, and they actually decreased the rates on computers. Results indicated that depreciation allowances can greatly increase cash flow in the short run, but have a smaller effect on the price of an asset over its lifetime. Bosworth (1985, 34) stated that his results “need not imply that the neoclassical model of investment behavior is wrong in its focus on changes in the price of capital”. Overall, Bosworth (1985) believed that the tax system has become so complex that tax policy incentives intended to promote certain activities may result in far different outcomes in practice.

Chirinko (1986) examined the relationship between tax policy and business investment using four different classes of investment models included in previous research. Chirinko reviewed the theory, key assumptions, and empirical results generated by these four classes of investment models. He stated that prior research has shown a significant relationship between tax policy and investment behavior, but he believed these results to be based on assumptions that arguably led to upward biases. Chirinko (1986) concluded that investment behavior may respond to tax policy incentives, but that significant supporting empirical evidence has yet to be generated.

Shapiro (1986) studied the impact of the cost of capital within the framework of the neoclassical theory of investment. This study used U.S. private business firm-level data for the period 1955 to 1983. Shapiro (1986) concluded that investment and the cost of capital are either uncorrelated or only weakly correlated, but that investment and output are strongly correlated. His observation that investment and output are strongly correlated while the cost of capital has little correlation with investment weighs against the neoclassical model. Other researchers in this area, however, have noted that correlation is not causation, and that weak correlation does not imply that changes in taxation have no effect on investment. Olivier Blanchard commented that the weak correlation could have stemmed from “omitted variable bias” between user cost and an omitted productivity variable that makes the correlation appear insignificant (Shapiro 1986, 155). Blanchard also explained how the small correlation could result from other factors, such as the small variance in user cost.

Halvorsen (1991) researched the effects of tax policy on investment in agriculture. This study uses aggregated annual time-series data covering 1955 through 1978. The effects of tax policy on agricultural investment during the sample period are investigated by simulating demand equations for equipment and structures using actual rental prices as well as the rental prices that would have existed under three alternative tax policy scenarios (Halvorsen 1991). Halvorsen (1991) con-

cluded that tax policy incentives over the sample period did increase agricultural spending on equipment and structures, giving support to the impact of tax incentives.

In summary, the period between 1981 and 1986 was the time of the most generous capital recovery allowances in the history of U.S. income taxation and researchers delved into the effectiveness of these liberal incentives. One conclusion that can be drawn from academic research during this time period is that the effectiveness of the incentives was different across asset classes. Another lesson learned from academic research during this period was that the complexity of the tax system may result in different outcomes in practice. Studies later in this period began to question assumptions on which this line of research relies and thus cast doubt on the effectiveness of the investment incentives.

Post-Tax Reform Act of 1986 Studies

The Tax Reform Act of 1986 made significant modifications in the allowance of capital recovery costs. The investment tax credit was repealed. ACRS was replaced by Modified Accelerated Cost Recovery System (MACRS). MACRS lengthened the recovery period over which depreciation is calculated.

Auerbach and Hassett (1992) derived and estimated models of investment behavior and studied how tax policy investment incentives impacted this behavior. Their estimates suggested that tax policy incentives that lower the user cost of capital have played an important role in investment behavior, particularly for investment in machinery and equipment. Auerbach and Hassett (1992) concluded that tax policy changes affect the level and pattern of investment significantly, although their impact has not always been a stabilizing factor. They believed that further work was needed to explore the various impacts that tax policies could have on investment behavior before any definitive conclusions could be drawn.

Cummins and Hassett (1992) analyzed disaggregated firm-level investments impacted by the Tax Reform Act of 1986. The Tax Reform Act of 1986 repealed the investment tax credit and generally extended depreciation lifetimes, both of which could potentially impact capital investments. Cummins and Hassett (1992) found strong evidence of the impact of tax policy on investment and concluded that there is a significant relationship between the cost of capital and equipment investment. They also concluded that there was a strong relationship between the cost of capital and structures investment.

Davis and Swenson (1993) studied the impact of tax incentives on the demand for capital investments by developing controlled laboratory markets. Prior research, such as Chirinko (1986), had noted the difficulties in this area of econometric research caused by the numerous estimations needed, including (1) purchase cost of a unit of capital, (2) financial cost of

capital, net of inflation, (3) rate of depreciation, (4) rate of income taxation, (5) rate of investment credit, (6) net cost of debt finance, and numerous other estimations. According to Davis and Swenson (1993), the difficulties in calculating proper estimates for these variables highlight the general limitations of econometrics in certain settings. They chose, therefore, to create a laboratory model to eliminate these restrictions. The results of their experiments did not support the neoclassical prediction that depreciable asset investment will increase in response to tax policy incentives, such as accelerated depreciation or investment tax credits. The experimental results indicated that the demand for investment was unresponsive to tax incentives because equipment suppliers captured the tax benefits for themselves by increasing the prices of the depreciable assets.

Clark (1993) examined the effects of tax incentives on aggregate investment behavior and focused exclusively on investment in durable equipment. Clark believed that the long-run attitude of investors would be better served by a stable policy, rather than by ever changing tax-policy incentives. Clark (1993) concluded that the investment tax credit was not appropriate for short-run fine tuning of fiscal policy. Clark's evidence indicated that changes in the investment tax credit had only minimal and delayed effects on equipment investment and that an investment tax credit is unlikely to have socially beneficial effects.

A study by Wasylenko (1997) analyzed the state of the literature concerning the role of taxation on economic development. Wasylenko (1997) noted that policymakers believed that tax incentives influenced economic behavior, and historical evidence had shown that government tax policy often included incentives intended to foster growth. However, researchers have struggled over the past 20 years to determine the extent to which tax policy incentives influence the level and distribution of employment and investment, particularly in state and local regions. The majority of studies relating economic development to tax policy can be said to use ad hoc empirical specifications, so, at best, these studies demonstrated statistical association rather than showing the true nature of the relationship between tax policy and economic development (Wasylenko 1997). Wasylenko (1997) believed that the results from previous research in this area were driven by variations in the data, changing time periods, as well as other factors. Wasylenko (1997) concluded the results were not very reliable and changed depending on the variables included in the model and/or the time period analyzed.

Goolsbee (1998) examined the estimated response of real investment to changes in the cost of capital created by tax policy incentives. His findings indicated that much of the benefit of investment tax incentives does not go to investing firms but rather to capital suppliers. According to Goolsbee (1998), a ten percent investment tax credit increased equipment prices

3.5–7.0 percent, so a large part of the subsidy's reduction in the effective purchase price of equipment for investing firms is simply lost to the capital suppliers. Goolsbee stated, "Only about 60 percent of investment subsidies go to the buyers, with the remaining 40 percent going to capital suppliers" (1998, 138). Overall, results indicated that investment spending was responsive to investment tax policy, but in the short run, the increased demand for investment mainly increased capital goods prices rather than quantities. Goolsbee (1998) claimed these results indicated that investment tax subsidies might provide largely unintended benefits for capital suppliers.

A study by Hassett and Hubbard (1998) examined whether investment tax incentives were blunted by changes in prices of capital goods. This study explored this topic by estimating the extent to which industrialized countries are price takers in the world market for capital goods. Results from the study indicated that most countries, including the United States, face a highly elastic supply of capital goods, suggesting that the effect of investment incentives on the price of investment goods is small. Therefore, tax policy investment incentives were likely to result in real investment rather than simply being dissipated in changes in capital-goods prices.

A later study by Goolsbee (2000) examined the potential bias arising from measurement error in the cost of capital and the impact this bias could create when studying the impact of investment incentives. Using panel data on different types of capital equipment, Goolsbee (2000) tested for the presence of measurement error in the tax term and calculated the implied size of such an error, and he examined how important the measurement error is for conventional estimates of investment. Findings provided direct evidence of measurement error in the tax component of the cost of capital accounting for about 20 percent of the tax term's variance. After correcting for the error, Goolsbee (2000) concluded that taxes significantly affect both prices and investment and that conventional results may be off by as much as a factor of four.

Studies in the era after the Tax Reform Act of 1986 showed mixed results. Some studies showed evidence that the incentives had been effective; while others did not. New methods and approaches such as laboratory experiments were tried in order to overcome perceived shortcomings in previous research efforts. The idea that suppliers raised prices, thus negating the benefits of the tax incentives, was explored. As earlier studies had concluded, the effectiveness of the investment tax credit was found to be lacking. Additional concern was expressed about the uncertainty and instability of the policy towards investment incentives. Another study faulted previous research and stated that policymakers enact tax incentives to influence economic behavior despite the fact that the benefits have not been proven. The research of this period is generally more critical of prior studies and also provokes more skepticism about the effects of investment incentives.

Studies After 2002

Starting in 2002, legislation has been more favorable in promoting investments in capital assets. Bonus depreciation and expensing of assets have been available to varying extents in order to stimulate investment during these tough economic times. A number of studies have investigated the effectiveness of these provisions.

Cohen et al. (2002) examined the effects of the bonus depreciation incentives provided in the Job Creation and Worker Assistance Act of 2002. This study utilized the results derived from prior research, such as Hall and Jorgenson (1967) and Auerbach and Hassett (1992), to evaluate the impact of the law on the marginal cost of equipment investment and whether the temporary nature of the incentive increased or decreased the stimulus associated with the tax reduction. Results indicated these tax-policy provisions significantly increase the incentive to invest in equipment. Cohen et al. (2002) modeled these tax incentives as a complete surprise, but noted that many firms may well have anticipated them in advance, which would have likely restrained investment prior to enactment. Cohen et al. (2002) also found that the temporary nature of the incentives provided more immediate stimulus than a permanent tax cut would have for base case parameters, but they stated that this conclusion was not theoretically robust.

A study by Desai and Goolsbee (2004) examined the related issues of capital overhang and taxes using data at the industry, the asset, and especially the firm level. More specifically, they studied whether over-investment in the 1990s caused the low investment of the 2000s and whether investment spending in the 2000s became less sensitive to prices. They hoped to determine why the tax-policy incentives provided in 2002 and 2003 seemed to have been ineffective in restoring investment to normal levels. Desai and Goolsbee (2004) found little correlation between the investment boom of the 1990s and the investment declines of the 2000s, and they found evidence of small investment increases in various industries. Desai and Goolsbee (2004) concluded that these minimal increases were not evidence that tax-policy incentives were ineffective. Rather, the short-run effect of the incentives was simply too small to counteract the double-digit declines that occurred in the 2000s. In the comments section of this paper reviewer Kevin Hassett states, "the authors have favored some extreme assumptions that are not supported by their empirical work, all aligned in a manner to make the tax cuts seem ineffective. A more balanced assessment of the recent impact of the tax reforms would certainly be more favorable" (Desai and Goolsbee 2004, 339).

Goolsbee (2004) studied the impact that tax policy investment incentives can have on the quality composition of capital goods that firms purchase. Detailed data on farming, mining, and construction machinery suggested that this impact is econom-

ically important. Goolsbee (2004) concluded that increased capital investment spending generated by tax policy investment incentives appeared to be driven by firms shifting to higher quality capital goods rather than buying larger numbers of existing capital vintages, allowing suppliers to reap some of the gain through higher prices from tax benefits intended to increase output. Goolsbee even goes as far as stating that “all” of the increase in investment from tax subsidies comes from an upgrade to higher quality purchases and not from quantity increases (2004, 521). In addition, Goolsbee (2004) believed that this quality response was specifically tied to tax policy because increases in investments for other purposes did not generate the same effect.

A study by Miller et al. (2008) researched the impact of the bonus depreciation incentives of 2002 and 2003 on capital expenditures in the general aviation market, which includes all aviation other than commercial and military aircraft. This study attempted to quantify the impact of bonus depreciation incentives on the manufacture and delivery of general aviation aircraft in the United States. This research was performed using sample data from the general aviation industry, provided by GAMA (an international trade association representing 56 of the world’s leading aircraft manufacturers), covering 1987 through 2005. Results from Miller et al. (2008) revealed that bonus depreciation incentives did not have a statistically significant impact on the shipment of general aviation aircraft in the United States. The results, however, indicated that the bonus depreciation incentives contributed to a significant shift in the sales mix of general aviation aircraft manufactured from piston to turbine aircraft. Basically, the bonus depreciation incentives did not significantly increase the number of aircraft purchased, but the incentives did cause investors to purchase more expensive, higher quality aircraft.

House and Shapiro (2008) studied the effects of temporary investment tax incentives using a model to determine the impact of investment subsidies, specifically examining the bonus depreciation allowances included in the 2002 and 2003 tax bills. This study used quarterly data from the Bureau of Economic Analysis (BEA) covering 1959 through 2006. House and Shapiro (2008) found that temporary investment tax incentives did alter the timing of investment decisions, and they concluded that bonus depreciation incentives passed in 2002 and then increased in 2003 had a powerful impact on the composition of investment. Capital that benefited substantially from the tax policy saw sharp increases in investment, with no evidence that market prices increased due to the policy. The general results held for only the specific circumstance of a sufficiently temporary change in the cost of purchasing capital goods; however calculations showed that even changes in tax policy that last for several years can be safely modeled as temporary.

Hulse and Livingstone (2010) examined the effect on capital expenditures of bonus depreciation tax incentives that were enacted as part of the 2002 and 2003 Tax Acts. This study used quarterly firm-level data covering 1990 through 2006. After controlling for many previously documented determinants of capital expenditures, results indicated that capital expenditures during bonus depreciation’s availability were greater than those during the time it was not available. However, Hulse and Livingstone (2010) noted that other results indicated that bonus depreciation had an insignificant effect on capital expenditures, and these mixed findings persisted through several sensitivity analyses. Overall, Hulse and Livingstone (2010) interpreted their results as weakly supportive evidence that Congress attained its goal of stimulating capital spending.

Edgerton (2010) estimates how corporate losses may mitigate the impact of tax incentives like bonus depreciation. This research estimates investment responses to tax incentives allowing effects to vary with cash flows and taxable status. Results from Edgerton (2010) provide evidence that firms are more responsive to tax incentives for investment when their cash flows are high. Edgerton (2010) concludes that tax incentives have the smallest impact on capital investment exactly when they are likely to be put in place, during downturns in economic activity when cash flows are low.

Bunker and Shughart (2014) examined the economic impact of regional tax policy incentives included in the Gulf Opportunity (GO) Zone Act of 2005. The GO Zone Act provided tax incentives, such as increased section 179 limits, 50 percent bonus depreciation and tax-exempt bond financing, for businesses and individuals to encourage the rebuilding and rehabilitation of hurricane-stricken areas. Bunker and Shughart (2014) utilized linear mixed-effects modeling and multiple regression procedures with a matched sample panel data set from 2002 through 2008 containing real-world county-level economic data and attempted to minimize some of the issues addressed by prior empirical research. They concluded that the tax incentives provided by the GO Zone Act did not generate significant increases in key economic indicators included in their study.

Based on our observations of the academic research studies after 2002, as with research in the prior period, the research results from this time period are mixed. Many of the studies focused attention on the timing of the provisions as temporary incentives and whether their impacts were short term or long term. Other studies showed that the incentives led to a shifting to higher quality acquisitions; thus changing the mix of products sold but not the quantity.

Conclusions And Areas For Future Research

The research studies covered in this literature review analyzed the impact of tax policy incentives on capital spending

utilizing various techniques. The majority of prior empirical studies in this area has been based on firm-level data and tested using some form of econometric model or regression equation. However, there have been a few studies that used other methods, such as controlled laboratory experiments and case studies. The overall results, while still inconclusive, tend to show that tax policy incentives do have a positive impact on capital spending and economic growth. However, skepticism has increased over time as more recent studies have cast doubt on the assumptions, methods, and results of earlier studies. Tax policymakers continue to use investment incentives to spur capital spending and foster economic growth, regardless of the lack of conclusive evidence about their effectiveness. Table I summarizes the empirical research findings covered in this literature review.

Lessons Learned and Unanswered Questions

This study of empirical research related to investment tax incentives conducted since the adoption of accelerated depreciation for tax purposes has revealed a few lessons, but generates a number of unanswered questions. Federal and state legislators have continued to enact investment incentives throughout this period in response to economic crises in spite of the lack of evidence that these provisions are effective. If academic researchers want their voices heard by policymakers and legislators, their research needs to be more effective in answering these questions. This review of the literature did not reveal specific reasons for the inconsistent results, or any suggestions for improving the research, but the authors call on researchers to find solutions. Otherwise, these concerns call into question the value of the research. The primary conclusion of this study that looked at the effectiveness of the research into the impact of the tax investment incentives reveals that there is little reason for policymakers to rely on this work.

Among the few lessons that the research reveals are that a number of methods and assumptions have been tried and all have been subjected to criticism. Results vary across economic sectors and classes of assets. There is potential for suppliers to increase prices and thus negate the tax benefits. Studies show that the investment tax credit is a less effective incentive than depreciation allowances or other capital recovery methods. (Given that the investment tax credit has not reappeared since its repeal in 1986, perhaps this lesson was learned by Congress.) Incentives can impact the mix of products sold as buyers choose higher quality goods. The increased complexity of the tax system has made it more difficult to predict how the incentives will function in the economy.

Many questions are left unanswered. The results of these studies are influenced by the assumptions, the methods of analysis, and the statistical techniques used by the researchers. Perhaps this is just an inherent limitation that explains the inconclusiveness of these academic studies. The authors acknowledge that it is

possible that academic research is relied on by Congressional staff, but not referenced in Congressional committee reports. If so, how are differences in results reconciled to determine which studies to utilize? In an attempt to be thorough, the review in this paper covered studies over the past 50 years. Caution is needed when comparing studies from many years ago to more recent studies. For example, the role of physical capital in production processes is much different in recent years than decades ago due to the increasing role of intangible assets. In addition, the global economy has become much more integrated and may have affected the role of physical capital in production processes. For these reasons, the studies were separated into time periods and little consistency in results could be found even among results within a separate time frame. Some might argue that finding conflicts across time periods is not surprising because the specific reasons for implementing the policies and the economic circumstances may have been different. Thus, the policies might have differing effectiveness. The circumstance that led Congress to pass investment incentives have differed. For example, bonus depreciation has been made available to taxpayers a number of times such as when it was enacted in 2002 in reaction to the terrorist attacks and at other times during economic downturns. Different tools have been used over time, but with the exception of the investment credit, these tools accomplish the same result of accelerating the timing of cost recovery. However, the purpose in each instance was to spur capital spending.

Only academic research in the area of tax investment incentives was reviewed in this paper, studies of other tax policy issues should be examined to determine whether those results are more consistent and how much impact those studies have had on policy discussions.

The primary unanswered question is whether tax investment incentives have significant impact on the level, timing and composition of asset acquisitions. Another major question relates to the timing of the enactments of these provisions. If these incentives are effective, then should they be made permanent? The uncertainty of these provisions makes it difficult for businesses to incorporate into their budgeting process. Are the impacts short term or long term? Since the research shows differential impacts across industries and asset classes, what are the distortion effects on investment decisions? What are the unintended benefits and consequences? Finally and most importantly is the comment made by Brown in the article that started this line of research true? Over 50 years ago, Brown (1962) encouraged researchers “to press on with our study of investment decisions to give them breadth and depth” in order “to be useful to those designing policy.” The studies have not been useful to policymakers. Is that because the field of research lacks breadth and depth or are there other explanations? What could be done to make research useful to policymakers?

Table I – Prior Studies on the Impact of Tax Incentives

Study	Conclusion
Hall and Jorgenson 1967	Tax policy is highly effective in changing the level and timing of investment expenditures and tax policy has had important effects on the composition of investment expenditures.
Jorgenson and Siebert 1968	Inflation does have an impact on investment and should be taken into account when performing research, but also concluded that the theory of corporate investment behavior based on the neoclassical theory of optimal capital accumulation does suffice to explain corporate investment behavior.
Coen 1968	Tax policy incentives had been disappointing and resulted in only minimal increases in investment of capital expenditures.
Taubman and Wales 1969	Tax policy incentive output is higher in the new state than would have occurred with no tax incentives; however the overall impact of these tax incentives falls short of their intended results.
Chisholm 1974	Tax policy incentives did substantially change the optimal replacement age for farm machinery, providing evidence that tax policy does influence investment behavior.
Coen 1975	Accelerated depreciation methods increased the present values of tax depreciation relative to economic depreciation by about ten percentage points, indicating that tax depreciation incentives do have an impact on investment behavior.
Brimmer and Sinai 1976	Tax reform would bring a significant improvement in capital formation and business liquidity; however tax incentives are not necessarily the most effective strategy to use to accomplish these tasks.
Parker and Zieha 1976	Increasing the rate of investment credit from seven percent to ten percent was not sufficient to offset the penalty resulting from tax accounting on the historical cost basis, given recent inflation experience in the United States.
Rennie 1977	Tax policy incentives did indeed affect the amount and timing of fixed investments in the private class A and B electric utility industry.
Coen and Hickman 1984	Depreciation liberalization under the 1981 tax act raised the level of long-term growth by over one percent and these tax policy incentives foster a higher growth rate and a permanently higher level of productivity.
Bosworth 1985	The tax system has become so complex that tax policy incentives intended to promote certain activities may result in far different outcomes in practice.
Chirinko 1986	Investment behavior may respond to tax policy incentives, but significant supporting empirical evidence has yet to be generated.
Shapiro 1986	Investment and the cost of capital are either uncorrelated or only weakly correlated, but investment and output are strongly correlated.
Halvorsen 1991	Tax policy incentives over the sample period did increase agricultural spending on equipment and structures, giving support to the impact of tax incentives.
Auerbach and Hassett 1992	Tax policy changes have played a significant role in affecting the level and pattern of investment, although this impact on investments has not always been a stabilizing factor.
Cummins and Hassett 1992	Tax policy has a strong impact on investment and there is a significant relationship between the cost of capital and equipment investment; also that there is a strong relationship between the cost of capital and structures investment.
Davis and Swenson 1993	Tax policy incentives are not effective; their results indicated that demand for investment was unresponsive to tax incentives because equipment suppliers captured the tax benefits for themselves by increasing the prices for the depreciable assets.

Study	Conclusion
Clark 1993	Changes in the investment tax credit have had only minimal and delayed effects on equipment investment and an investment tax credit is unlikely to have socially beneficial effects.
Wasylenko 1997	Prior studies in this area demonstrated statistical association rather than showing the true nature of the relationship between tax policy and economic development and that the results from previous research studies were not very reliable and were driven by variations in the data, changing time periods, and other factors.
Goolsbee 1998	Investment spending is responsive to investment tax policy, but in the short run the increased demand for investment mainly increases capital goods prices rather than quantities.
Hassett and Hubbard 1998	Tax policy investment incentives are likely to result in real investment rather than simply being dissipated in changes in capital-goods prices.
Goolsbee 2000	After correcting for the measurement error in cost of capital, tax policies significantly affect both prices and investment.
Hassett and Hubbard 1998	Tax policy investment incentives are likely to result in real investment rather than simply being dissipated in changes in capital-goods prices.
Goolsbee 2000	After correcting for the measurement error in cost of capital, tax policies significantly affect both prices and investment.
Cohen et al. 2002	Tax policy provisions significantly increase the incentive to invest in equipment and the temporary nature of the incentives provided more immediate stimulus than a permanent tax cut.
Desai and Goolsbee 2004	Tax policy incentives created small investment increases in various industries; however, the short-run effect of the incentives was simply too small to counteract the double-digit declines that occurred in the 2000s
Goolsbee 2004	Increased capital investment spending generated by tax policy investment incentives appeared to be driven by firms shifting to higher quality capital goods rather than buying a larger number of their existing capital types.
Miller et al. 2008	Bonus depreciation incentives did not have a statistically significant impact on the shipment of general aviation aircraft in the United States; however, the results indicated that the bonus depreciation incentives did contribute to a significant shift in the sales mix of general aviation aircraft from piston to turbine aircraft.
House and Shapiro 2008	Temporary investment tax incentives do alter the timing of investment decisions and bonus depreciation incentives passed in 2002 and then increased in 2003 had a powerful impact on the composition of investment.
Hulse and Livingstone 2010	Capital expenditures during bonus depreciation's availability were greater than those during the time it was not available. Results are considered weakly supportive evidence that Congress attained its goal of stimulating capital spending.
Edgerton 2010	Tax incentives have the smallest impact on capital investment exactly when they are likely to be put in place, during downturns in economic activity when cash flows are low. Tax incentives have the smallest impact on capital investment exactly when they are likely to be put in place, during downturns in economic activity when cash flows are low.
Bunker and Shughart 2014	Tax incentives provided by the GO Zone Act did not generate significant increases in key economic indicators and the incentives did not appear to have had the impact desired by Congress.

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Can Ethical Training of College Students Affect Their Ethical Values?

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Abstract

The ethical climate in the business world continues to decline. Some educators believe that integrating ethics education across the curriculum may be effective in improving that ethical climate. This exploratory study assesses changes in student attitudes about ethical situations at the beginning and end of an accounting program at a small AACSB institution. Assessments are made using the Defining Issues Test (DIT-2) and the Multi-dimensional ethics scale (MES). The Defining Issues Test (DIT-2) is used to evaluate a change in the level of moral reasoning of accounting students after completion of their accounting program. The Multi-dimensional Ethics Scale (MES) is used to measure changes in ethical sensitivity related to justice, relativism, deontology, utilitarianism, and egoism after completion of an accounting program. This study confirms significant changes in levels of moral reasoning and changes in ethical sensitivity even when controlling for age, gender, and what students already knew when entering the accounting program. It is the hope that more colleges and universities will require ethics education which could result in more ethical future accounting professionals and a more ethical business climate.

Introduction

The lack of ethics in business undermines the free enterprise system...profit or greed often over-powers ethics (Iancu et al. 2010). What is ethics? Generally, ethics refers to standards of right and wrong that describe what an individual ought to do. However, an individual's interpretation of what is right and wrong may vary based on many factors, including the concepts of justice, fairness, personal beliefs, family beliefs, societal obligations, the cost of one decision over another, and specific virtues.

Williams and Dewett (2005) identified several common goals of business ethics education including enhancing student's awareness and sensitivity towards consequences of their actions, promoting student's moral development, and promoting the ability to handle complex ethical decision making. Is a general business ethics course sufficient for exposing our accounting students to the dilemmas they may face as accounting professionals? Can ethics education increase levels of moral development? Few studies have attempted to measure the impact of ethics education at the program level. This exploratory study attempts to empirically assess changes in attitudes about ethical situations after completing an accounting program at a small AACSB accredited institution.

Russell and Smith (2003) identified that a primary contributing cause of corporate malfeasance (such as Enron and Worldcom) is because accounting programs have not significantly adapted their methods of instruction or approach to accounting and management education over the last 60 years. After these scandals, the AACSB Ethics Education Task Force encouraged business schools to commit to teaching ethical responsibility

at both the individual and corporate levels (AACSB 2004). In addition, many accounting students will need to fulfill an ethics requirement before sitting for the CPA Exam. Texas was the first state to require that a CPA candidate complete a board approved 3-semester-hour ethics course before sitting for the CPA exam. Further, many states require that a CPA candidate pass an ethics exam covering ethical and professional conduct before receiving their CPA license.

Researchers suggest that formal ethics education can promote higher development of ethical reasoning (Ponemon 1993; Armstrong 1993) while others question whether ethics can be taught (Geary and Sims 1994). Although few educational institutions are willing to devote entire courses to teaching ethics (Gutz and McCutcheon 1998), most schools agree that some ethics should be incorporated within the accounting curriculum (Gunz and McCutcheon 1998, Cohen and Pant 1989). A survey of accounting faculty suggests that integration across the curriculum is preferred rather than a stand-alone course (Blanthorne et al. 2007). Therefore, many educational institutions attempt to integrate ethics across the curriculum (rather than offering an accounting ethics capstone course). However, a primary concern that complicates this issue is that there is a significant amount of content to teach and time is already a scarce resource in most courses (Stape 2002, Loeb 1988).

This study explores changes in ethical sensitivity over a three year time period where ethics is integrated throughout the curriculum. Through the use of a pre-test/post-test methodology, changes in ethical sensitivity and levels of moral reasoning for this sample of accounting students are measured. This study extends ethics research by formally assessing the

outcomes of ethics interventions using (1) the DIT-2 to assess the level of moral reasoning of accounting students and (2) the MES with vignettes developed by Cohen et al. (1998, 1996, 1993) for evaluation of ethical situations in business and accounting contexts.

Literature Review

There are many ethical theories and models to explore; however, this paper will briefly discuss three major ethical theories relevant to this study: The Defining Issues Test (DIT) and its later version (DIT-2), and the Multi-dimensional Ethics Scale (MES).

Defining Issues Test (DIT and DIT-2)

The Defining Issues Test (DIT) developed by Rest (1979) and a later version, the DIT-2, refined by Rest et al. (1999) evolved based on Kohlberg's (1969) six-stages of moral development. Rest (1983, 1994) posits that resolution of an ethical dilemma involves a complex process involving (1) making an ethical judgment of an ideal solution to a particular dilemma, (2) an ethical intention of whether or not to comply with the ethical judgment, and (3) the action of carrying out the ethical intention. Duncan and Knoblett (2000) found that a corporate accountant's level of moral reasoning (a higher DIT score) influences the accountant's decision to engage in earnings management. Sennetti, Shawver, and Bancroft (2004) examined the ethical decisions of IPO accountants using eight business and accounting situations. In situations of offering a foreign bribe and copyright violations, higher moral reasoning (higher DIT score) correlated to increased sensitivity to these actions; and those with higher moral reasoning indicated an intent to avoid offering a foreign bribe; however, higher moral reasoning scores did not impact other decisions in their study (Sennetti et al. 2004). Logsdon, Thompson and Reid (1994, 849) found no correlation between moral reasoning and attitudes about software piracy.

In a classroom experiment, Ponemon (1993) found that students with both lower and higher moral reasoning (DIT scores) acted "unethically" when they failed to voluntarily pay for photocopies of class notes compared to students with scores in the middle range. However, Ponemon (1993) identified that they were not convinced that the students saw this as an ethical dilemma, given that the experiment was framed as a game. Abdolmohammadi and Baker (2007) found that plagiarism rates decrease as moral reasoning (DIT score) increases.

Specific to this manuscript are studies about the effects of education on moral judgment (Rest 1986). Rest (1986) summarized that moral education programs can increase moral judgment development; however, studies focusing on the increases in moral reasoning as a result of accounting ethics education

have produced mixed results. Poneman (1993), St. Pierre et al. (1990), Earley and Kelly (2004), and Shawver (2006) did not find increases to moral reasoning scores after an ethics course; however, Armstrong (1993) did. Rest (1979) argued that moral reasoning is a distinct cognitive domain and can be taught. Therefore, H1 is presented below.

H1: Accounting students will have higher levels of moral reasoning after completion of an accounting program which has integrated ethics education into the curriculum.

Multi-dimensional Ethics Scale (MES)

Reidenbach and Robin (1990) identified that ethical judgment is a broad and complicated construct because individuals often use more than one rationale when making complicated ethical judgments. Using this multi-dimensional approach allows researchers not only to explore what an individual believes, but more importantly explore reasons why they made certain ethical judgments and decisions within the philosophical values of justice, deontology, relativism, utilitarianism, and egoism. Prior studies found that many of these philosophical values influence moral judgments and decisions related to marketing (Reidenbach and Robin 1990), business and accounting (Cohen et al. 1998, 1996, 1993; Cruz et al. 2000; Sennetti et al. 2004; Shawver et al. 2006), and whistleblowing (Shawver and Clements 2007, Shawver and Shawver 2008). There are few studies that have attempted to assess changes in these philosophical values as a result of ethics education. A discussion of each of these philosophical values follows.

Justice

Actions taken for reasons of justice relate to beliefs in making decisions that are fair for everyone; commonly described as moral equity. Rawls (1971) has done a significant amount of work related to the theories of justice outlining justice as a fair set of rules for society. Rawls suggests to create equality one must evaluate morality in the original position under a "veil of ignorance." The "veil of ignorance" is described as a state of mind resulting from the original position where hypothetically no one knows 1) his or her place in society; 2) his or her class or social status; 3) what abilities or handicaps he or she will have; and 4) his or her conception of the good or psychological tendencies. Behind a "veil of ignorance," rules for society can be created without bias from one's personal position or status.

Nguyen et al. (2008) attempted to enhance students' learning of ethical judgment using lectures, discussions of various ethical theories and social responsibility. Nguyen et al. (2008) found no support for changes related to justice; however, Shawver (2009) found some support for changes in ethical judgments related to justice. By exposing students to various issues of

justice, it is expected that accounting students will demonstrate more ethical judgment related to justice. A student should have the ability to demonstrate more ethical judgment related to justice by identifying unethical actions as more unjust after completion of the program and identifying ethical actions as more just after completion of the accounting program. Therefore; H2 is presented below.

H2: After completing an accounting program which has integrated ethics education into the curriculum, accounting students are more likely to identify justice when evaluating ethical dilemmas.

Relativism

The theory behind relativism suggests that morality and ethical actions are relative to the rules and norms within one's culture. This implies that certain rules may not be acceptable in one culture but may be acceptable in another; suggesting that the same rules do not apply to everyone equally. Ethical relativism suggests that moral rightness and wrongness of actions varies from society to society and that there are no absolute universal moral standards binding on all men at all times; what is right in one society may be wrong or neither right nor wrong in another society (Ladd 1973). Further, "cultural relativism maintains that there is an irreducible diversity among cultures because each culture is a unique whole with parts so intertwined that none of them can be understood or evaluated without reference to the other parts and to the cultural whole" (Ladd 1973, 2). Many ethical evaluations are grounded by important relationships that have shaped ones' attitudes about right and wrong.

Nguyen et al. (2008) found no support for changes in relativism after a one semester business ethics course; however, Shawver (2009) found some support for changes in ethical judgments related to relativism after a one semester accounting professional responsibility course. Many students will come to college with a strong sense of their own family values. Although these values may not change as a result of the accounting program, students may experience changes to how they interpret their existing family values and increase learning in the areas of what is culturally and traditionally acceptable. Therefore; H3 is presented below.

H3: After completing an accounting program which has integrated ethics education into the curriculum, accounting students are more likely to identify relativism when evaluating ethical dilemmas.

Egoism

Egoism is generally viewed as the least ethical philosophy since it focuses selfishly on what is best for one individual. Egoism is usually attacked on the basis that it ignores what most would

agree are blatant wrongs (Reidenbach and Robin 1990). However, Williams and Dewett (2005) identified that some economists do not equate self-interests with selfishness or a disregard for others. They suggest that freedom to pursue self-interest in open competition may be the most efficient way to satisfy the interests' of all parties. Egoistic actions would be presumed ethical if they promote an individual's long-term interests.

Shawver (2009) found no support for changes in egoism after a one semester professional responsibility course. By exposing students to various ethical dilemmas and how decisions not only affect an individual but affects society as a whole, it is expected that accounting students will identify egoism in the unethical actions of others and will perceive ethical actions as less egotistic. Therefore, H4 is presented below.

H4: After completing an accounting program which has integrated ethics education into the curriculum, accounting students are more likely to identify egoism when evaluating ethical dilemmas.

Utilitarianism

Mill's (1961) attempted to help legislators determine which laws were morally best and provide the greatest balance of good over evil. Generally, utilitarianism is a form of efficiency where actions are done for the greatest good for society while minimizing costs. However, discussions of utilitarianism have evolved into two distinctive aspects of the consequences of rules and individual acts. Act utilitarianism considers only the results or consequences of a single act to determine the morality of an action. One objection to act-utilitarianism is that there may be an ability to justify any crime if the value of the consequences of a particular act is great enough. Rule-utilitarianism suggests morality lies in abiding by more general rules that, if followed universally, would produce the greatest pleasure or happiness for the most people. Accountants are often trained to identify alternatives that maximize benefits while minimizing costs. Accounting ethics education should expose students to cost benefit analysis; increasing the likelihood that a student would consider utilitarian concepts in their ethical evaluations.

Shawver (2009) found some support for changes in ethical judgments related to utilitarianism. Therefore; H5 is presented below.

H5: After completing an accounting program which has integrated ethics education into the curriculum, accounting students are more likely to identify utilitarianism when evaluating ethical dilemmas.

Deontology

Kant (1980) described moral law in relation to the Categorical Imperative suggesting that one should act only in accordance with maxims (rules) that could be universally accepted. Further, this imperative states that one should never act in such a way that treats others as a means only but always as an end in itself. Interpretations of these ideas introduce concepts of respect for persons and treating people as subjects who perform an act rather than an object which is acted upon. Deontological actions have been described as those with a focus on unwritten or implied contracts when evaluating principles of right and wrong. Reidenbach and Robin (1990) suggested that deontology may be the preferred ethical philosophy, although critics argue that no matter which rule applies to any situation there are always exceptions to every rule.

Accountants have a professional obligation to society to act ethically and maintain integrity which extends to accurate financial reporting. Accounting ethics education should expose students to their professional responsibilities to the public and professional codes of conduct; increasing the likelihood that a student would consider deontological obligations in their ethical evaluations. Prior research has shown some changes related to deontology after ethics interventions (Nguyen et al. 2008, Shawver 2009). Therefore; H6 is presented below.

H6: After completing an accounting program which has integrated ethics education into the curriculum, accounting students are more likely to identify deontology when evaluating ethical dilemmas.

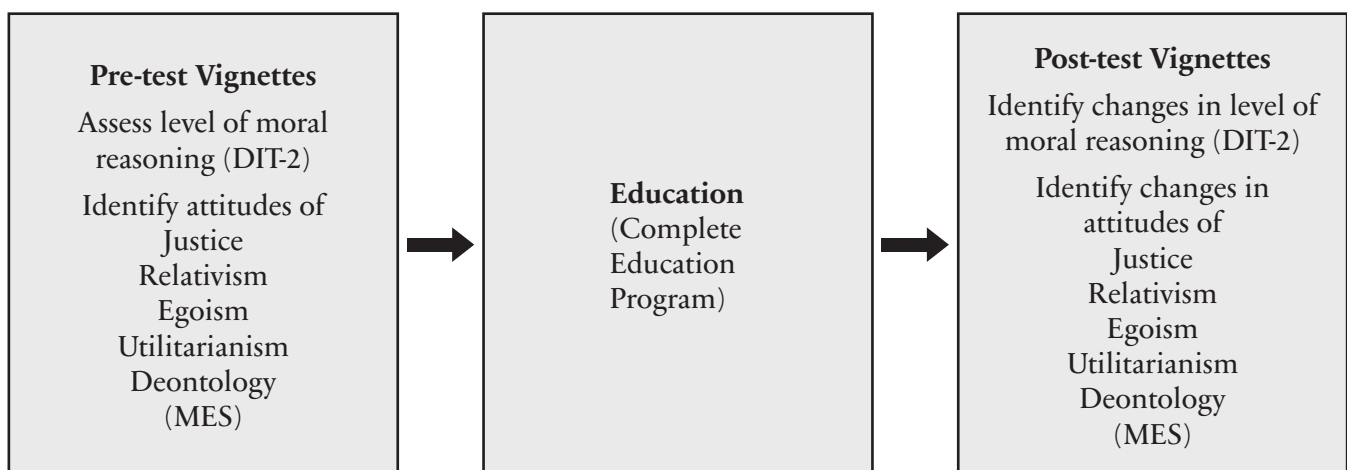
Evaluating Ethical Dilemmas Using Vignettes

Flory et al. (1993) suggested that specific subtleties, external pressures, internal pressures and changes in an ethical situation can change both ethical judgments and behaviors. Bebeau (1994) suggest that ethical sensitivity can be enhanced through instruction. Therefore, this study will explore the changes in

ethical sensitivity for five contemporary moral philosophies of justice, deontology, relativism, egoism, and utilitarianism using the MES. The four vignettes developed by Cohen et al. (1998, 1996, 1993) are used for their application to accounting and business situations to explore these changes.

There are few studies that have attempted to assess changes to attitudes as a result of ethics education. Nguyen et al. (2008) assessed changes in ethical judgment as a result of a one semester business ethics course and Shawver (2009) assessed changes in ethical judgment as a result of a one semester accounting professional responsibility course. Nguyen et al. (2008) explored three situations involving sales and marketing issues and found that ethics learning was only significant in contractualism (deontology) ethics for a situation involving selling a new automobile with repeated transmission problems. Shawver (2009) explored changes in ethical evaluations using eight situations involving laying off workers (V1), promoting products with insufficient product testing (V2), offering foreign bribes (V3), sharing software (V4), shipping products early to meet a quarterly bonus (V5), extending credit (V6), expensing personal gifts as a business expense (V7) and reducing the estimate for bad debts to increase reported income (V8). Shawver hypothesized that changes in these moral philosophies would occur as a result of ethics education. Statistical differences were found in many of the scenarios for at least one philosophy as a result of the ethics intervention. Statistical changes in reasons of justice occurred in six of the eight scenarios (all scenarios but V2 and V8), changes in reasons of deontology occurred in three situations (statistically significant in V4, V6, V7), changes in utilitarianism occurred in V4, and relativism in V5, but no significant changes were found for egoism as a result of a one semester ethics intervention (Shawver 2009). The contribution to the literature of this study is that it attempts to measure changes in ethical sensitivity using five philosophies discussed above (justice, deontology, relativism, egoism, and utilitarianism) after completion of the accounting program that has integrated ethics throughout the curriculum. This is shown in Figure I.

Figure 1



Does Learning in the Area of Ethical Judgment Lead to Better Ethical Intentions?

Shawver and Sennetti (2009) suggested that a composite MES score is a way to measure a student's improvement in ethical sensitivity. The composite MES is defined as "a relative comparison to measure (explain) a student's improvement in sensitivity in the respondents' perceived concept of justice, rightful obligation, and so forth" (Shawver and Sennetti, 2009, 667). This score averages all five philosophical values into one score explaining a student's improvement in ethical sensitivity for concepts of justice, relativism, utilitarianism, egoism, and deontology measured in this study.

Nguyen et al. suggested that "no single theory of business ethics is capable of providing solutions to the multitude of moral and ethical issues encountered in business" (2008, 73). However, Nguyen et al. (2008) suggested that an ethics learning score can be computed by taking the ethical judgment rating differences of each philosophy from the beginning and the end of the semester and these scores can be used in a hierarchical regression to determine the effects of student learning. Nguyen et al. (2008) found that student learning was statistically significant for contractualism ethics (deontology), and was not significant for moral equity (justice) or relativism. This study combines the methodologies of both Shawver and Sennetti (2009) and Nguyen et al. (2008) to explore whether learning in ethical judgment leads to more ethical intentions. As previously discussed, moral judgment involves deciding which action is morally right or wrong and ethical intentions involve deciding if one would act in a moral way. Therefore, H7 is presented below.

H7: Learning in the area of ethical judgment will lead to more ethical intentions.

Methodology

The students in this study chose to attend a small AACSB undergraduate educational institution. This educational institution received a grant to implement an ethics program and train the faculty. Nearly 100 percent of the Business School faculty participated in a semester-long ethics training seminar. After completion of the seminar, 70 percent of the business school faculty implemented ethics modules in their respective courses. Further, 75 full-time faculty in the remainder of the school (out of 115) received ethics training in subsequent years. The curriculum at this institution requires completion of a stand-alone business ethics course that is taught by business faculty. In addition, each student is required to complete two philosophy courses and two theology courses, and ethics is integrated in many other courses throughout the curriculum including human resources, organizational behavior, law, management and accounting.

A pilot study was conducted on 30 intermediate accounting students. Minor modifications to the instructions were made as a result of the pilot study. Many students do not declare a major until the second semester of their freshman year at the educational institution used in this study. During the period of study, the pre-test questionnaire was administered during the first week of the fall semester of the sophomore year and the post-test was administered during the last week of the spring semester senior year for those in this study. Participants provided the last four digits of their social security number on each part of the survey. This enabled the researcher to match the pre and post-test surveys while allowing participants to remain anonymous. Each participant was asked to complete the survey and was informed that their participation was voluntary. Each student completed the DIT-2 and four vignettes related to accounting and business. Each questionnaire was administered during class time with instructions on how to complete each section. Thirty-two usable responses were obtained after matching both the pre and post test surveys for each respondent. This sample represents the entire accounting class that completed their degree during the period of study.

A section of the survey included the DIT-2. The DIT-2 is a structured, self-administered test that is objectively scored. Each participant responds to five standardized vignettes by ranking 12 of the most important rationales for decisions in each situation. The five vignettes include ethical dilemmas of reporting an unfavorable story about a political candidate, administering medicine to help a fatally ill person die, destruction of property, stealing food for a starving family, and holding an "open" school board meeting after the board received threats.

Rest et al (1997) developed a modified index for measuring moral reasoning called the N2-score. This score uses the same DIT-2 survey to rank and rate the information provided by respondents. The N2-score combines the higher more sophisticated moral reasoning (stages 5-6) with lower level personal items (stages 1-4). Rest et al. (1997) identifies two main reasons why this hybrid index may work better than the older P-score. First, more information is used in the calculation of the N2-score and "there is something synergistic about the interaction between the two specific elements of the N2" (Rest et al. 1997, 506). The N2-score indicates the extent to which an individual is acquiring more sophisticated moral thinking and also gaining clarity about ideas that should be rejected for their simplistic or biased solutions. Thus, the score indicates the degree to which post-conventional items are prioritized and the degree to which personal interest items (lower stage items) receive lower ratings than the ratings given to post conventional items (higher stage items).

A second section of the survey contained the MES and four vignettes that are accounting and business related. Each participant indicates their belief of whether the action was ethical

on a 7-point Likert scale ranging from “ethical” to “unethical”. Each participant rates the action in the vignette identifying an agreement with a philosophical value with a response closer to 7 and disagreement closer to 1 (note that some responses are reverse coded prior to beginning the data analysis). The questions for justice consist of responding to each action ranging from “just/unjust”, “fair/unfair”, and “morally right/not morally right”. The questions for relativism consist of responding to each action ranging from “acceptable to my family/not acceptable to my family”, “culturally acceptable/culturally unacceptable”, and “traditionally acceptable/traditionally unacceptable”. The questions for egoism consist of responses to “self-promoting for the actor/not self-promoting for the actor” and “personally satisfying for the actor/not personally satisfying for the actor”. The questions for utilitarianism consist of responses to “produces maximum utility/produces least utility” and “maximizes benefits while minimizes harm/minimizes benefits while maximizes harm”. The questions for deontology consists of responding to “does not violate an unwritten contract/violates a written contract” and “violates an unspoken promise/does not violate an unspoken promise.” Each question is grouped to create an average for each philosophical value. If the participant evaluates the dilemma and agrees that the action in the dilemma is unethical (scores closer to 7) and the action violates a philosophical value (scores closer to 1) a negative coefficient for the philosophical value will be reported. Appendix A provides all four vignettes: (V1) promoting a product that has been insufficiently tested, (V2) sharing software with a friend, (V3) expensing personal gifts as a business expense, and (V4) increasing income by changing an estimate for bad debt. Appendix B provides all of the recoded survey questions.

Since this research addresses ethical issues that may or may not be believed to be socially desirable, this study uses the short version of the Impression Management (IM) scale to determine if the respondents are providing socially acceptable answers. Paulhus (1991) developed the Balanced Inventory of Desirable Responding (BIDR) and the IM scale. The IM measure is a set of questions used to identify impression management. Impression management occurs when a respondent answers questions in a manner that deliberately under-reports

socially undesirable acts and over-reports desirable acts or behaviors. These questions include statements such as “I always obey laws, even if I’m unlikely to get caught.” Each statement is rated on a 7-point Likert scale ranging from “not true” to “very true.” For this study, the mean IM for males was 3.14 with a standard deviation of 1.92, and females scored 3.86 with a standard deviation of 2.57 when the pre-test data was collected at the beginning of their sophomore year. The mean IM for males was 4.17 with a standard deviation of 1.67, and females scored 4.21 with a standard deviation of 3.26 when the post-test data was collected at the end of their senior year. Paulhus found typical scores for males to average 2.93 with a standard deviation of 2.8, and for females to average 3.21 with a standard deviation of 2.8. The scores in this study are not statistically different than the typical scores reported by Paulhus; therefore, we can believe that the respondents have not provided socially biased answers.

Results

Table I provides the mean responses to the question “the action described above is ethical/unethical” for responses from the beginning and end of the accounting program for each vignette rated on a 7-point Likert scale. A response of 1 indicates that the participant believes the action is ethical, whereas a response of 7 indicates that the action is unethical. In two vignettes (V2, V4), the respondents indicated that they believed each action to be slightly more unethical (means closer to 7) after completion of the accounting program than their belief prior to completing the accounting program. For V3, the participants rated this action as more ethical after completion of the accounting program. This vignette is the only vignette out of all four where the actor in the vignette chose not to complete an unethical act. Responses indicate an increased understanding or awareness that these situations have ethical implications and that the participants are able to identify ethical vs. unethical actions. The results of a paired sample t-test indicate student evaluations to be significantly different after completing the accounting program for two vignettes (V3 the decision not to expense personal gifts as a business expense and V4 adjusting bad debt to increase reported income).

Table I
Paired Sample t-tests Comparing Mean Ratings between Beginning and End of Program

Vignette	N	Beginning of Program Mean	SD Beginning	End of Program Mean	SD End	Sig Chg
V1 Product Safety	31	5.88	1.26	5.88	0.83	
V2 Sharing Software	32	4.47	1.52	4.78	1.64	
V3 Does Not Expense Gifts	32	2.58	1.65	1.61	1.31	0.022
V4 Bad Debt Adjustment	32	25.31	1.14	6.58	0.62	0.006
N2-Score	32	25.31	14.23	33.07	17.39	0.031

Table II
Paired Sample t-tests Comparing Mean Ethical Sensitivity between Beginning and End of Program

Justice	N	Beginning Mean	Std Dev	Ending Mean	Std Dev	Sig Chg
V1	31	3.03	1.47	2.67	1.08	
V2	32	4.26	1.61	3.62	1.55	
V3	32	4.94	1.70	6.24	1.08	0.001
V4	32	2.34	1.29	1.49	0.57	0.001
Relativism	N	Beginning Mean	Std Dev	Ending Mean	Std Dev	Sig Chg
V1	32	3.61	1.44	3.44	1.08	
V2	32	4.35	1.39	4.39	1.14	
V3	32	4.89	1.44	5.70	1.14	0.008
V4	32	2.97	1.24	2.42	1.10	0.001
Egoism	N	Beginning Mean	Std Dev	Ending Mean	Std Dev	Sig Chg
V1	31	4.13	1.70	4.84	1.77	0.044
V2	32	4.52	1.57	4.03	1.08	
V3	32	3.86	1.70	4.31	1.70	
V4	32	3.86	1.55	4.20	1.85	
Utilitarianism	N	Beginning Mean	Std Dev	Ending Mean	Std Dev	Sig Chg
V1	31	3.61	0.80	3.02	1.10	0.006
V2	32	4.78	0.97	4.30	1.10	0.049
V3	32	4.14	1.55	5.14	1.34	0.004
V4	32	3.59	1.01	2.70	1.31	0.007
Deontology	N	Beginning Mean	Std Dev	Ending Mean	Std Dev	Sig Chg
V1	31	3.09	1.50	3.02	1.19	
V2	32	3.70	1.87	3.09	1.49	
V3	32	5.78	1.43	6.28	1.04	
V4	32	2.97	1.51	2.05	1.19	0.003
MES Total	N	Beginning Mean	Std Dev	Ending Mean	Std Dev	Sig Chg
V1	31	3.42	0.86	3.37	0.75	
V2	32	4.20	1.04	3.90	0.90	
V3	32	4.75	1.13	5.55	0.93	0.001
V4	32	3.14	0.72	2.57	0.76	0.000

H1 expects that after completing the accounting program, an accounting student will have a higher level of moral reasoning. A comparison of pre and post test N2-scores shows a significant change. The average pre-test N2-score was 25.31 and increased to 33.07. The N2-score differentiates post-conventional and personal interest items and this increase may be attributed to an increased understanding and preference for post-conventional reasoning after completing the accounting program.

H2 through H6 expects that accounting students will have an increased understanding that ethical issues have contexts within the philosophical values of justice, deontology, utilitarianism,

relativism and egoism after completion of the accounting program. Table II presents the results of the evaluations and the associated moral philosophies that are significant for each vignette at the beginning of the semester (left side of the table) and presents the results of the evaluations and the associated philosophical values that are significant for each vignette after completion of the accounting program (right side of the table). A t-test confirms that the accounting students had significant changes in their attitudes regarding many of the moral philosophies. Further discussion of all vignettes will occur with each philosophical value.

Justice

H2 expects that as a result of completing the accounting program, accounting students are more likely to use justice in evaluating ethical dilemmas. At the beginning of the accounting program, most students have identified that these vignettes are unethical for reasons of justice (unjust, unfair, not morally right). At the end of the accounting program, the attitudes about justice changes significantly in two out of four of the vignettes (V3 and V4). In V3, the only action that is ethical, the students have indicated that they believe the decision not to expense personal items as a business expense is more just after completion of the accounting program. In V4, the students have indicated that adjusting bad debts to increase reported income is more unjust after completion of the accounting program. An understanding of issues related to justice provides an important foundation for ethical decision-making. H2 is supported.

Relativism

H3 expects that as a result of completing the accounting program, accounting students will demonstrate more ethical judgment related to relativism. In this study, there are two significant changes to attitudes regarding relativism (V3 and V4). In V3, the only action that is ethical, the students have indicated that they believe the decision not to expense personal items as a business expense is more relativistic (scores closer to 7). This may indicate a belief that students have identified that this ethical action is more acceptable to their family, traditions, and culture after completion of the accounting program. In V4, students perceive the action of adjusting bad debts to increase reported income as less relativistic (scores closer to 1). This may indicate a belief that students have identified that this unethical action is less acceptable to their family, traditions, and culture after completion of the accounting program. These results have important implications for the accounting profession. It is essential that students have an understanding that earnings manipulation is not an acceptable accounting practice prior to entering the profession. H3 is supported.

Egoism

H4 expects that as a result of completing the accounting program, accounting students will demonstrate more ethical judgment related to egoism. Egoism became more significant for V1, where sales manager continues to promote a product that has had insufficient testing. These participants identified the action of promoting a product with insufficient product testing as more self-serving to the sales manager in the scenario. Since egoism had only 1 statistically significant change out of the four vignettes, H4 is partially supported.

Utilitarianism

H5 expects that as a result of completing the accounting program, accounting students will demonstrate more ethical judgment related to utilitarianism. V1, V2, and V4 all have significant changes to perceptions that the three unethical actions have less utility after completing the accounting program. In V3, the only ethical choice, students have identified that this action has more utility after completing the accounting program. These results may be significant for the accounting profession. As accountants we are trained to analyze the costs and benefits of each decision we are about to make; utilitarianism principles are applied in many of our decisions. H5 is supported.

Deontology

H6 expects that accounting students are more likely to use deontology in evaluating ethical dilemmas after completing the accounting program. H6 is supported for one vignette (V4 Bad Debt). The deontological view can be significant for accountants; often accountants are expected to provide assurance services that benefit society. A significant change in deontology for V4 may indicate that after completing their accounting program accounting students recognize that earnings manipulations not only affect one's immediate surroundings but society at large.

Learning in Ethical Judgment

Because evaluation of ethical dilemmas may involve applying multiple philosophical values, a MES total score was calculated by averaging all five philosophical values into one score. Table II reports the means and standard deviations for the MES total score for both the beginning and end of the semester for each vignette. Students reported statistically significant changes in attitudes regarding V3 and V4. This MES total difference score is used in a hierarchical regression to determine whether learning would lead to more ethical sensitivity. Using similar procedures suggested by Nguyen et al. (2008), the first step in the hierarchical regression controls for age and gender, the second step is the MES total score at the beginning of the sophomore year, and the third step is the MES total difference score (calculated by subtracting the end of the program score from the beginning of the program score). This procedure is used to assess the incremental change in ethics learning above and beyond what this sample of students knew at the beginning of the accounting program after controlling for age and gender. Table III shows that in all three unethical situations (V1, V2, V4) ethics learning is statistically significant. In V1, product safety, the adjusted R² increased from .129 to .295, explaining 16.6 percent of unique variance in ethical sensitivity as a result of the accounting program after controlling for age and gender. In V2, sharing software,

Table III
Hierarchical Regression Results for Ethics Learning on Ethical Judgment

V1 Layoff								
Variable	Intention β	F	df	t	R2	Adj R2	$\Delta R2$	Sig
Step 1								
Age	0.199	3.108	2, 27	1.140	0.187	0.127		0.061
Gender	0.380			2.187				
Step 2								
Ethical Judgment	-0.179	2.426	3, 26	-1.025	0.219	0.128	0.002	0.088
Step 3								
Ethics Learning	-0.559	4.032	4, 25	-2.671	0.392	0.295	0.166	0.012*
V2 Product Safety								
Variable	Intention β	F	df	t	R2	Adj R2	$\Delta R2$	Sig
Step 1								
Age	-0.298	1.606	2, 28	-1.663	0.103	0.039		0.219
Gender	-0.120			-0.669				
Step 2								
Ethical Judgment	-0.324	2.298	3, 27	-1.846	0.203	0.115	0.076	0.100
Step 3								
Ethics Learning	-0.997	13.849	4, 26	-6.232	0.681	0.631	0.517	0.000*
V3 Does Not Expense Gifts								
Variable	Intention β	F	df	t	R2	Adj R2	$\Delta R2$	Sig
Step 1								
Age	0.177	0.797	2, 28	0.945	0.054	-0.014		0.461
Gender	0.191			1.015				
Step 2								
Ethical Judgment	-0.141	0.694	3, 27	-0.718	0.072	-0.032	-0.018	0.564
Step 3								
Ethics Learning	-0.320	0.917	4, 26	-1.243	0.124	-0.011	0.020	0.469
V4 Bad Debt Adjustment								
Variable	Intention β	F	df	t	R2	Adj R2	$\Delta R2$	Sig
Step 1								
Age	-0.449	3.609	2, 28	-2.664	0.205	0.148		0.40
Gender	-0.057			-0.349				
Step 2								
Ethical Judgment	-0.244	3.221	3, 27	-1.466	0.264	0.182	0.034	0.038
Step 3								
Ethics Learning	-0.528	5.266	4, 26	-2.943	0.448	0.363	0.181	0.003*

the adjusted R2 increased from .115 to .631, explaining 51.6 percent of unique variance in ethical sensitivity as a result of the accounting program after controlling for age and gender. In V4, bad debt adjustment, the adjusted R2 increased from

.182 to .363, explaining 18.1 percent of unique variance in ethical sensitivity as a result of the accounting program after controlling for age and gender. H7 is supported.

Conclusions And Areas For Future Research

Accounting professors have a unique opportunity to educate future accounting professionals by arming them with ethical frameworks, encouraging an understanding of philosophical values and alternatives that may discourage future lapses in ethical judgment. Although many may argue that it is impossible to teach someone to be more ethical, this study has shown that this small sample of accounting students evaluate moral problems with greater thoughtfulness, are more ethically sensitive, and utilize the five philosophical values of justice, relativism, egoism, utilitarianism and deontology more after completing an accounting program at a small AACSB institution where business ethics is taught and ethics is integrated across the curriculum in many courses. This paper shows increases to a students' level of moral reasoning as measured by the DIT-2 (N2-score) for students who have received ethics instruction during their accounting program. Further, ethics learning is significant in all three vignettes where an unethical action was completed even when controlling for age, gender, and what a student already knew when they entered the accounting program.

This study has several limitations that deserve some attention. The sample is a self-selected sample of accounting students from one educational institution. Although this sample represents the entire accounting class during the period of study, the small sample size is a serious concern. Because of the longitudinal nature of this study over a three year period, additional data was not gathered because of the length of time required to do so. Although the subjects are selected from one educational

institution, this sample is useful in documenting the effects of this particular accounting program and this study could be replicated at other institutions. A disadvantage from convenience sampling of this type is that the sample may not be representative of all accounting students. Limitations exist as a result of the accounting program itself. In addition to the amount of ethics education coverage in the curriculum, teaching styles and approaches may impact ethics learning. Therefore, varying results may occur at different educational institutions and accounting programs. Finally, a limitation of any ethics education program is that one may not actually behave in the same manner as they have reported on this survey. Future research may wish to compare the results in this study to a sample of students in other business majors, colleges, and curricula.

This author believes that educators cannot give up on attempting to encourage and educate future ethical leaders because some believe ethics cannot be taught, time limitations may inhibit covering ethics in our courses, or because assessment is problematic. Accountants are expected to practice the highest level of ethical professionalism and students must have exposure to ethical dilemmas prior to entering the profession. Implementing ethics training within accounting curricula is crucial to developing an understanding of professional obligations while completing the technical aspects of an accounting curriculum. It is the hope that more accounting programs will require ethics education that develops higher levels of moral reasoning and more thoughtful ethical dilemma resolution that results in a more ethical business climate that supports free enterprise.

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Appendices

Appendix A: Accounting and Business Vignettes

1. A company has just introduced a highly successful new kitchen electrical appliance. The sales manager, who is paid partly on a commission basis, discovers that there has been insufficient product testing to meet government guidelines. The tests so far indicate no likelihood of any safety problem. Action: Because of this information, the sales manager continues to promote the product.
2. The owner of a local small business, which is currently in financial difficulty, approaches a longtime friend to borrow and copy a proprietary database software package which will be of great help in generating future business. The software package retails for \$500. Action: Because of this information, the friend loans the software package.
3. A salesman, the father of two small children, has been promoted to a job in which he has to travel away from home for the firm on regular basis. Because the trips are frequent and inconvenience his family life, he's contemplating charging for his personal family expenses while traveling for the company. He has heard that this is common practice in the company. Action: Because of this information, the salesman still decides not to charge the company \$50 for his family gifts when he could have.
4. The CEO of a company requests to the controller reduce the estimate for bad debts in order to increase reported income, arguing that this is common practice in the industry when times are hard. Historically, the company made very conservative allowances for doubtful accounts, even in bad years. The CEO's request would make it one of the least conservative in the industry. Action: Because of this information, the controller makes the adjustment.

Appendix B: Recoded Questions to Create 'Positive' Responses

1. Unjust 1 2 3 4 5 6 7 Just
2. Unfair 1 2 3 4 5 6 7 Fair
3. Not Morally Right 1 2 3 4 5 6 7 Morally Right
4. Not Acceptable to my family 1 2 3 4 5 6 7 Acceptable to my family
5. Culturally Unacceptable 1 2 3 4 5 6 7 Culturally Acceptable
6. Traditionally Unacceptable 1 2 3 4 5 6 7 Traditionally Acceptable
7. Not Self-promoting for the actor 1 2 3 4 5 6 7 Self-promoting for the actor
8. Not Personally satisfying for the actor 1 2 3 4 5 6 7 Satisfying for actor
9. Produces the least utility 1 2 3 4 5 6 7 Produces the maximum utility
10. Minimizes benefits while maximizes harm 1 2 3 4 5 6 7 Maximizes benefits while minimizes harm
11. Violate an unwritten contract 1 2 3 4 5 6 7 Does not violate unwritten contract
12. Violate an unspoken promise 1 2 3 4 5 6 7 Does not violate unspoken promise
13. The probability that I would undertake the same action is: High 1 2 3 4 5 6 7 Low
14. The probability that my peers would undertake the same action is: High 1 2 3 4 5 6 7 Low
15. The action described above is: Ethical 1 2 3 4 5 6 7 Unethical
16. Please specify why you feel this action is either ethical or unethical. _____

The Accounting Internship from the Employer Perspective: What is the Value?

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ABSTRACT

This paper examines various ways in which employers perceive the value of an accounting internship. This study extends the literature by examining the level of skill development in accounting interns from the employer perspective. In addition, it considers employer input in regards to the value in hiring interns, the general strengths and weaknesses in accounting interns they hire, and what they see as the value of the internship for an accounting student. Overall, accounting students made significant progress on all of the soft skills employers assessed, except increasing ethical behavior. In addition, most employers felt the internship experience was most valuable to them in building relationships with potential future hires and benefited students by providing them with a real-world experience. This research informs both accounting educators and accounting employers about the role an internship has in the preparation of accounting students for the profession. *Key Words: Accounting Internship, Skill Development, Accounting Education*

Introduction

Although many accountants believe that a solid understanding of accounting principles is the most important skill for a successful career, CFOs have indicated that soft skills are what distinguishes candidates they hire (Kranacher 2010). Likewise, J.H. Cohn, an accounting and consulting firm, has recognized that developing soft skills or “enabling-skills” in their employees created a competitive advantage for them (Kovach 2009, 50). Specifically these skills include “oral and written communication, relationship building, team performance, and leading and managing people” (Kovach 2009, 50).

Soft skills include people skills and personal characteristics, while hard skills are the technical expertise and knowledge needed to perform specific tasks (Robles 2012). Robles (2012) found the top ten soft skills perceived by business executives as the most important were integrity, communication, courtesy, responsibility, social skills, positive attitude, professionalism, flexibility, teamwork, and work ethic. Similarly, Pernsteiner (2013) interviewed ten recruiters who hired full-time accountants, and the top skills they desired were communication, self-confidence, the ability to manage time effectively, strong work ethic, and the ability to work independently to solve problems. Furthermore, employers hiring accounting students used grade point average (GPA) to assess their technical ability and responses to behavioral questions to evaluate their soft skills. Generally, recruiters prefer a GPA of 3.0 or higher (Pernsteiner 2013; Violette and Chene 2008).

Although the soft skills are described in slightly different ways across the literature, the message is clear: employers need accountants and other business professionals who have well-developed soft skills (Amato 2013; Kermis and Kermis

2010; Lin et al. 2010; Meeting of the minds 2008; Nally 2013; Violette and Chene 2008). However, Lin et al. (2010) found accounting students did not believe there was as much value to writing and speaking skills as accounting professionals. It is, therefore, of interest to find where these skills are developed. Lin et al. (2010) pointed out that educators have already added communication courses to the accounting curriculum, and that has not solved the issue. An internship is one experience that many accounting students complete before graduation, and since it is likely that students use a variety of soft skills during the internship, it is also probable that students develop some of these skills as part of this aspect of their education.

Most of the prior research studies involving internships examined the benefits of an internship, including its connection to employment. Within this area, there have been fewer investigations into the specific skills that accounting students develop from an internship experience. This study examines employer perceptions of the degree of hard and soft skill development that occurs in accounting students as a result of completing an accounting internship. This extends the current literature by examining the level of skill development from the employer perspective. In addition, this study considers employer input in regards to the importance of hiring interns, the overall strengths and weaknesses in accounting interns they hire, and what they see as the value of the internship for an accounting student.

This research provides more insight into potential areas in the accounting curriculum that can be strengthened, as well as how a high impact practice prepares accounting students to be strong accounting professionals in the workforce. It also informs firms who hire accounting interns about the critical role they play in the skill development of accounting under-

graduates so they may consider offering additional internships or making intentional choices about intern responsibilities that could affect skill development. The following sections of the paper review the relevant literature and the research methods used, analyze and discuss the results, as well as summarize the conclusions and areas of future research.

Literature Review

A number of studies have been conducted to examine accounting internships. These studies have mainly investigated the effect of an internship on academic performance (e.g., English and Koeppen 1993; Knechel and Snowball 1987), as well as other advantages. Kessler et al. (2009) surveyed accounting interns and employers within public accounting to find the internship program provided students with knowledge and experience they could not have gotten through their regular undergraduate education. From the employer perspective, employers in public accounting who were surveyed indicated the top three benefits of offering accounting internships included the ability to recruit the top students, the ability to test out candidates before hiring them full-time, and a means to increase the firm's reputation with students (Kessler et al. 2009). Other benefits of internship experiences identified in prior research included helping students choose their major or specific discipline area they wanted to work in and providing them with career advantages while giving employers an opportunity to connect with promising students and reduce their salary costs.

Considering the topic of the value of an accounting internship and the skills employers seek in employees they hire, the literature pertaining to career advantages is most relevant. Within this area, researchers have examined the relationship of an internship experience and job opportunities, the perceptions of students and employers in terms of the importance of skills in the recruiting process, and the level of development of skills in accounting interns.

First, prior studies have considered the effect of an internship on the employability of business students (Callanan and Benzing 2004; Gault et al. 2000; Gault et al. 2010) and specifically for accounting students (Kessler et al. 2009; Pernsteiner 2015; Rigsby et al. 2013) and found positive results. Rigsby et al. (2013) surveyed employees at CPA firms below the manager level and determined that an internship was useful for students in getting job offers. Similarly, Pernsteiner (2015) found 70 percent of accounting students surveyed who completed an internship had accepted a full-time job offer, and Kessler et al. (2009) interviewed three students who all were offered a job at the firm where they interned.

Andrews and Higson (2008) interviewed employers to determine the skills they required and interviewed business graduates to determine if their education prepared them for

the workplace. The employers and graduates were in four different European countries: the UK, Austria, Slovenia, and Romania (Andrews and Higson 2008). Both graduates and employers felt that communication skills were important, but graduates indicated that their education did not provide them with adequate presentation skills that they needed on the job (Andrews and Higson 2008). Overall, the 'core components' of graduate employability were technical abilities, soft skills, and work experience (Andrews and Higson 2008).

Other studies have considered the perceptions of students and employers about the importance of particular skills in the recruiting process. Kavanagh and Drennan (2008) considered what skills accounting students perceive they need for employment and what skills employers expect accounting students to possess. Students rated "communication, analytical, leadership, teamwork and self-motivation/self-direction skills" (Kavanagh and Drennan 2008, 288) as the most important for a successful career while the top skills employers required were "analytical/problem solving, business awareness/real life experience and basic accounting skills" (Kavanagh and Drennan 2008, 294).

Green et al. (2011) measured the effects of a formal internship program on students' perceived values of personality and technical traits that would be important to employers during first and second employment interviews. Students perceived less value for each of the categories (personality, technical, interpersonal, and background skills) than the employers, but ranked the order of the categories the same as employers (Green et al. 2011). Both students and employers rated a positive attitude as the most important trait during the first interview, and overall, employers valued almost all of the traits as either extremely important or important, where students distinguished a difference in the importance of the traits (Green et al. 2011).

Finally, various studies have explored the skills that accounting or business students gain from an internship experience. Accounting students at a public midwestern university ranked confidence, use of Microsoft Excel and other computer software, and understanding of the technical aspects of accounting among the greatest skills (out of 11 hard and soft skills) they developed from their experience (Pernsteiner 2015). Overall, students felt they improved all 11 hard and soft skills they rated. There were no statistically significant differences between the skill level of students who had accepted a job offer and those who had not, in interns with longer internships or in interns with higher GPAs (Pernsteiner 2015).

This differs from a study completed by Beck and Halim (2008) who found the most significant skills developed by accounting interns in Singapore were personal and interpersonal skills rather than technical skills. Paisey and Paisey (2010) compared the skill development of accounting and finance students

between a Scottish university with work placement and one without. At the university with work placement, students developed analytical skills, time management skills, computer skills, oral communication skills, and the ability to interpret financial information (Paisey and Paisey 2010).

Using the instrument developed by Paisey and Paisey (2010), Maelah et al. (2011) discovered accounting interns in Malaysia also increased their soft skills, specifically in time management, oral communication, and working with others. Cook et al. (2004) surveyed business interns over a ten-year period and also found that interns felt the experience was positive. Specifically, the majority of respondents matured through their internship experience and learned to work with other people (Cook et al. 2004).

Clearly there are varied results, but consistently soft skills are a significant part of what accounting interns develop from their internship experience. All of the above studies determined the level of development from the student perspective. Since they are the ones developing the skills, it would seem they would know best which ones they developed. However, it is of interest to see the viewpoint of the employer for comparative purposes. After all, they have more experience and have worked with many accounting interns during their careers. What is their perception of the extent of the development of these skills in the interns they hire?

This study explores various ways in which the accounting internship is valuable to the employer and the accounting student from the employer perspective. This includes what employers value about offering internships, what employers feel about hiring candidates with internship experiences, what employers think the value of the internship is for the accounting student, and the extent to which students develop hard and soft skills from the internship experience. In terms of skill development, it continues the work of Pernsteiner

(2015) by using the same 11 statements about hard and soft skills, but asks employers to rate them rather than the students. Also, where the students were asked to rate the overall development of their skills from their internship, this survey asked employers to rate the level of skills of accounting students when they are hired for an internship (pre), and to rate the level of the skills after the internship (post). In addition, employers were asked some general questions about their hiring practices, their level of satisfaction with the interns they hire, and accounting interns' strengths and weaknesses.

Methodology

Employers who hire accounting interns from a public mid-western university were surveyed about the general value of internships including the value in offering them, the value for the student, and their hiring practices. In addition, employers rated the level of skill development in interns at the time they were hired and the level of development after the internship was complete. Employers were also asked to respond to questions about their satisfaction with the interns they hired and accounting interns' overall strengths and weaknesses. The majority of the questions were rated by the employer using a 7-point Likert scale. The questions relating to the overall strengths and weaknesses and the value of an internship to the student were open-ended. The open-ended questions were summarized based on the themes that arose from the employer comments.

The survey was sent to all employers who had recruited at this university to ensure as many participants as possible. This university does not track internships that students complete unless they are for course credit, so by sending the survey to all contacts, it ensured that no employers were left out. According to the Accounting Internship Coordinator, there were 27 (17 CPA firms and 10 non-CPA firms) different employers

Table I: Extent of Development from the Internship Experience

1.	Confidence in ability to work in an accounting position. (S)
2.	How to work independently and resolve issues on your own. (S)
3.	How to work with others. (S)
4.	How to write effectively. (S)
5.	How to communicate (network) with other people. (S)
6.	Understanding of the technical aspects of accounting. (H)
7.	How to manage your time and complete tasks in the most efficient manner. (S)
8.	How to speak in front of other people. (S)
9.	How to analyze data. (H)
10.	How to use your judgment in completing tasks. (S)
11.	How to use Excel or other computer software. (H)
Note: (S) or (H) indicate whether the skill was considered a hard (H) or soft (S) skill.	

who hired interns over the course of the 2013-14 academic year (includes Summer 2013) and 50 different employers over the past three years (including the 2013-14 year). The survey was sent in April of the Spring 2014 semester, just after most full-time internships were completed. The survey was purposely sent at this time in order to ensure that the employers would have a recent memory of interns to draw from when completing the survey.

In regards to skill development, employers were asked to consider 11 statements describing both hard and soft skills, both at the time they hired the interns and at the time the internship was completed. Employers were asked to rate each of these statements based on their overall feeling about interns. This was intentional in order to get the general impressions rather than specific experiences for a few students. The 11 statements employers considered are listed in Table I, along with whether each was considered a hard or soft skill.

These statements are the same as those used in a study completed by Pernsteiner (2015) that surveyed the accounting students who had completed internships at this university about their level of skill development. They were developed by considering data from employers, employer assessments of interns, and intern reflection papers. Having the employers make the evaluations offered not only another perspective, but also a more experienced perspective. Although students know best how much they improved, they do not understand the nature of the skills as well as someone who has been working in the field. The fact that the same statements were used as those given to the students made it possible to compare the results and determine whether there were differences in the perceptions of students and employers in regards to the skills developed from an internship experience.

Employers were also asked about interns' ability to behave ethically and whether they had ever experienced a situation in which an intern had given out confidential information. This was done to explore whether an internship experience could be a source of ethical development. Forty-five employers replied to the survey and 32 of those responses were useable, resulting in an overall response rate of at least 64 percent. The three-year average of 50 employers was used as the total possible (rather than 27 for the most recent year) in order to calculate a more conservative response rate. Thirty-four percent of the respondents were in a human resource role within the organization and 66 percent were in an accounting role. Although the majority of respondents had been with their organization for ten or more years, this was a very slim majority. Table II summarizes the demographic results of the respondents.

Table II: Demographics of Respondents

Role in Organization	N	decimal
Human Resources	11	0.34
Accounting	21	0.66
Total	32	1.00
Years of Experience	N	decimal
<2	6	0.19
2-4	8	0.25
5-7	5	0.16
8-10	9	0.28
Total	32	1.00
Type of Organization	N	decimal
CPA Firm	12*	0.38
Private Company	11	0.34
Public Company	6	0.19
Government Agency	3	0.09
Total	32	1.00
<i>*Two large firms and ten small- to mid-sized firms</i>		

Results

The results of the study are organized into three separate sections. The first section summarizes the responses from employers about internships in general and their value, including the type of positions and length of the internships, as well as the value in offering them, and the value to the student. The second section reports the results from questions asked related to employer hiring practices. Lastly, the third section presents the findings related to the overall preparedness of accounting interns and their skill development.

Internships in General and Value

It is not surprising that over half (53 percent) of the respondents said the average length of their internship was between three and four months and was in the area of either audit, tax, or a combination of both. Most of the respondents (38 percent) were CPA firms, which generally offer most of their internships in the spring semester during tax season. However, there were also a large number of respondents (31 percent) who offered internships greater than six months. This university has seen some of its largest recruiters extending the “regular” spring internship into summer and longer-term internships over the academic year. The results are summarized in Table III below.

Seventy-four percent of employers indicated that providing an internship was a very valuable way to build a relationship with potential future hires. Only 23 percent of employers rated “filling employment needs inexpensively” as a very valuable

reason to hire accounting interns. The results show that although inexpensive labor is a benefit, it is not one considered to be extremely valuable by employers. The results of employer ratings of reasons for offering internships are presented in Table IV below.

In addition to the choices provided, employers could also enter their own reason for hiring accounting interns. Other reasons provided were “to grow our pool of young talent,” “to give experience to an intern while also filling a seasonal need,” and “to allow students the opportunity to experience our firm.” These reasons are all very similar to the specific options presented in the table.

Table III: Average Length and Type of Internship

Time	N	decimal
1–2 months	1	0.03
3–4 months	17	0.53
5–6 months	4	0.13
>6 months	10	0.31
Total	32	1.00
Type	N	decimal
Audit	18	
Tax	15	
Cost	6	
Combination Audit/Tax	7	
General or Corporate Accounting	7	
Other	8	
Totals	61*	

**The type exceeds the number of respondents because one employer can offer multiple types of internships.*

Lastly, employers responded to an open-ended question about what they felt was the value of an internship for an accounting student. Twenty of the 32 employers entered a response to this question. Three themes emerged from the analysis of

the written responses. Employers stated the value in terms of helping students decide on a particular area within accounting to work, providing a “real life” experience, and helping them with their career.

For example, one employer said, “public and private corporations hold many more positions for them that these students do not know exist unless they are exposed to them.” Fourteen of the 20 respondents mentioned specifically how in some way the internship experience was a “real world working experience.” One employer stated it this way “[an internship provides] the opportunity to obtain a real life work experience in a real world setting without the ramifications of disastrous mistakes.”

Some of the ways employers expressed how the internship helped accounting students with their careers were in terms of informing both the employer and the intern about whether they are a “good fit,” “creating the opportunity for potential full time employment after graduation,” and “build[ing] relationships with potential employers.” These comments reinforce prior research that has discussed the benefit of internships, both from the employer and intern standpoints.

Hiring Practices

Employers were asked about whether they had minimum GPA requirements to hire interns, how often they hire interns for full-time positions, and their philosophy in hiring full-time candidates. Eighteen of the 32 respondents (56 percent) of employers indicated that they had a minimum GPA requirement. All but one respondent who had a requirement specified that the minimum was either 3.0, 3.20, or 3.25. Seventy-five percent of total respondents who worked for CPA firms had a GPA requirement. They represented one-half of the respondents with a requirement in place. Considering that CPA firms hire the majority of interns, it is not surprising that they would have formal guidelines in place to ensure the quality of their hires.

Employers also rated the frequency with which they hire an intern for full-time employment on a scale from one (never)

Table IV: Why Employers Offer Internships

Very Valuable Reason to Hire Interns (6 or 7 on Likert scale)	Skill	Mean Response
74%	To build a relationship with potential future hires	5.94
60%	To maintain a positive relationship with a university	5.40
57%	To train future accountants	5.43
50%	To build a positive reputation in the community	5.2
50%	To hire students on a trial basis	5.23
23%	To fill employment needs inexpensively	4.03

to seven (almost always). The mean response was 4.66. Pernsteiner (2015) found 52 percent of the accounting interns surveyed accepted a job offer with the organization where they interned and 70 percent overall had accepted a job offer. Therefore, this relatively low rating by employers may be due to the fact that they either do not have full-time openings to offer, or interns choose to work for a different organization.

Since the majority of CPA firms often have full-time openings, and it is less likely that private organizations would, additional analysis was performed to see if there were significant differences in hiring an intern based on the type of organization. A one-way analysis of variance was conducted to determine that there was no significant difference in hiring an intern based on the type of firm. The independent variable, type of organization, included four groups: CPA firm (M=5.33, SD=1.44, n=12), public company (M=4.17, SD=2.64, n=6), private company (M=4.27, SD=2.05, n=11), and government agency (M=4.33, SD=2.08, n=3). Although the mean was the greatest for a CPA firm, there were no significant differences between the groups. An independent t-test was also conducted that included CPA firms as one group and all other organizations as the second group. There were also no significant differences between these groups.

The last aspect of the employer's hiring practices that was examined was the philosophy in hiring full-time candidates. Respondents were asked to identify the statement that most closely matched with their hiring philosophy or were given an option to add their own. Many (38 percent) of the employers indicated they preferred that candidates had completed an internship with their organization while 19 percent preferred an internship at any organization. Thirty-one percent of employers said that it was not necessary for students to have an internship, and none of the employers said they required an internship.

Considering that many employers felt building a relationship with a potential candidate was a very valuable reason to hire accounting interns, it follows that 31 percent said it was not necessary to have an internship. They hire the interns primarily for the relationship, not because of what the interns get out of the internship. There are most likely a variety of reasons why so many employers preferred an internship with

their organization. Two examples are that the intern already is knowledgeable about practices at their firm, and they know the candidate will fit into their organization.

Intern Development

Employers assessed accounting interns they hired in terms of professional conduct and understanding of ethics. Over half of the employers said students exhibited a high degree of professional conduct in the office and 44 percent rated interns' understanding of professional ethics as high. This university requires all majors in the College of Business to complete four workshops on professional development. All interns would have taken these workshops before their internships began as they are required to be completed before they can be admitted to the College of Business. The results indicate that the majority of interns display a high degree of professional conduct and the workshops may be a contributing factor. The results of these questions are presented in table V below.

In addition to the overall question about understanding professional ethics, employers were also asked whether they had ever experienced situations where interns felt that by following a particular directive they would be violating professional ethics. All employers responded that they had not experienced this type of situation. Similarly, employers responded to a question about whether they had ever experienced an accounting intern that shared confidential information with friends, family, or others outside the organization. Only two employers responded that they had had accounting interns share confidential information, but both indicated that this did not have a detrimental effect on client relationships.

Overall, it seems that accounting students have a high degree of understanding of ethics at the time they are completing an accounting internship. It had the highest mean response even though it was not significantly developed from the internship experience. At this university, ethics is integrated throughout the accounting curriculum and a standalone ethics course is offered as an elective. The elective course is generally taken by accounting students in their last year, after the internship has been completed (if at all).

Table V: Overall Assessment of Interns in Professionalism and Ethics

High Degree (6 or 7 on Likert scale)	Statement	Mean Response
59%	Please rate the level of professional conduct by interns in the office (1 = very unprofessional; 7= high degree of professionalism exhibited)	5.62
44%	Please rate the level of interns' understanding of professional ethics (1= no understanding; 7= high degree of understanding)	5.39

A paired sample t-test was conducted to evaluate whether a statistically significant difference existed in each of the hard and soft skills before and after an internship. All of the means increased and were significant except for ethical behavior. The skill that employers felt increased the most was independence and the second highest was confidence. Students said they made the most progress in confidence, and Microsoft Excel was the second highest (Pernsteiner, 2015). Employers indicated there was a significant improvement in interns' Microsoft Excel skills, but it was not as much of an improvement as some of the other skills. It is interesting to note that although employers indicated that accounting interns displayed some understanding of professional ethics (mean response = 5.39) during their internship, they felt the intern only increased their ability to behave ethically slightly. The results of the employer ratings of pre and post interns in terms of the skills they developed are presented in table VI below.

Considering that the employers' ratings could be influenced by other variables such as the type of work they do or the amount of experience they have, additional analyses were conducted to see if there were significant differences in the responses based on type of organization, the respondent's role within the organization, or number of years with the company. A one-way analysis of variance was conducted for each skill statement, both pre and post, to determine that there were no significant differences in the responses based on the type of firm. There was one significant difference in the skills statements, for both the pre and post responses, for the statement regarding the ability to use Microsoft Excel or other software. The significant difference was found between CPA firms and private companies. The results are reported in table VII.

An independent t-test was also conducted that included CPA firms as one group and all other organizations as the second group. There were no significant differences between these groups for any of the skill statements. In addition, an independent t-test was conducted to determine if there was a statistically significant difference in the means for each skill statement, both pre and post, based on the role of the respondent in the organization. The two groups used were human resource or administrative role and accounting role. There were no significant differences between these groups in any of the skill statements either pre or post.

A one-way analysis of variance was conducted for each skill statement, both pre and post, to determine that there were no significant differences in the responses based on the number of years of experience. Three groups were used: zero to four years, five to ten years, and more than ten years of experience. There was one significant difference in the skill statements for both the pre and post responses for the statement regarding the ability to speak in front of other people (pre $p=.025$; post $p=.001$). The significant difference was found between those respondents with five to ten years of experience and those with more than ten years. There was also a significant difference in only the pre-internship results for the skill statement about writing effectively for the same groups (pre $p=.035$; post $p=.150$). Although the post results were not significantly different for the ability to write effectively, the means are consistently lower for the group with more than ten years of experience. The results are reported in tables VIII and IX below.

These results are thought-provoking. It is possible that those individuals who have more experience have higher standards in regards to communication skills. This could be because they believe communication skills are more important or because

Table VI: Progress Made on Skill Development

Skill	Mean Response When Hired	Mean Response After Internship	p-Value
How to work independently and resolve issues on your own	4.44	5.88	0.000
Confidence in ability to work in an accounting position	4.91	6.00	0.000
Understanding of the technical aspects of accounting	4.62	5.66	0.000
How to use your judgment	4.81	5.78	0.000
How to manage your time and complete tasks in the most efficient manner	5.13	5.94	0.000
How to analyze data	4.81	5.68	0.000
How to speak in front of other people	4.37	5.13	0.000
How to use Excel or other computer software	5.56	6.28	0.000
How to communicate (network) with other people	5.34	5.91	0.000
How to write effectively	5.03	5.59	0.001
How to work with others	5.69	6.22	0.000
Behave ethically	6.25	6.31	0.765

Table VII: ANOVA Results for Ability to Use Excel or Other Software

Type of Organization	Pre			Post		
	Mean	SD	N	Mean	SD	N
CPA firm	6.00	0.95	12	6.42	0.90	13
Private company	4.64	1.36	11	5.73	0.79	11
Public company	6.00	0.89	6	6.67	0.52	6
Government agency	6.33	0.58	3	7.00	0.00	3

Table VIII: ANOVA Results for Ability to Speak in Front of Others

Years of Experience	Pre			Post		
	Mean	SD	N	Mean	SD	N
0–4	4.64	1.3	14	5.50	1.02	14
5–10	5.11	1.7	9	5.89	0.93	9
>10	3.22	1.5	9	3.78	1.56	9

Table IX: ANOVA Results for Ability to Write Effectively

Years of Experience	Pre			Post		
	Mean	SD	N	Mean	SD	N
0–4	5.86	0.77	14	5.64	0.93	14
5–10	6.00	1.32	9	6.11	1.05	9
>10	5.11	1.17	9	5.00	1.58	9

there is a considerable gap (they have superior skill) in their skills as compared to those of students' right out of college. This is an area to explore further using larger sample sizes.

To help validate these findings and the skill statements used, employers were asked an open-ended question to identify the strengths and weaknesses in the interns they hire. Virtually all of the comments were related to skills identified and asked in the survey. Some stated them as strengths while others stated them as weaknesses. In terms of professionalism, one employer noted inappropriate cell phone use and punctuality as issues they see. The weakness that was mentioned the most often by employers was lack of skills using Microsoft Excel.

Lastly, employers rated their overall satisfaction with the skill level of interns they hire. The mean response was 5.45. This may indicate that we can continue to improve the skills of accounting students through the accounting curriculum. Although students reportedly made progress on their skills during the internship, employers would like them to have greater skills when they start.

Conclusions And Areas For Future Research

Overall, this study supports prior research conducted in the area of accounting internships, finding significant benefits for both the student and the employer. Overwhelmingly, employ-

ers described the greatest value an internship provided to an accounting student was that of a real-life experience. Employers also felt that accounting interns develop significantly in both hard and soft skills over the course of their internship experience. However, there were some differences noted when comparing the results of this study to that of prior research. For example, students and employers rated skills differently in terms of which ones developed the most significantly. This may be of less importance than the affirmation by employers that accounting students significantly increase all of the identified skills in the study except ethical behavior.

Employers reported the most valuable reasons for offering an internship were to build relationships with potential future hires and universities. Although they also found value in filling their employment needs inexpensively, this was not the most important reason to offer an internship. Thus, it appears that an accounting internship is an extremely important recruiting tool for the accounting profession.

The results of the study provide useful information to employers who are currently offering internships or are considering offering them. First, there are several reasons to offer internships from the employer perspective, including building a connection with a pool of candidates for hiring and staying connected with universities. The results also affirm that employers play an integral role in helping accounting students

prepare for the profession. The more employers consider the impact they have on the accounting student, the more they are able to make intentional choices about what responsibilities the accounting intern has during their internship. For example, providing interns with an opportunity to write a memo or prepare a presentation could help an accounting student understand the importance of communication to the accounting profession as well as identify their strengths and weaknesses in that particular area. Future research could explore specific responsibilities to be included in an internship that promote the greatest growth in skill development.

For accounting educators and administrators, the results identify some areas to review in terms of the accounting curriculum. First, since students experience extensive development in both hard and soft skills through an internship, making an internship experience required should be considered. Having a sufficient number of internship sites may be an impediment to including an internship experience as a requirement, but sharing the benefits discussed in this paper with employers could help grow the number of internship locations. Second, the results indicate that accounting students need to develop some skills through other areas of the curriculum. For example, ethical behavior is not substantially developed during the internship, indicating ethics needs to be taught in other areas. However, although the skill was not significantly developed during the internship, it had the highest mean response in terms of the development before and after the internship. It could be that this was a behavior that was difficult to observe, making it something that was assumed to be true in the absence of any inappropriate behaviors. Ethical development is a complicated area and was not the focus of this study. It is an interesting topic for future research to explore. A reliable instrument testing for ethical development could be given to accounting interns before and after their internship to determine their level of ethical development.

Although the ability to speak in front of people and writing effectively significantly changed from the beginning of the internship to the end, both of these skills had the lowest mean responses from employers. It is positive that employers felt accounting students improved these skills during their internship, but it seems that these skills were still not as well-developed as others. This is another area to explore in future research. If adding additional coursework in these areas and participating in high impact practices is not enough for students to have a high degree of development, what other methods can be used to ensure the level of communication skills is as high as other soft skills?

Clearly an accounting internship makes a strong contribution to the education of accounting students and should be heavily promoted by accounting firms, accounting faculty and administrators. The results of this study can be used to encourage more students to complete accounting internships. Sharing

employer perspectives of its value with accounting students is critical to their recognition of its importance. Students in a rush to graduate should strongly consider how a choice to take time for an accounting internship now could impact their entire future career. The results encourage employers, accounting faculty and administrators to work together to develop more internship opportunities so every student, to the extent possible, can take part in the development that occurs during the experience. The formula for a successful accounting graduate includes fostering soft skills as well as technical skills. Well prepared, successful graduates in accounting will help make significant contributions to growing the reputation of the accounting profession and its importance in our economy.

One limitation of this study is the sample size. The sample size is relatively small, so the comparability of the study may be reduced. This is especially true of the comparisons made based on type of organization and years of experience. The sample size within any of these groups is small, making it difficult to detect significant differences. Therefore, although the results indicated the ratings by employers did not differ across the type of organization or experience of the respondent in most cases, significant differences may actually exist. The consistency in the ratings by employers across these groups currently allows the results to be summarized, which may not hold true when the sample size is increased. Future research using larger sample sizes would help validate the results of this study.

Another limitation is that the sample was from only one university. The results could vary across different universities but that comparison cannot be made with the current data. A third limitation is that the survey instrument used for skill development has not been tested for validity and reliability. It is possible that the same results could not be replicated across a different sample. Finally, the ratings provided by employers were based on a generalization of their internship experiences rather than on individual intern experiences. This also could be a limitation in the study as employers may have had a recent very good or very poor experience that influenced their judgment of interns overall.

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The Effects of Accountability on Individual Brainstorming Performance

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ABSTRACT

This study is concerned with the effects of accountability on individual performance when preparing for fraud risk brainstorming sessions. We investigate how accountability influences the number and quality of fraud risk ideas generated. Brainstorming has been found to improve an auditor's detection of fraud during an audit. Despite this, little research exists on the preparation stage of brainstorming and what factors might improve brainstorming performance. We conduct an experiment using senior-level accounting students to examine the influence of induced accountability on individual brainstorming preparation. Results find individuals who are held accountable generate a similar number of fraud risks as those who are not held accountable, but generate lower quality fraud risk factors during brainstorming tasks. These findings indicate that accountability stifles the brainstorming process and diminishes the benefits of the process. *Keywords: Accountability, Brainstorming, Fraud Risks, SAS 99, AU-C 240*

Introduction

This study investigates how accountability influences individual fraud risk brainstorming performance. The brainstorming session is a relatively recently required element within auditing standards and has been found to improve auditor's fraud detection efforts. A brainstorming session requires members of the audit team to assemble and discuss the possibility of material misstatements in the financial statements due to fraud prior to and during the collection of information. Statement of Auditing Standards No. 99 (hereafter SAS 99), later codified as AU-C Section 240 (hereafter AU-C 240), *Consideration of Fraud in a Financial Statement Audit*, requires auditors to conduct a brainstorming session during each financial statement audit to discuss how management might perpetuate and conceal fraud (American Institute of Certified Public Accountants 2002; American Institute of Certified Public Accountants (AICPA) 2012, para. 15). Further, in 2010, the Public Company Accounting Oversight Board (hereafter PCAOB) issued a suite of risk assessment standards, which incorporated and strengthened the requirements of AU-C 240. Particularly, Auditing Standard No. 12 (hereafter AS 12), *Identifying and Assessing Risks of Material Misstatement*, reiterates that the audit engagement team should conduct an exchange of ideas, or brainstorming session, to determine how and where financial statements might be susceptible to fraud and how management might perpetrate and conceal fraudulent financial reporting (Public Company Accounting Oversight Board 2010, para 52). The purpose of this study is to consider what factors are associated with individual (nominal), rather than group, brainstorming performance. Specifically, we examine how accountability influences performance during a brainstorming preparation task.

Prior literature shows that there are often two stages of brainstorming: a preparation stage and a group brainstorming session (Beasley and Jenkins 2003; Bellovary and Johnstone 2007). While neither AU-C 240 nor AS 12 requires an individual preparation component, prior research documents that individual preparation prior to group brainstorming improves the group brainstorming session (Osborn 1953, Osborn 1957; Isaksen 1998). To date, however, little research has focused on the preparation stage of brainstorming or about preparatory factors that impact individual performance during brainstorming sessions. Most of the extant accounting brainstorming research considers the efficacy of various forms of brainstorming (Chen et al. 2015), the related improvements to auditor's fraud risk assessments, and changes to audit programs (Carpenter 2007). Ramos (2003) states that individual brainstorming preparation may be beneficial in developing an increased understanding of the client environment and current financial performance, ensuring the similarity of information shared by all members of the group, and emphasizing a group focus on the characteristics of the fraud triangle. Further research on brainstorming preparation and the benefits of individual auditor preparation is needed to ensure to efficacy of the brainstorming process required by AU-C 240 and AS 12.

In 2007, the PCAOB criticized audit firms for their failure to meet the criteria of SAS 99 regarding brainstorming suggesting a need for audit firms to increase the quality of brainstorming performance (Public Company Accounting Oversight Board 2007). As brainstorming sessions represent the consensus of the fraud judgments of individual auditors, a focus on individual preparation is an important starting point. Building on the notion that preparation likely improves performance

(as stated above), the next step is to consider factors that may improve individual brainstorming preparation.

This study addresses the issue by examining the influence of one specific factor, accountability, on individual brainstorming performance. Prior research suggests that accountability generally improves judgment and decision-making (hereafter JDM) performance in an auditing context (Kennedy 1993; Hoffman and Patton 1997; DeZoort et al. 2006; DeZoort and Harrison 2008). In this study, we experimentally investigate the effects of individual accountability during an audit brainstorming session of fraud risks.

This study should be of interest to accounting researchers, as it extends the academic literature on fraud risk brainstorming and provides exploratory evidence on how accountability affects performance during the required brainstorming session. These findings might also be extended to the auditors' continued awareness of fraud risk areas throughout the audit. The results of this research are also important to audit firms responsible for structuring and conducting required brainstorming sessions. Knowledge about the factors that improve or impede brainstorming sessions may enhance the audit process.

The remainder of this paper is organized as follows: Section II provides the background and hypotheses development. Section III presents the methodology and experimental design and Section IV discusses the results. A discussion and concluding comments are presented in section V, and limitations and suggestions for future research are presented in Section VI.

Literature Review

SAS No. 99 / AU-C 240

Fraud consideration requirements of AS 12 are founded in SAS 99 (later superseded by AU-C 240). However, AU-C 240 is considered the most authoritative audit guidance for fraud detection and outlines auditors' responsibility to consider fraud in financial statement audits. AU-C 240 increases auditors' responsibility to detect fraud and to consider the potential for fraud continuously throughout the audit engagement (AICPA 2012). The standard requires a discussion of fraud among all key members of the audit team, referred to as a brainstorming session. Therefore, an understanding of the key features of AU-C 240 provides the context for understanding auditors' current fraud detection responsibilities.

AU-C 240 defines fraud as "an intentional act by one or more individuals among management, those charged with governance, employees, or third parties, involving the use of deception that results in a misstatement in financial statements that are the subject of an audit" (AICPA, 2012, para. 11). AU-C 240 (as well as the original SAS 99) considers fraud within a framework of several fraud risk factors related to

management's incentive, pressure and opportunity to commit fraud (i.e., fraud triangle) (AICPA, 2012, para. 11). However, unlike earlier standards, SAS 99 deemed the inclusion of a fraud triangle checklist in audit work papers insufficient to address fraud risks (Carpenter 2007).

Under AU-C 240, audit team members must conduct a brainstorming session during the planning phase of every engagement to discuss where and how management might perpetuate and conceal fraudulent financial reporting with regard to the fraud triangle (AICPA 2012). Although the standard does not specify how the session should be conducted, it describes the session as "an exchange of ideas" and suggests that communication about fraud should continue throughout the audit and occur with an attitude of professional skepticism (AICPA 2012, para. 15). Further, the standard provides a list of factors that should be addressed during the brainstorming session (AICPA 2012, para. 15, A12-A13).

Brainstorming Preparation

In conjunction with AU-C 240 not clearly specifying how brainstorming sessions be conducted, it does not require individual brainstorming preparation prior to the group session. Much of the research in accounting and psychology describes a two-phase approach to brainstorming (Beasley and Jenkins 2003; Bellovary and Johnstone 2007). Stage one consists of individuals brainstorming alone prior to any group meeting or session. This phase of brainstorming is closely related to the concept of nominal groups where aggregating individuals' brainstorming is referred to as a nominal group (Carpenter 2007). Stage two consists of the group brainstorming session and allows for discussion and sharing of ideas. One key measure of performance during stage two is the number of ideas generated by the group. While most research acknowledges both stages of brainstorming, most literature focuses on stage two, while virtually ignoring stage one. This paper focuses on stage one, which is also referred to as the "preparation" phase of brainstorming or nominal (individual) brainstorming.

Prior research emphasizes the importance of having individuals brainstorm alone or prepare prior to group brainstorming sessions (Beasley and Jenkins 2003; Bellovary and Johnstone 2007). Though Osborn's (1957) seminal work supports the superiority of group brainstorming over individual efforts, he maintains that participants attending the brainstorming session should have some preparation and training in advance of the group session. Specifically, Osborn recommends that a preparation memo be distributed prior to the brainstorming session to offer background information and examples of the type of ideas desired to address the problem. Additionally, the preparation memo should request participants to generate ideas on their own prior to the group brainstorming session (Isaksen 1998).

Beasley and Jenkins (2003, 5) suggest assigning “homework” prior to group brainstorming sessions to avoid some of the inefficiencies associated with group brainstorming. They state that encouraging audit team members to brainstorm prior to the session allows them to utilize their experience and prior knowledge about the client and gives them an idea of what to expect during the brainstorming session. In addition, including checklists (such as those associated with the fraud triangle) or other tools with the homework provides a structure for group discussion.

While much accounting brainstorming research has relied on experimental data, one recent field study describes brainstorming activities in audit practice. Using a series of interviews among various audit team members, Bellovary and Johnston (2007) find that nearly 96% of team members engage in some form of preparation prior to group brainstorming sessions by gathering relevant client information and/or preparing checklists. This finding demonstrates that preparation is a typical part of brainstorming practice and highlights the importance of further research in this area.

In summary, individual preparation has been shown to mitigate some of the inefficiencies associated with group brainstorming and given that little or no research has been conducted in improving/assessing this step in the brainstorming process, it appears to be an area of accounting research that warrants further empirical exploration. This study begins to address this and specifically considers one factor, accountability, which may improve individual performance during brainstorming preparation.

Accountability and Number of Ideas Generated

The number of ideas generated by the group is a key performance outcome of the second stage of brainstorming and this type of measure has been used to evaluate individual brainstorming performance. Roach et al. (2006) measure the number of ideas generated to investigate the influence of goal setting and humor on individual brainstorming performance. Thus, although their study is concerned with individual, rather than group performance, it provides evidence that idea generation is an appropriate measure. Their paper considers how one key factor, accountability, influences individual brainstorming performance. Therefore, it is important to understand accountability in an accounting research context.

Common elements of accountability include the involvement of another party, traceability of the individual’s JDM, individual evaluation, and the possibility for justification (Lerner and Tetlock 1999). Tetlock (1985, 307) states the following in regards to accountability:

Accountability is a critical rule and norm enforcement mechanism: the social psychological link between

individual decision-makers on the one hand and the social systems to which they belong on the other. The fact that people are accountable for their decisions is an implicit or explicit constraint upon all consequential acts they undertake (If I do this, how will others react?).

Bonner (2007, 214) discusses the impact of accountability on auditor JDM, defining accountability as “the implicit or explicit expectation that one may be called on to justify one’s beliefs, feelings and actions to others”. The relation between accountability and JDM factors may be mediated by several variables, though motivation and consequent effort are the most important (Bonner 2007).

Lerner and Tetlock (1999) review literature on accountability within a variety of contexts, distinguishing between accountability to parties with known versus unknown views. When individuals are accountable to parties with known views, cognitive effort is reduced and their judgments and decisions tend to converge with those to whom they are accountable (Tetlock 1983; Tetlock 1985; Tetlock et al. 1989; Wilks and Zimelman 2004). When individuals are held accountable to parties with unknown views, they are more likely to engage in more “vigilant, complex, and self-critical thinking” (Tetlock 1992, 343; Lerner and Tetlock 1999). Research also finds that higher levels of cognitive effort are exhibited by individuals that are held accountable in an effort to maintain their reputations with clients, third parties, and other auditors, and to avoid the consequences that may arise when their actions are not consistent with their evaluative audience (Messier et al. 1992). In addition, these individuals engage in preemptive self-criticism and consider numerous perspectives related to the issue (Bonner 2007). In an audit engagement, the evaluative audience would include all members of the audit team comprised of auditors with various experiences who may or may not have had previous involvement with one another. As such, the views related to fraud risk may be unknown prior to the group brainstorming session. Thus, audit members are more likely to exhibit higher cognitive effort because the views of team members may be unknown, thereby protecting their reputation among colleagues.

Experimental research has found that accountability affects auditors’ behavior and decisions. Auditors expecting a review of their work more thoroughly justify their decisions than those not expecting a review (Koonce et al. 1995). Lord (1992) finds auditors held accountable for their decisions were less likely to issue an unqualified opinion, while those not held accountable were more likely. While examining the effects of accountability on auditor’s testing strategies, Asare et al. (2000) found that accountable auditors increased the breadth of their testing, expanded testing of potential error causes, and demonstrated better performance overall than non-accountable auditors. Another consistent finding regarding accountability

is that individuals who are accountable tend to exhibit a higher degree of conservatism in their judgments and decisions (Lord 1992; Buchman et al. 1996; Hoffman and Patton 1997). Research has also shown that accountable individuals exert more effort during a task and tend to exercise greater levels of conservatism with respect to fraud risk (Peecher 1996). Peecher (1996) investigates the effects of accountability on auditor's judgments in a fraud risk assessment task. Results indicate that for subjective tasks, auditors held accountable to superiors exhibited higher levels of skepticism and assessed higher levels of fraud (i.e., were more conservative in their fraud risk judgments).

The accountability-induced motivation raises the level of self-critical effort because individuals believe that they must prepare for the possibility of criticism by others (Lerner and Tetlock 1999; Bonner 2007). These findings suggest the plausibility that auditors who feel accountable will scrutinize their work more than auditors who are not held accountable for their work, which may have unintended adverse effects on performance. Given the potential for greater self-critical effort, along with the suggested relationships between accountability and conservatism among individuals that feel accountable, we expect that accountable participants may list fewer ideas during a brainstorming task than non-accountable participants. Further, while accountability may have positive effects during some auditing tasks, the self-critical effects of accountability might also hinder or lower the quality of performance in other tasks, such as brainstorming. These hypotheses are formally stated below in the alternative form.

H1: Individual brainstorming participants who feel accountable to parties with unknown views will generate fewer fraud risk ideas than individual brainstorming participants who do not feel accountable.

H2: Individual brainstorming participants who feel accountable to parties with unknown views will generate lower quality (fewer correct) fraud risk ideas than individual brainstorming participants who do not feel accountable.

Methodology

Experimental Design and Task

We conducted a 1 X 2 experiment to assess the effects of accountability on individual brainstorming performance. Two primary dependent measures were used to evaluate brainstorming performance: 1) total number of fraud risk ideas generated, and 2) number of correct fraud risk ideas generated. Participants were randomly assigned to one of two treatment conditions for accountability (present or absent). Accountable participants were informed in the instructions

that their answers for the task were required to be shared and would be subject to evaluation during the group brainstorming procedure. A subsequent group brainstorming session was conducted solely for the purpose of manipulating the accountability variable. During the group brainstorming session, some individuals were called upon to share ideas generated during the individual session. However, no information from the group session was used in testing the hypothesized relationships. In the not accountable condition, participants were ensured that they were not required to share and that their responses would remain anonymous.

A fictional case, based on a non-profit organization and reviewed by several auditing professionals, was prepared with embedded fraud risk factors. Participants were given the case materials containing instructions, background information about the client, a narrative description of the company's management, and a five-year statement of activities. The narrative information discussed areas related to the fraud triangle, such that information about managements' incentive, opportunity, and rationalization to commit fraud is discernable. The case also provided a review of the three components of the fraud triangle and a brief summary of AU-C 240. Participants were asked to check that they read and understood the usefulness of the fraud triangle and AU-C 240 before they began the experiment. While some participants may have had prior exposure to this information, we assumed a base level of knowledge among participants and exposed each of them to this content. Due to the lack of familiarity regarding the required brainstorming sessions, we informed participants that they were simply generating ideas about potential fraud within the case.

Participants

The participants in our study were 118 senior-level undergraduate students (60 Males and 58 females) with an average GPA of 3.31 and attending a four-year university located in the southwestern region of the United States. The average age of the participants was 25 and ranged from 20 to 57. They reported an average of a little less than four years of professional experience. The average number of times participants reported being engaged in brainstorming planning sessions was about four times. Their knowledge and experience with nonprofit organizations was minimal with a reported average of two using a 9-point Likert scale. Please note that two participants omitted data relevant for some of the descriptive statistics. For these two observations, we imputed an average for the omitted data. Descriptive statistics for the sample are presented in Table I.

Prior research suggests that use of student participants as surrogates for professional accountants is an acceptable methodological choice in certain structured contexts (Mortensen et al. 2012). Moreover, unless a specific theory that is relevant to the research exists, justifying the need to use auditing profes-

Table I: Sample Size and Descriptive Statistics

Variables	N	Mean	SD	Min	Max
Age	118	25.03	6.56	20	57
Years of professional experience	118	3.27	6.35	0	37
Brainstorming experience	118	3.60	2.41	1	9
Nonprofit accounting knowledge	118	2.40	1.57	1	8
Nonprofit work experience	118	2.37	2.09	1	9
Understanding of accountability	118	8.75	0.54	7	9
Cumulative GPA	118	3.31	0.48	2.0	4.0

sionals or using professional subjects is necessary to achieve the research goals, researchers should consider the use of students as participants in experimental research (Peecher and Solomon 2001; Libby et al. 2002; Curtis et al. 2012). Further, several studies in prior accounting research have utilized students as surrogates for accountants (Houghton and Hronsky 1993) and auditors (Ashton and Kramer 1980; Borthick et al. 2006).

More specifically, research suggests that auditing students have acquired the values, attitudes, and cognitive and professional capabilities necessary for entry into the accounting profession through anticipatory socialization provided by upper-level accounting courses (Weight 1977; Elias 2006; Elias 2007; Elias 2008; Ahmad et al. 2011). In this study, we are primarily testing the effect of accountability on performance and use brainstorming as a tool in order to provide insight helpful to audit firms about improving brainstorming sessions. Thus, the technical knowledge or experience surrounding brainstorming should be less influential in the experiment as these senior-level students have reached a level of knowledge about fraud and fraud-related concepts as new auditors. In addition, as much of the fieldwork in auditing is conducted by entry-level professionals, the ability of these young professionals to consider, independent of other engagement team members, fraud risk factors of a client is an important topic of concern for the entire engagement team. This study's participants are senior-level students who are, on average, two semesters away from qualifying to enter the profession as entry-level auditors and as such, should serve as an appropriate proxy for new auditors. For these reasons, we feel that our use of students as participants, serving as a proxy for entry-level or newly hired auditors in a relatively structured task, is consistent with our research objectives.

Experimental Procedures

This experiment took part in two phases, an individual brainstorming phase and a group brainstorming session. Both phases were administered and monitored by one of the authors in a controlled setting during the regular class period and lasted approximately 30 to 40 minutes. Prior to beginning phase

one, each participant read the general instructions concerning the experiment and received a packet containing all case materials. Participants enrolled in one of two sections of an upper-level accounting course were randomly assigned to one of two conditions, the accountable or not accountable condition, as evidenced by page one of the instruction packet.

In phase one, participants were given roughly five minutes to familiarize themselves with the instructions and summaries of the fraud triangle and AU-C 240 prior to beginning the experiment. Their task was to brainstorm individually and list fraud risks they believed were present in the case. During this phase, participants were able to access all of their case materials for use as a reference. Subsequently, demographic information such as age, gender, professional experience, prior brainstorming, and not-for-profit experience was collected. In addition, a manipulation check was performed to ensure that participants correctly perceived the accountability manipulation.

Phase two of the experiment consisted of a matching session and a group brainstorming session. In the matching session, participants were asked to match their list of fraud risks generated during phase one to one of 20 common fraud risks provided to them. Afterwards, the brainstorming session began where participants were asked to share their fraud risks ideas generated during the individual session as a group. The purpose of this phase was solely to replicate an actual brainstorming session and no data was collected during this phase.

Results

Manipulation Checks

Accountability was manipulated between participants (accountable or not accountable) through the verbiage used in the instructions. In the accountable condition, the following statement was presented: "I understand that I **will be** required to share my responses during the group brainstorming exercise and that these responses will be evaluated." Similarly, the not accountable condition ensured participants that their responses

would be kept confidential and that they were not required to discuss answers during the group brainstorming session. The statement provided is as follows: “I understand that I **will not be** required to share my responses during the group brainstorming exercise and that my responses may remain anonymous.” Participants provided survey responses indicating their level of perceived accountability. Specifically, we asked them to indicate, using a nine-point Likert scale, their level of understanding with one of the following statements: “I understand that I will be required to share my responses during the group brainstorming exercise and that my responses will be evaluated” or “I understand that I will not be required to share my responses during the group brainstorming exercise and that my responses may remain anonymous.” Participants’ mean responses to the question in the accountable condition and non-accountable condition were 8.75 and indicated they correctly perceived being accountable or not accountable ($p < .000$).

Validity Checks

We performed several tests to examine the existence of threats to internal and external validity. We examined data collected in each section and found no significant difference in the dependent variables between sections. Thus, the data from both sections was combined and analyzed. Possible systematic differences between the control and treatment group were examined. Results do not find any significant differences between the age, gender, overall GPA, professional experience, and accounting knowledge, indicating that both groups are otherwise identical.

Analysis of Variance

Table II presents the means and standard deviations for all three experimental conditions. We used analysis of variance (ANOVA) to test the significance of the differences between experimental conditions.

Table II: Sample Size and Descriptive Statistics

	Fraud Risk Ideas	Correct Fraud Risks
Accountable	9.22 (3.360) {60}	6.34 (1.297) {60}
Not Accountable	9.24 (2.710) {58}	7.22 (1.287) {58}

Hypothesis one suggests that the accountable group will be more conservative in their judgments and generate fewer fraud risk ideas than the not accountable group. The average number of fraud risks generated from both groups was nine. Results do not find a significant difference between groups $F(1,116) = .002, p = .965$. Findings in prior literature show that accountability leads to an increase in effort and motivation to be correct, while at the same time, tending to generate

a greater degree of self-critical effort and skepticism. Thus, hypothesis two suggests that accountable participants will generate lower quality (i.e., fewer correct) fraud risk ideas than not accountable participants. Results show statistically significant differences between both groups in the number of correctly identified fraud risks between groups $F(1,116) = 13.895, p < .000$. Thus, the results support hypothesis two as the accountable group ($n = 6.34$) exhibited lower quality performance (i.e. fewer correct fraud risks) than the not accountable group ($n = 7.22$). These results suggest that accountability may actually hinder the brainstorming process, despite the efficacy of accountability in other auditing contexts. ANOVA results are summarized in Table III (page 42).

Sensitivity Analysis

Additional analyses were conducted to test the robustness of the results. Demographic variables (age, gender, and experience) were added as control variables in an extended multivariate analysis (MANOVA). Results indicate a strong positive relationship between accountability (*Accountability*) ($p = .000$) and nonprofit experience (*NP Work Experience*) ($p = .007$) on individual brainstorming procedures. No other variables were significant and there was no change in the pattern of significance on the dependent variables. Results of the multivariate analysis of covariance (MANCOVA) summarized in Table IV.(page 42).

Conclusions And Areas For Future Research

This research contributes to the extant accounting literature by explicitly focusing on the preparation stage of brainstorming for fraud. Much of the research to date has considered the superiority of various types of brainstorming techniques in their ability to generate fraud risk ideas, fraud risk assessments, and other changes to the overall audit plan (Chen et al. 2015). This study solely considers how individuals with different levels of accountability differ in their individual brainstorming preparation efforts. While accountability has proven benefits in various auditing tasks, our study reveals a potentially negative impact that accountability may have on the auditing tasks of individual brainstorming. While participants that feel accountable to another party may work harder to generate correct responses, they also tend to be more skeptical, and self-critical of their responses, which in this case, led to poorer performance. The results suggest that when conducting brainstorming sessions, it may not be advisable to hold individuals accountable for their responses, as it may stifle their ideas and have deleterious effects on their ability to correctly identify relevant fraud risk factors.

This research is among the first to explore relationships between accountability and brainstorming performance and has important implications for standard setters as they con-

Table III: Effect of Accountability on Individual Brainstorming Procedures

Source	Sum of Squares	df	Mean Square	F	Sig.	Result
Number of Fraud Risk Ideas (H1)	1084.822	116	9.352	0.002	0.965	Not supported
Correct Fraud Risk Ideas	216.866	116	6.488	1.670	0.000	Supported

Table IV: MANCOVA Results
Effect of Accountability, Gender, Knowledge, and Experience on Individual Brainstorming Procedures

Source	N	F(Wilks' λ)	p-value	Partial η^{2b}	Observed Power ^c
Intercept	116	330.593	0.000	0.086	1.00
Gender	116	2.063	0.132	0.037	0.417
Professional Experience	116	2.982	0.055	0.052	0.569
Brainstorming Experience	116	1.241	0.293	0.022	0.265
NP Accounting Knowledge	116	2.932	0.058	0.052	0.561
NP Work Experience	116	5.169	0.007	0.087	0.818
Accountability ^a	116	9.721	0.000	0.153	0.980

The dependent variables are Number of Fraud Risks Ideas and Correct Fraud Risk Ideas

^acoded as a fixed factor. The other variables are coded as covariates.

^bPartial η^2 , measured on a scale from 0 to 1, indicates the proportion of the variance in the dependent variables explained by the independent variable.

^cObserved power, measured on a scale from 0 to 1, indicates the likelihood that an existing effect will be detected.

tinue to make improvements to the auditor's requirements for considering fraud in the financial statement audit. Recent reports of the PCAOB have criticized firms for their inability to demonstrate effective brainstorming sessions, citing substantial variation in the quality of brainstorming sessions and have indicated the need for improved curriculum for auditors focusing on, among other things, brainstorming (PCAOB 2007; PCAOB 2014; Burns and Zelic 2014). Further, the Board's Standing Advisory Group has added fraud risk assessment, including brainstorming, to its most recent agenda, indicating continued concern in this area. This research will add to the extant research aimed at improving the overall quality of the audit; in this case, improving the efficacy of the brainstorming sessions. This new area of research, however, is primarily aimed at improving the individual auditor's brainstorming participation and fraud risk assessment, rather than looking at the efficacy of the entire group.

As firms are comprised of individual auditors, the individual performance of auditors is an important determinant in the overall quality of the group brainstorming session. Improving individual auditor performance related to brainstorming is a feasible solution for firms in structuring the brainstorming session to conform to the requirements set forth in AU-C 240. Moreover, firms that integrate an individual accountability component for brainstorming (e.g., suggestions that the

more experienced auditors will be using the brainstorming session as a training ground for new auditors) or create an atmosphere that would lead to the appearance of accountability (e.g., warnings to new auditors that the partner will be in attendance and will be listening to what they have to say with a critical ear) might reconsider the potentially adverse effects of such a process. This reconsideration may lead to related improvements in the group brainstorming sessions, especially if it is reiterated to the new auditors that they will not be held accountable or judged for their comments and suggestions during the session (e.g., tell them there are no 'stupid' suggestions and to individually try to come up with and share any possible fraud risk scenarios). These improvements are ultimately associated with increased attention to the possibility of fraud in the financial statements, which is the underlying premise of AU-C 240.

This study is subject to several limitations. First, the amount of information participants received and the preparation time was limited in order to simplify the experiment and to reduce completion time. Second, senior-level students from a single institution were included in the experiment; however, using undergraduate students in experiments examining brainstorming is common in behavioral research (Gallupe, et al. 1992; Litchfield 2009; Litchfield et al. 2011). While limitations exist when using student participants, prior research suggests that

students may serve as surrogates for practitioners, unless a specific theory or research goal precludes using students as subjects (Peecher and Solomon 2001; Libby et al. 2002) and that students may share similar characteristics of entry-level accountants (Weight 1977; Elias 2006; Elias 2007; Elias 2008; Ahmad et al. 2011). Our study focuses on this group of individuals (new-hires) and the results may not be generalizable to more experienced or senior level auditors. Last, accountable participants faced no penalty, other than minimal grading assessment, for identifying incorrect or a lower number of possible fraud risks.

Future research should consider using professional auditors as participants to replicate this study. In an audit environment,

penalties could include loss of reputation and the possibility of additional hours being worked, leading to budget overages. Future studies might also consider adding a quantity component as research finds quantity goals improve performance (Litchfield 2009). Managers may consider requiring audit team members to provide a minimum number of fraud risk ideas. While our study focused on how accountability influenced a brainstorming tasks, the auditing environment contains a variety of tasks that are likely included by the accountability of the auditor. Tasks such as work paper review, computations of estimates, identification and assessment of internal control deficiencies, and other fraud and error-based risk analyses are interesting areas for future researches to study the effects of accountability.

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Appendix A: Independent Variable

Accountability was the sole manipulation in the study. Accountability was manipulated by informing participants throughout the instrument that their responses generated during the brainstorming session would or would not be shared and evaluated. Appendix A includes Table V with the statements acknowledging accountability in the task.

Table V: Independent Variable: Accountability/No Accountability

Manipulation	Variable	Measurement
Accountability	Your task is to review the case provided and answer the questionnaire. After completion, you will bring your answers to a group brainstorming session where they will be shared and evaluated.	Dichotomous Yes/NO
	I understand that I will be required to share my responses during the group brainstorming exercise and that these responses will be evaluated.	Dichotomous Yes/NO
No Accountability	Your task is to review the case provided and answer the questionnaire. After completion, you will submit your answers anonymously and then you will have the opportunity to participate in the group brainstorming session. You are NOT required to share your answers during the session.	Dichotomous Yes/NO
	I understand that I will not be required to share my responses during the group brainstorming exercise and that my responses may remain anonymous.	Dichotomous Yes/NO

Appendix B: Dependent Variables

Appendix B provides Table VI with the questions measuring the dependent variables.

Table VI: Dependent Variables: Fraud Risks Identified and Correct Fraud Risks Identified

Variable	Measurement
<p>Fraud Risks Identified:</p> <p>Participants were asked to list all fraud risks identified in the case provided.</p> <p><i>Based on the information you read in the case, use the space below to list as many fraud risk possibilities as possible. Please list each fraud risk possibility separately. We've provided 18 numbered lines for you; however, you may not need to use all 18 lines. You may refer to your case materials as a reference.</i></p>	Number Identified
<p>Correct Risks Identified:</p> <p>Participants were asked to match their answers to the list provided.</p> <p><i>Using the red pen provided, please use the below List of Common Fraud Risks used by auditors and match them to the list of fraud risks you generated from the case. Not all of the below common fraud risks were present in the case.</i></p>	Number Correctly Identified

Appendix C: Control Variables

Appendix C provides Tables VII with the questions measuring the control variables.

Table VII: Control Variables: Age, Gender, and Experience

Variable	Measurement
<p>Age</p> <p>Participants were asked to provide their age.</p> <p><i>My age is: _____.</i></p>	Age
<p>Gender:</p> <p>Participants were asked to indicate their gender.</p> <p><i>I am: _____.</i></p>	Dichotomous Female/Male
<p>Experience:</p> <p>Participants were asked to provide information about professional, brainstorming, and non-profit experience.</p> <p><i>I have _____ years of professional work experience.</i></p> <p><i>Please provide your opinion on the importance of brainstorming sessions during the planning phase of an audit by circling a number between 1 (very unimportant) and 9 (very important) on the following scale.</i></p> <p><i>Please indicate your level of experience with brainstorming sessions by circling a number between 1 (very little) and 9 (very high) on the following scale.</i></p> <p><i>About how many times would you say you've participated in brainstorming planning sessions?</i></p> <p><i>Please indicate your accounting knowledge associated with non-profit organizations by circling a number between 1 (very little) and 9 (very high) on the following scale.</i></p> <p><i>Please indicate your level of experience working with non-profit organizations by circling a number between 1 (very little) and 9 (very high) on the following scale.</i></p>	<p>Number</p> <p>Likert 1–9</p> <p>Likert 1–9</p> <p>Likert 1–7</p> <p>Likert 1–9</p> <p>Likert 1–9</p>

Appendix D: Manipulation Checks

Appendix D provides Table VIII with the questions included in manipulation checks to ensure the treatment was effective and participants were engaged.

Table VIII: Manipulation Check

Variable	Measurement
<p>Participants were asked to provide a response to the following statements in order to measure the effect of the treatment.</p> <p><i>I understand that I will be required to share my responses during the group brainstorming exercise and that my responses will be evaluated.</i></p> <p><i>I understand that I will not be required to share my responses during the group brainstorming exercise and that my responses may remain anonymous.</i></p>	<p>Likert 1–9</p> <p>Likert 1–9</p>
<p>Participants were asked to provide a response to the following statement in order to determine task engagement.</p> <p><i>In the case you read, where did the RMH Foundation open new banking accounts?</i></p>	Multiple Choice

Down but Not Out: Investigating Returns for Negative Retained Earnings Firms

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ABSTRACT

We investigate the future performance of firms reporting a negative balance in retained earnings on their annual balance sheet (“NRE firms”). NRE firms report surprisingly high one-year ahead average annual abnormal returns of 13 percent, suggesting that the market significantly discounts these firms. The superior performance of NRE firms is robust to the inclusion of various risk factors and the use of various methodologies. We argue that high abnormal returns to NRE firms represent both compensation for risk and market mispricing because the market is unable to fully distinguish firms that have experienced temporary underperformance from firms that are unable to survive. *Key words: Negative retained earnings, performance, abnormal returns*

Introduction

A significant number of firms report a negative balance for retained earnings (“NRE firms”) on their annual balance sheets. For example, from 1988 to 2011, we find 32 percent of our firm-year observations have negative retained earnings. Further, the number of observations with NRE is trending up, with approximately 14 percent of observations with NRE in 1988 and 65 percent in 2011. This trending up of NRE firms is consistent with other findings that firms in general are seeing greater deferral of revenues, expedited expenses, and lower earnings (Givoly and Hayn 2000).

In theory, retained earnings represent an accounting measure of accumulated efforts from the allotted endowments of a firm that can be either reinvested in the firm or paid back to shareholders. When losses (and sometimes dividends) outstrip earnings, the retained earnings will be negative, signaling a net loss to investors (DeAngelo et al. 2006). NRE firms have higher bankruptcy risk, and therefore are more highly discounted by the market (Joos and Plesko 2005).

Intuitively, firms will accumulate negative earnings for two reasons: one, the firm has invested in projects that have not yet produced positive earnings but where expected future earnings are positive; two, the firm’s earnings process is flawed and the firm will never be profitable. The former case is a result, in part, of the accounting principle of conservatism. When a firm invests in projects, especially through research and development, conservatism often requires that the investment is charged to expense before all of the related benefits are recognized; this can lead to temporarily lower and sometimes negative retained earnings. The resulting difference between the two reasons listed above is that the viable investment will eventually recover the losses and have positive retained earnings, whereas the non-viable investment will not.

Determining whether the NRE firm is viable or not is difficult because of two mechanisms. First, the risk for new and unproven ventures is high, resulting in greater variation in outcomes that are more difficult to predict (Guo et al. 2005). Second, inside managers have access to information regarding the likelihood of success of the firm. However, since this information is largely private, there is asymmetry between managers and investors (Barth et al. 1999). A manager may be aware of the reason for the accumulated losses, but because of the information asymmetry, will either hide that information (if the bad state is true and the firm will not be viable in the long term) or be unable to credibly provide that information (if the good state is true and the firm will return to profitability over the long term). Of course, this excludes the trivial case where the manager knows that the true alternative is bad and signals that to the market.

Accordingly, NRE firms pose a difficult problem for market participants in terms of valuation. When earnings are positive, firm value is a function of the risk and the persistence of current earnings (Ohlson 1995 and Kormendi and Lipe 1987). However, when earnings are negative, the valuation process is a function of the maximum of the resale value of the firm’s resources (assets) or the real options from investments (Burgstahler and Dichev 1997), which can be more difficult to estimate.

This paper considers firms with negative retained earnings and how efficiently they are valued by market participants. If the market is able to properly value NRE firms then future returns to these firms will be attributable to risk alone, and there should not be any “excess” returns. On the other hand, if there is bias in the valuations by market participants (or perhaps institutional restrictions such as some investors cannot own firms reporting a negative retained earnings balance),

then excess returns will be present and can be utilized in a trading strategy.

This research is interesting for several reasons. First, the paper helps provide a greater understanding of the information environment around a certain class (NRE) of firms. Hayn (1995) argues that losses are less informative of future earnings because losses are not expected to persist. She argues that investors perceive losses as transitory, so current earnings are not as useful for predicting future earnings. Instead, when earnings are negative and not expected to persist, firm value becomes more of a function of the value from adapting firm resources (the assets) to other uses (Burgstahler and Dichev 1997, Berger et al. 1996). This paper sheds some light on how well these loss function firms are valued by outside investors, and whether they are biased in their estimates. More specifically, if investors tend to avoid NRE firms because they are difficult to value (and possibly riskier), then future returns to NRE firms should be significantly higher.

Second, this paper provides more insight into an interesting dataset. To date, little attention has been paid to firms with NRE. Joos and Plesko (2005) develop a loss-reversal model and find that investors price transitory losses positively over the sample period. However, they find that larger persistent losses correspond to higher returns, which is inconsistent with the prediction of their model. They find that investors value R&D components as assets, so persistent losses with R&D are valued as future earnings potential, but did not study predictability of this information for future returns.

Finally, this paper provides evidence on the role of accounting information in the larger context of high-risk firms. Many mutual funds have restrictions and limits on types of investments they can make in a regulatory attempt to protect those of limited investing experience and knowledge (Eakins et al. 1998). However, a well-formed investment portfolio includes diversified assets across all risk classes (Sharpe 1964). This paper emphasizes the value that can accrue to shareholders of higher risk firms, such as NRE firms.

Our results show that investors can earn positive abnormal returns when investing in a portfolio of NRE firms. Overall, these firms perform surprisingly well and report size-adjusted buy-and-hold abnormal returns of 13 percent over the year following the release of their financial statements showing a negative retained earnings balance. This result is robust to several different risk specifications. Our results also show that NRE firms have higher standard deviations in their returns as well, consistent with greater uncertainty for future values and therefore greater arbitrage opportunities.

The following section provides a brief literature review, followed by the methodology we employ as well as a discussion on the sample. We then provide our results and conclude.

Literature Review

Similar to market anomaly and mispricing research that considers whether market participants systematically misprice firm value (Frankel and Lee 1998; Lee 2001), our objective is to compare the returns of NRE (negative retained earnings) firms with PRE (positive retained earnings) firms after controlling for risk. If the proper degree of risk is included as controls, then a firm (or a portfolio of firms based on an observable accounting information metric) should not persistently obtain abnormal returns attributable to risk.

Several papers utilize different accounting information metrics to form such portfolios. For example, the seminal work of Sloan (1996) separates firms into high and low accrual groups and finds that those with lower accruals (and therefore higher cash flows) tend to earn abnormal returns over those with high accruals (lower cash flows). We consider whether retained earnings, specifically negative retained earnings, can lead to abnormal future returns. Negative retained earnings are a result of excess losses of a firm (or a combination of losses and dividends). Because GAAP requires the expensing of some investments, such as research and development, firms can have negative retained earnings but garner positive returns if these investments pay off in the future. These firms pose a higher risk of failure due to the uncertainty in the project's success, which is difficult for the market to assess ex ante on an individual basis (Guo et al. 2005). That said, an informed and rational investor will expect a higher return on such investments to account for the increased risk.

The remaining issue is what, in theory, should be used to control for the expected risk. Our separating metric, negative retained earnings, has not been used before in literature, and there is considerable debate over different measures of risk. To address this issue, we use a number of possible measures and controls. These controls include controls for market, size, book-to-market (Fama and French 1992), cash from operations (Oler and Picconi 2014), Altman's Z score (Chang et al. 2006), and the variance of future returns, as captured by the Sharpe ratio (Sharpe 1966). Our goal in using the wide variety of risk factors is to ensure that we are adequately controlling for expected normal returns, even though this will subject the paper to a greater possibility of a type II error (i.e., less power to find significant results). We also check our results using Fama-French factors and using calendar-time portfolios.

Since this work is largely exploratory, we do not make a deliberate directional hypothesis. If NRE firms are mispriced by the market, then abnormal returns attributable to NRE firms should persist after controlling for such known risk factors, otherwise we will not detect abnormal returns when partitioning on retained earnings.

Methodology

We begin with all firms in the merged CRSP/Compustat dataset with fiscal years from 1988 to 2011. Similar to other market efficiency papers (Sloan 1996), our returns portfolio opens three months after the end of each firm's fiscal year-end and closes 12 months later. We calculate buy-and-hold returns for each firm and subtract buy-and-hold returns for that firm's size decile portfolio to estimate abnormal returns for year +1. We calculate cumulative returns using the same methodology. Annual abnormal returns for all observations, before applying any screens for missing data or exchange, are 0.21 percent (BHAR) and 0.15 percent (CAR).¹ We exclude firms that are not traded on the NYSE, NASDAQ, or AMEX, and we exclude firms missing total assets, book-to-market (btm), income before extraordinary items, cash from operations, lever-

age, Altman's Z (Altman 1968), liquidity, and change in cash from operations.² After these exclusions we have 63,676 firms with annual BHARs of 7 percent (Table 1, Panel A). Firms with negative retained earnings (NRE firms) have annual BHARs of 13 percent (Table 1, Panel B), and firms reporting a positive retained earnings balance have annual BHARs of 5 percent (Table 1, Panel C). Other univariate data for our main sample are shown in Table I.

We calculate several variables to gauge the firm's leverage, liquidity, return on assets, operating cash flows, and Altman's Z, with all calculations shown in the Appendix. Market capitalization and total assets are scaled to year 2000 dollars using the Consumer Price Index. All financial statement variables are winsorized at the 1 percent level by year.

¹We note that abnormal returns for the entire universe of firms should be approximately zero, as they are here.

²All variables are defined in the appendix.

Table I: Univariate Statistics

Panel A: Full Dataset						
Variable	N	Mean	Std Dev	P25	Median	P75
Market Value of Equity	63,676	2,654	12,195	65.85	279.8	1,213
Total Assets	63,676	2,361	8,576	73.35	290.2	1,268
Book to Market	63,676	0.613	0.599	0.286	0.494	0.787
Return on Assets	63,676	0.007	0.184	-0.011	0.041	0.087
Operating Cash Flows	63,676	0.070	0.162	0.028	0.087	0.147
Liquidity	63,676	2.729	2.570	1.305	1.982	3.116
Leverage	63,676	0.235	0.209	0.044	0.207	0.361
Retained Earnings	63,676	485	4,322	-12.271	27.204	227.0
Altman's Z score	63,676	3.357	6.434	0.879	1.895	3.844
Cumulative Abnormal Returns (size adjusted)	63,676	0.063	0.532	-0.212	0.027	0.287
Buy and Hold Abnormal Returns (size adjusted)	63,676	0.074	0.836	-0.288	-0.036	0.238

Panel B: Negative Retained Earnings Firm/Years						
Variable	N	Mean	Std Dev	P25	Median	P75
Market Value of Equity	20,413	842.5	4,931	33.05	112.9	408.9
Total Assets	20,413	1,027	4,663	31.18	99.80	415.2
Book to Market	20,413	0.527	0.737	0.166	0.382	0.734
Return on Assets	20,413	-0.119	0.264	-0.204	-0.040	0.032
Operating Cash Flows	20,413	-0.021	0.223	-0.084	0.030	0.100
Liquidity	20,413	3.144	3.372	1.224	1.960	3.551
Leverage	20,413	0.258	0.263	0.012	0.186	0.424
Retained Earnings	20,413	-411.0	2,921.3	-196.9	-59.42	-15.33
Altman's Z score	20,413	2.650	8.837	-0.392	0.717	2.902
Cumulative Abnormal Returns (size adjusted)	20,413	0.103	0.701	-0.292	0.041	0.405
Buy and Hold Abnormal Returns (size adjusted)	20,413	0.132	1.189	-0.390	-0.079	0.306

Panel C: Positive Retained Earnings Firm/Years						
Variable	N	Mean	Std Dev	P25	Median	P75
Market Value of Equity	43,263	3,509	14,323	104.4	450.1	1,830
Total Assets	43,263	2,990	9,836	124.5	454.5	1,821
Book to Market	43,263	0.654	0.517	0.338	0.534	0.804
Return on Assets	43,263	0.066	0.077	0.027	0.057	0.100
Operating Cash Flows	43,263	0.113	0.097	0.060	0.105	0.161
Liquidity	43,263	2.532	2.059	1.341	1.990	2.980
Leverage	43,263	0.224	0.178	0.063	0.213	0.345
Retained Earnings	43,263	908.3	4,787	25.013	106.8	468.7
Altman's Z score	43,263	3.690	4.872	1.307	2.244	4.089
Cumulative Abnormal Returns (size adjusted)	43,263	0.044	0.428	-0.186	0.022	0.247
Buy and Hold Abnormal Returns (size adjusted)	43,263	0.047	0.600	-0.244	-0.022	0.217

Panel D: Negative vs. Positive Retained Earnings Firm/Years						
Variable	Mean Neg. R/E	Mean Pos. R/E	p-value	Median Neg. R/E	Median Pos. R/E	p-value
Market Value of Equity	842.5	3,509	<0.001	112.9	450.1	<0.001
Total Assets	1,027	2,990	<0.001	99.80	454.5	<0.001
Book to Market	0.527	0.654	<0.001	0.382	0.534	<0.001
Return on Assets	-0.119	0.066	<0.001	-0.040	0.057	<0.001
Operating Cash Flows	-0.021	0.113	<0.001	0.030	0.105	<0.001
Liquidity	3.144	2.532	<0.001	1.960	1.990	0.0076
Leverage	0.258	0.224	<0.001	0.186	0.213	0.7054
Retained Earnings	-411.0	908.3	<0.001	-59.423	106.8	<0.001
Altman's Z score	2.65	3.690	<0.001	0.717	2.244	<0.001
Cumulative Abnormal Returns (size adjusted)	0.103	0.044	<0.001	0.041	0.022	<0.001
Buy and Hold Abnormal Returns (size adjusted)	0.132	0.047	<0.001	-0.079	-0.022	<0.001

NRE firms are significantly smaller than positive-retained earnings firms (total assets of \$1 million for NRE firms, Panel B, vs. \$3 million for positive retained earnings (PRE) firms, Panel C), have lower book-to-market ratios (0.53 vs. 0.65), lower ROA (-0.12 vs. 0.07), higher leverage (0.26 vs. 0.22), and a lower Altman's Z score (2.7 vs. 3.7). Our sorting variable, retained earnings, has a mean value of -411 million for NRE firms vs. 908 million for PRE firms. Panel D provides the results from tests of differences between the NRE and PRE firms. All variables are significantly different across the two samples with the lone exception between median leverage.

Results

The number of years a firm reports negative retained earnings can vary; some firms may report negative retained earnings for only one year before retained earnings becomes positive again, while other firms may persist with negative retained earnings

for a number of years. Accordingly, we examine returns to NRE firms when sorted on the cumulative number of years the firm reports negative retained earnings, with results shown in Table II. Returns to PRE firms are shown in "year 0", as PRE firms do not have any immediately prior years of negative retained earnings. An NRE firm will appear in the "year 1" row in the first year it reports negative retained earnings, and if that firm reports negative retained earnings in the subsequent year, it will appear in "year 2", etc. Although theoretically possible, it is difficult for NRE firms to continue indefinitely; they will likely delist or return to positive retained earnings. Consistent with this reasoning, the number of observations decreases with each subsequent year, ending with one firm surviving 24 years of negative retained earnings. Cumulative abnormal returns (CARs) are consistently higher for NRE firms for years 1 through 12 for CARs (Panel A), when average returns for NRE firms drop to -4 percent (compared to average returns to PRE firms of 4.4 percent). For BHARs, returns to NRE

Table II: Returns by Consecutive Year

Year of Consecutive Negative Retained Earnings Balance	Panel A: CAR				Panel B: BHAR		
	N	Mean	Prob.	Sharpe Ratio	Mean	Prob.	Sharpe Ratio
0	43,263	0.044	<0.001	0.103	0.047	<0.001	0.078
1	4,148	0.147	<0.001	0.185	0.219	<0.001	0.161
2	3,243	0.128	<0.001	0.178	0.153	<0.001	0.143
3	2,633	0.074	<0.001	0.103	0.075	<0.001	0.075
4	2,086	0.074	<0.001	0.104	0.097	0.002	0.084
5	1,654	0.091	0.002	0.140	0.126	<0.001	0.076
6	1,338	0.094	<0.001	0.138	0.125	<0.001	0.120
7	1,091	0.101	<0.001	0.149	0.155	<0.001	0.117
8	902	0.099	<0.001	0.157	0.117	<0.001	0.124
9	752	0.054	0.014	0.090	0.046	0.082	0.063
10	613	0.134	<0.001	0.195	0.132	0.002	0.124
11	469	0.101	<0.001	0.171	0.0178	0.017	0.111
12	362	0.067	0.049	0.104	0.061	0.120	0.082
13	284	-0.040	0.204	-0.076	-0.036	0.374	-0.053
14	226	0.097	0.036	0.140	0.203	0.206	0.084
15	175	0.080	0.071	0.137	0.091	0.128	0.116
16	137	0.069	0.220	0.105	0.002	0.962	0.004
17	100	0.037	0.534	0.062	0.030	0.647	0.046
18	76	0.103	0.136	0.173	0.080	0.399	0.097
19	50	0.100	0.175	0.194	0.123	0.160	0.202
20	34	-0.016	0.898	-0.022	-0.092	0.394	-0.148
21	21	0.123	0.233	0.269	0.110	0.283	0.241
22	12	0.085	0.484	0.209	0.046	0.702	0.113
23	6	0.297	0.311	0.460	0.271	0.321	0.450
24	1	-0.072	n/a	n/a	-0.305	n/a	n/a

firms drop to 4.6 percent for year 9, vs. returns to PRE firms of 4.7 percent. Average returns to NRE firms become more erratic as the years of consecutive negative retained earnings increase (and the number of firms in the portfolio decrease).

We also include the Sharpe Ratio for each year's returns, calculated as the mean return divided by the cross-sectional standard deviation of returns for that year to adjust for risk as captured by the variance of returns. Table I, Panels B and C, show that the standard deviation of returns is higher for NRE firms than for PRE returns (0.701 for NRE CARs, vs. 0.428 for PRE CARs).

The Sharpe Ratio can be intuitively understood as a measure of returns to each unit of extra volatility you endure for holding a riskier asset. The Sharpe Ratio for PRE firms is 0.103 (for CARs), vs. 0.185 for NRE firms in their first year of reporting

negative retained earnings. Results using the Sharpe Ratio are similar to those with abnormal returns alone, in that NRE firms show superior performance for a number of consecutive years of reporting negative retained earnings.

We next consider whether NRE firms are less likely to continue trading over the long-run, and are more likely to be delisted for negative reasons such as bankruptcy. Making this determination requires peeking ahead to the "ultimate fate" reported by CRSP as the firm's delisting code. Delisting codes are three digits long, but can be broken into five major categories: "1xx" signifies firms continuing to trade as of the final date of reporting for CRSP data, which for our dataset is December 31, 2011. "2xx" signifies firms that are delisted because they are acquired by another firm. "3xx" signifies firms that exchange their current stock issue for a new stock issue (e.g., a different class of shares on the same exchange, or a class of shares that

Table III: Returns by Ultimate Fate

Table III shows 1-year ahead returns by “ultimate fate” for negative and positive retained earnings firms. Ultimate fate refers to the future delisting code for the firm, sorted into 1xx (firm continued trading as of the last day of data availability for CRSP, December 31, 2011), 2xx (firm is delisted because it is acquired by another firm), 3xx (firm stock exchanged for another issue of firm stock), 4xx (firm is liquidated), or 5xx (firm is dropped from the exchange). The proportion of NRE and PRE firms in each category is calculated as the number of firms in that category divided by the total number of NRE and PRE firms shown in Panels B and C of Table I. We also report the number of days between the firm’s year-end and when the firm’s ultimate fate is realized.

Ultimate Fate	Variable	N	Proportion %	Days to Delisting Mean	CAR Mean	BHAR Mean
Panel A: Firms that continue trading	Negative R/E Firms	11,014	54.0	2893.4	0.098	0.118
	Positive R/E Firms	25,558	59.1	3718.1	0.047	0.052
	P-value			<0.001	<0.001	<0.001
Panel B: Firms that are acquired	Negative R/E Firms	8,628	42.3	1916.2	0.141	0.180
	Positive R/E Firms	16,753	38.7	2195.7	0.047	0.045
	P-value			<0.001	<0.001	<0.001
Panel C: Firms that are exchanged for other issues	Negative R/E Firms	95	0.5	1941.2	-0.032	-0.084
	Positive R/E Firms	289	0.7	1839.1	0.019	0.035
	P-value			0.6701	0.4253	0.1532
Panel D: Firms that are liquidated	Negative R/E Firms	32	0.2	1244.1	0.049	-0.100
	Positive R/E Firms	15	0.0	1775.6	-0.168	-0.142
	P-value			0.1067	0.1724	0.794
Panel E: Firms that are dropped	Negative R/E Firms	644	3.2	1650.4	-0.293	-0.226
	Positive R/E Firms	648	1.5	2332.4	-0.116	-0.105
	P-value			<0.001	<0.001	0.007

are traded on a different exchange). “4xx” signifies firms that are liquidated, and “5xx” signifies firms that are dropped from the exchange without being exchanged for another security or being liquidated (for example, firms delisted with the code 574 went bankrupt). As expected, firms delisted for a “5xx” reason represent the greatest loss to shareholders.

We break our NRE and PRE firms into these five delisting categories and show (1) the number of days between each firm’s fiscal year end and the delisting date, (2) CARs for year +1, and (3) BHARs for year +1. Results are shown in Table III.

Panel A shows future trading days and returns to firms that continue trading. 11,014 firm-years of NRE firms have average CARs of 9.8 percent, vs. 25,558 PRE firms with CARs of 4.7 percent. As this analysis “peeks ahead” it is not surprising that returns are higher for NRE firms because the market expects these firms to be more likely to delist for negative reasons. The days to delisting are lower for NRE firms as well, mainly because the number of NRE firms has increased over time. Returns are also higher for NRE firms that are ultimately acquired (Panel B), consistent with the market viewing NRE firms as less suitable takeover targets, leading to a positive surprise when these firms receive takeover offers. Panels C and D have relatively few observations making it difficult

to draw strong conclusions. However, results from Panel E suggest that NRE firms are more likely to be delisted for negative reasons than PRE firms (the ratio of the number of observations in Panel E for NRE firms to total NRE firms is 3.2 percent, while the number of observations in Panel E for PRE firms to total PRE firms is 1.5 percent). NRE firms that are ultimately dropped trade for only 1,650 days, vs. PRE firms that trade for 2,332 days (a difference of about 2.7 years). One year ahead returns to NRE firms that are ultimately dropped are -29 percent, vs. PRE firms that are ultimately dropped at -12 percent. Results from Table III, coupled with the overall higher average returns to NRE firms, suggests that the market may overestimate the likelihood that a NRE firm will be dropped (i.e., be delisted for a negative reason), and underestimates the likelihood that a NRE firm will continue trading or be acquired by another firm. However, for those NRE firms that do not ultimately survive, shareholders face greater losses than those for PRE firms.

We next consider additional steps to control for risk. Table IV shows results when we regress CARs on a dummy variable set to 1 for NRE firms (and 0 for PRE firms), with additional common controls for risk. In Panel A we include the market value of equity, the book-to-market (btm) ratio, operating cash flows, and Altman’s Z score (Chang et al. 2006, Kalay et

al. 2007, Eisdorfer 2008, and Guner et al. 2008). Our results suggest that, after controlling for these factors plus year and industry dummies (based on two-digit SIC codes), our NRE firms earn annual abnormal returns that are 4.9 percent higher than PRE firms. We add additional controls in Panel B, but continue to find that NRE firms significantly outperform PRE firms. Finally, in Panel C, we examine two-year ahead returns (i.e., we open our investment window at the end of month +3 relative to the firm's fiscal year-end, and close our investment window 24 months later), and find that there is no indication that returns to NRE firms reverse over that period. Our results are very similar if we use BHARs instead of CARs as our dependent variable.

The use of control variables in OLS implicitly assumes a linear relationship between the dependent variable and the control variables we include, and this may not faithfully represent the true relationship between our variables. Accordingly, as robustness checks, we modify our analysis by selecting matching firms based on the propensity for a firm to have negative return earnings (i.e., we estimate the propensity score for all firms using a logit regression, and then match each NRE firm with a PRE firm with the closest propensity score in that year and 2-digit SIC industry). We then run the same regression in Table IV using only each NRE firm and its closest match, and find

that NRE firms continue to significantly outperform PRE firms (untabulated). Alternatively, our conclusions are unchanged if we simply select the closest matching firm based on size alone. These results suggest that NRE firms outperform after controlling for other known factors. Even though our logistic regression uses the log of the market value of equity and btm, our results are robust to other specifications. Our results are similar when we use value-weighted or equal-weighted CRSP returns (as opposed to size-adjusting abnormal returns), and if we include firm "beta" in our models. Finally, our results are similar if we break our year control dummies in Table IV into quarterly dummies (i.e., if we assume that there is an unknown within-year variance in returns).

In a second set of tests, we utilize Fama and French (1992) factors (market, size, and book to market), plus Carhart's (1997) momentum to control for additional risks. Accordingly, in Table V, we show results from regressing monthly raw returns (less the risk-free-rate) on our NRE dummy, along with the market, size, book-to-market, and momentum factors from the Kenneth French website. Our NRE dummy loads significantly, at 0.005 ($p < 0.001$), again suggesting that our selected firms outperform by about 0.5 percent per month (or about 6.6 percent per year) after controlling for other factors.

Table IV: Regression Analysis

Table IV shows our regressions results of our hold out sample. Panel A shows OLS regressions results for our primary control variables. Panel B shows regression results with additional control variables. Panel C shows regression results where the dependent variable is 2-year portfolio returns as opposed to 1-year portfolio returns in Panels A and B. Returns for all regressions are cumulative abnormal (size-adjusted) returns. Estimated coefficients for year and industry (2-digit SIC) dummies are not shown.

Dependent Variable	Panel A		Panel B		Panel C	
	1- Year CAR		1-Year CAR		2-Year CAR	
Independent Variable	Est. Coeff	P-val	Est. Coeff	P-val	Est. Coeff	P-val
Negative R/E Dummy	0.049	<0.0001	0.038	<0.001	0.063	<0.001
Market Value of Equity	-0.013	<0.001	-0.016	<0.001	-0.028	<0.001
Book to Market	0.024	<0.001	0.023	0.001	0.057	<0.001
Operating Cash Flows	0.140	<0.001	0.220	<0.001	0.388	<0.001
Altman's Z score	-0.002	<0.001	-0.001	0.097	-0.003	<0.001
Leverage			-0.042	0.004	-0.058	0.002
Return on Assets			-0.143	<0.001	-0.248	<0.001
Liquidity			-0.004	0.003	-0.007	<0.001
Change in Op. Cash Flows			0.000	<0.001	0.000	<0.001
Change in Return on Assets			0.113	<0.001	0.063	0.036
Change in Leverage			-0.012	0.611	0.022	0.455
Intercept	0.072	0.052	0.101	0.008	0.171	<0.001
Observations		63,676		63,632		63,632
F-Score	13.88	<0.001	14.25	<0.001	24.56	
Adjusted R-square		1.8%		1.9%		3.4%

Fama and French (1992) exclude firms with negative book value of equity in their factor construction, their definition for firms having a negative book value of equity means that the sum of all equity accounts – mainly, equity from stock issued and retained earnings, is negative. These situations are relatively rare, and we find that only 10 percent of NRE firms have negative book value as well. Our conclusions are unchanged if we exclude these firms from our analysis.

Mitchell and Stafford (2000) argue that abnormal returns found by prior studies may be overstated because of a fail-

Table V: Fama-French Factor Regression Analysis

Table V shows our analysis of returns to negative retained earnings firms using the Fama-French (and Carhart) four factors. Our dependent variable is the monthly raw return for each firm, less the risk-free returns. Data is from January 1, 1988, to December 31, 2011, with factors downloaded from the Kenneth French website.

Dep Var: Monthly Raw Return less the Risk-Free Rate		
Variable	Est. Coeff	OLS P-val
Negative R/E Dummy	0.005	<0.001
Market Factor (MKT)	0.965	<0.001
Size Factor (SMB)	0.735	<0.001
BTM Factor (HML)	0.228	<0.001
Momentum Factor (MOM)	-0.196	<0.001
Intercept	0.006	<0.001
Observations	662,224	
F-Score	16,347	<0.001
Adjusted R-square	11.0%	

ure to control for cross-sectional correlation between returns. They advocate the use of the “calendar-time” methodology to control for cross-sectional correlation, although simulations from Lyon et al. (1999) suggest that this approach may result in overly conservative p-values. To execute this approach, we subtract average monthly raw returns for our PRE portfolio from average monthly raw returns for our NRE portfolio, and then regress the result on monthly market, size, book-to-market, and momentum factors. A significant intercept suggests that the NRE portfolio outperforms the PRE portfolio. Table VI shows the results for our calendar-time approach. The intercept is significantly positive, at 0.005 ($p < 0.001$, or about 6.3 percent per year), again suggesting that NRE firms outperform PRE firms after controlling for risk.

Conclusions And Areas For Future Reserach

This paper investigates the future returns associated with negative retained earnings (NRE) firms. Prior work suggests that NRE firms are more difficult to value than firms with positive

Table VI: Fama-French Calendar-time Regression Analysis

Table VI shows our calendar-time portfolio regression analysis with Fama-French four factors on holdout sample. Our dependent variable is the difference between the mean negative retained earnings portfolio return and the mean positive retained earnings portfolio return in a given month from January 1, 1988 to December 31, 2011.

Dep Var: Mean return of NRE portfolio returns		
Variable	Est. Coeff	OLS P-val
Intercept	0.005	0.013
Market Factor (MKT)	0.167	0.001
Size Factor (SMB)	0.716	<0.001
BTM Factor (HML)	-0.454	<0.001
Momentum Factor (MOM)	-0.159	0.017
Observations	295	
F-Score	7.01	<0.001
Adjusted R-square	51.2%	

retained earnings, suggesting that NRE firms are more likely to be mispriced. Using a wide variety of already documented risk factors, we show that NRE firms, on average, outperform PRE firms in terms of future abnormal returns. Our results suggest that it is possible to earn significantly higher returns using our simple strategy. Our results are robust to various measures of risk and various methodologies, suggesting that the abnormal returns we document likely reflect mispricing.

We believe that this paper adds to the research on market anomalies as well as on early-stage and high-risk investments. Firms with negative NRE are potentially distressed due to the lack of any accumulated accounting earnings and potential for bankruptcy. However, our results show that there appears to be an overweighting of this risk relative to an unbiased investment approach. The implication is that there is a potential for a profit making trading strategy based on the level of NRE. However, we do offer caution on this result for a couple of reasons. First, we do not consider transaction costs (Mashruwala et al. 2006), which can limit potential returns. Second, many institutions and banks (Bushee 2001) are cautious (following the common law “prudent man rule”) and avoid investing in such high-risk investments, potentially causing a decrease in the demand for these types of firms. Thus, the abnormal returns could be due to a market friction as opposed to actual imperfections. Lastly, we do not offer any theory beyond questioning efficient markets. A current stream of literature (e.g., Lee 2001) questions the efficient market hypothesis and suggests psychological reasons for abnormal market returns. We invite future research to investigate this possibility.

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Appendix: Description and Calculation of Independent Variables

Variable	Description
NRE Dummy	A dummy variable set to 1 if the firm reports negative retained earnings in the prior year, and 0 otherwise
Market Value of Equity	Fiscal year end price *Common shares outstanding
Book To Market	Common ordinary equity/Market value of equity
Returns on Assets (ROA)	Income before extraordinary items/prior year's assets
Change in Return on Assets	$ROA_t - ROA_{t-1}$
Operating Cash Flows	Net Cash from Operations /prior year's assets
Profit Margin	(Sales – Cost of Goods Sold)/Sales
Change in Profit Margin	$Profit\ Margin_t - Profit\ Margin_{t-1}$
Liquidity	Current Assets/Current Liabilities
Change in Liquidity	$Liquidity_t - Liquidity_{t-1}$
Leverage	Debt (Current & Long-term)/Average Assets
Change in Leverage	$Leverage_t - Leverage_{t-1}$
Asset Turnover	Sales/Average assets
Change in Asset Turnover	$Asset\ Turnover_t - Asset\ Turnover_{t-1}$
Altman's Z score	$(1.2 * ((Working\ Capital)/Assets)) + (1.4 * (Retained\ Earnings/Assets)) + (3.3 * ((Earnings\ before\ Interest\ and\ Taxes)/Assets)) + (0.6 * ((Market\ Value\ of\ Equity)/Book\ value\ of\ total\ debt)) + (0.999 * (Sales/Assets));$
Cumulative Abnormal Returns (size-adjusted, "CAR")	$CAR_t = \sum_{t=s}^e (R_{i,t} - R_{market,t}) = CR_{firm} - CR_{market}$ <p>Where:</p> <p>$R_{i,t}$ = returns for firm i over the period beginning with Month s and ending with Month e, where $s = +4$ and $e = +12$ relative to the end of each firm's fiscal year-end for year 1, and $s = +13$ and $e = +24$ for year 2, and</p> <p>$R_{market,t}$ = market size adjusted returns over the same period</p>
Buy and Hold Abnormal Returns (size-adjusted, "BHAR")	$BHAR_i = \prod_{t=s}^e (1 + R_{i,t}) - \prod_{t=s}^e (1 + R_{market,t}) = BHR_{firm} - BHR_{market}$ <p>Where:</p> <p>$R_{i,t}$ = returns for firm i over the period beginning with Month s and ending with Month e, where $s = +4$ and $e = +12$ relative to the end of each firm's fiscal year-end for year 1, and $s = +13$ and $e = +24$ for year 2, and</p> <p>$R_{market,t}$ = market size adjusted returns over the same period</p>

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