
JOURNAL OF BUSINESS ISSUES

2007, No. 1

ARTICLES

- ◆ **Perceived Quality of Accounting Journals**
Ran Barniv and David Fetyko

- ◆ **A Comparison of the Characteristics of Fortune 500 Corporate Controllers**
Antonio Apap and Arthur Gilbert, Jr.

- ◆ **Compensation Issues for S Corporation Owner-Employees:
Wages or Profit Distributions?**
Angela L.J. Hwang

- ◆ **How Much Does a New CPA Cost?**
G. Stevenson Smith

- ◆ **A Look at Wal-Mart Dominance in Retail Trade**
Edward Nissan and George Carter

- ◆ **Over-Optimism and the Underfunding of Defined-Benefit Pension Plans**
Jennifer J. Gaver and Jeffrey S. Paterson

JOURNAL OF BUSINESS ISSUES

2007, No. 1

James R. Hasselback, Editor
Mary Ball Washington Eminent Scholar
College of Business
University of West Florida
Pensacola, FL 32514

EDITORIAL ADVISORY AND REVIEW BOARD

D. Larry Crumbley, KPMG Peat Marwick Endowed Professor
Louisiana State University

Ted D. Englebrecht, Smolinski Eminent Scholar
Louisiana Tech University

Reinhold P. Lamb, Jody and Layton Smith Professor of Finance
University of North Florida

Gerald Lander, Gregory, Sharer and Stuart Term Professor
University of South Florida St. Petersburg

Alan Reinstein, George R. Husband Professor
Wayne State University

Copies of *Journal of Business Issues* are available on the website of the College of Business at the University of West Florida - <http://www.uwf.edu/cob>

JOURNAL OF BUSINESS ISSUES

2007, No. 1

TABLE OF CONTENTS

Perceived Quality of Accounting Journals Ran Barniv and David Fetyko	1
A Comparison of the Characteristics of Fortune 500 Corporate Controllers Antonio Apap and Arthur Gilbert, Jr.	21
Compensation Issues for S Corporation Owner-Employees: Wages or Profit Distributions? Angela L.J. Hwang	29
How Much Does a New CPA Cost? G. Stevenson Smith	51
A Look at Wal-Mart Dominance in Retail Trade Edward Nissan and George Carter	67
Over-Optimism and the Underfunding of Defined-Benefit Pension Plans Jennifer J. Gaver and Jeffrey S. Paterson.....	77

**Sponsored by
College of Business
University of West Florida
Dr. Edward Ranelli, Dean
Pensacola, FL 32514**

University of West Florida		Pensacola, Florida 32514		(850) uwf.edu				
College of Business		11000 University Parkway						
Ranelli, Edward	Dean	474-2348	eranelli	Econ	PHD	69	Alabama	2000
Dept of Accounting and Finance								
Fahnestock, Robert T.	C-Pr	474-2728	rfahnest	Atg	PHD	84	Miss	1974
Apap, Anthony	Prof	474-2720	aapap	Fnce	DBA	82	US Intl	1990
Calvasina, Richard V.	Prof	474-2737	rcaviasi	Atg	PHD	73	Miss	1980
Constant, Richard L.	Prof	474-6290	rconstan	Fnce	PHD	89	Fla St	2000
Donelan, Joseph G.	Prof	863-6591	jdonelan	Atg	PHD	89	St Louis	1999
Gray, O. Ronald	Prof	474-2734	ogray	Atg	PHD	80	Arkansas	1982
Hasselback, James R.	Prof	473-7100	jhasselback	Atg	PHD	76	Mich St	8-06
Mary Ball Washington Eminent Scholar								
King, Chula	Prof	474-2738	cking	Atg	PHD	83	LSU	1981
Acting Provost								
O'Keefe, Timothy	Prof	474-2659	tokeefe	Atg	DBA	78	Fla St	1998
Associate Dean								
Usry, Milton F.	Emer	474-2916	musry	Atg	PHD	64	Tx-Austin	1986
Yost, Gregory	Prof	474-2736	gyost	Atg	EDD	85	Fla St	1977
Gilbert, Arthur H. Jr.	Assoc	474-2992	rgilbertjr	Atg	DBA	95	La Tech	2004
Pace, R. Daniel	Assoc	474-3201	dpace	Fnce	PHD	91	Fla St	1996
Guyette, Roger W.	Asst	474-2729	rguyette	Atg	LLM	77	Florida	1980
Habegger, Wendy D.	Asst	857-6319	whabegger	Fnce	PHD	04	Fla St	2004
Moussalli, Stephanie D.	Asst	863-6586	smoussalli	Atg	PHD	05	Miss	8-06
Waggle, J. Douglas	Asst	474-2726	dwaggle	Fnce	PHD	94	Alabama	2005
Frank, Allen J.	Inst	474-2993	afrank	Atg	MACC	88	W Fla	1988
Frank, Sara L.	Inst	474-2931	sfrank	Atg	EDD	99	W Fla	8-84
Roark, Donald A.	Inst	474-2717	droark	BLaw	LLM	89	Florida	2003
Dept of Economics and Marketing								
Arguea, Nestor M.	C-Ac	474-3071	narguea	Econ	PHD	90	S Calif	1990
Allman, Dean	Prof	474-2667	dallman	Mktg	DBA	73	Fla St	1978
Bush, Ronald F.	Prof	474-2668	rbush	Mktg	PHD	73	Ariz St	1985
Huth, William L.	Prof	474-2652	whuth	Econ	PHD	80	Arkansas	1989
F. W. Hopkins Professor								
Sjolander, Richard J.	Prof	474-2663	rsjoland	Mktg	PHD	84	Mich St	1985
Eppright, David	Assoc	474-2137	deppright	Mktg	PHD	85	Tx-Austin	1988
Harper, Richard K.	Assoc	474-3072	rharper	Econ	PHD	89	Duke	1989
Hawkins, Richard R.	Assoc	474-2656	rhawkins	Econ	PHD	96	Geo St	1996
Keller, Scott	Assoc	474-3069	skeller	Mktg	PHD	98	Arkansas	2005
Kimball, Bob	Assoc	474-2617	bkimbal	Mktg	PHD	88	Georgia	1987
Martin, Gregory	Assoc	474-2623	gmartin	Mktg	PHD	94	Wisconsin	1994
Bettis-Outland, Harriette	Asst	474-2723	hbettiso	Mktg	PHD	04	Geo St	2003
Burkart, Christopher	Asst	474-2667	cburkart	Econ	PHD	06	Iowa St	2006
Morgan, Felicia N.	Asst	474-2659	fmorgan	Mktg	PHD	04	Ariz St	2007
Dept of Management and Mgt Info Systems								
Mukerjee, Arup	C-Pr	474-2318	amukherj	Mgt	PHD	91	Tennessee	1995
Carper, William B.	Prof	474-2310	bcarper	Mgt	PHD	79	Va Tech	1995
Murrell, Kenneth L.	Prof	474-2308	kmurrell	Mgt	DBA	77	Geo Wash	1982
Page, Diane	Prof	474-2133	dpage	Mgt	EDD	85	Fla St	1988
Teasley, Wynn E.	Prof	474-2372	cteasley	Mgt	PHD	73	Georgia	1977
Baugh, Gayle M.	Assoc	474-2206	gbaugh	Mgt	PHD	92	Cincinnati	1989
Hornyak, Martin	Assoc	474-2039	mhornyak	Mgt	PHD	94	Clev St	2000
Mohebbi, Esmail	Assoc	863-6950	emohebbi	Mgt	PHD	96	Toronto	2007
Peach, E. Brian	Assoc	474-2312	bpeach	Mgt	PHD	92	Oklahoma	1991
Platt, Richard G.	Assoc	474-2317	rplatt	MIS	PHD	72	North Tx	1990
Schultz, Marian C.	Assoc	474-3727	mschultz	Mgt	EDD	83	S Calif	1989
Williams, Julie Ann	Assoc	474-2283	jawilliams	Mgt	PHD	96	Ga Tech	2005
Reid, Randall C.	Asst	474-2310	rcreid	MIS	PHD	93	S Carol	2003
Snyder, Stephen J.	Asst	474-2315	ssnyder	Mgt	PHD	92	Ariz St	1991
Wei, June	Asst	474-2771	jwei	MIS	PHD	00	Purdue	2003
Juul, Kenneth A.	Lect	474-2316	kjuul	Mgt	MS		Auburn	

PERCEIVED QUALITY OF ACCOUNTING JOURNALS: A SYNTHESIS

Ran Barniv, Kent State University
David Fetyko, Kent State University

ABSTRACT: We synthesize faculty perceptions of accounting journal quality by scholarship category, type of accounting program, area of specialization, research method, and changes in perceptions across time. Our synthesis shows that rankings differ across studies and we present a cross-study average ranking for each accounting journal. We report significant differences in perceptions between specific categories and within subgroups in each category. Our synthesis also reports changes in quality rankings across time for journals ranked below the top five and provides rankings for relatively new journals. The synthesis provides essential inputs for such decisions as recruiting, tenure, promotion, and merit. Implications for administrators and faculty are discussed.

INTRODUCTION

Accounting articles extensively examine the perceptions of journal quality in the U.S. during the 1990s. These studies use primarily survey data from 1988 through 1993 (e.g., Hull and Wright, 1990; Brown and Huefner, 1994; Smith, 1994; Jolly et al., 1995).¹ Recent articles provide survey results by continents around the globe (Ballas and Theoharakis, 2003) and in the U.K. (Brinn et al., 1996; Lowe and Locke, 2004). We synthesize these articles and compare the rankings across studies while supplementing the comparisons with results of our recent survey of U.S. accounting faculty. Other studies apply different research methods for considering accounting journal quality, but we do not synthesize these studies in detail because we focus on articles using survey data.²

Our synthesis contributes to the literature in four ways. First, we synthesize the literature on perceptions of rankings by specific categories from 1990 through 2005. We add a few categories largely ignored in prior studies, including ranking by type of scholarship and comparing responses from doctoral programs and non-doctoral AACSB accredited accounting programs (that offer Master and Bachelor degrees). Next, we compare the rankings across studies and provide an average ranking for each journal. Then, we report the journal rankings based on U.S. accounting faculty specialized areas and provide a comparison across studies that rank journals by faculty areas for the top 25 ranked accounting journals. Finally, we provide an updated ranking that includes several relatively new journals not ranked in most prior studies.

In our synthesis, we focus on: (1) comparing studies; (2) comparing the specifics in the survey method; (3) comparing rankings across studies and providing a cross-study average ranking for each journal; (4) providing a partition between the scholarship of discovery and

¹ At least five published articles use a survey technique to examine the quality of accounting journals during the 1980s. Johnson et al. (2002) survey accounting administrators using Hasselback (2000) Accounting Faculty Directory.

² The methodology to assess journal quality varied across the studies. These articles use library holding lists (e.g., Zeff, 1996; Locke and Lowe, 2002; Milne, 2002), citations (Tahai and Rigsby, 1998), downloading SSRN articles (Brown, 2003), and accounting department ranking documents (Reinstein and Calderon, 2006).

integration and the scholarship of application; (5) presenting changes across studies and over time; (6) comparing doctoral and non-doctoral accredited accounting programs; and, (7) re-examining rankings for the top 25 discovery and integration accounting journals by specialized areas.

We report seven main findings. First, survey studies substantially differ by data, type of respondents, number of respondents, response rates, potential biases, and population surveyed. Further, specific research methods tend to be similar across studies, but we identify a few differences. Next our synthesis reports the rankings across studies, and we present an average ranking of each accounting journal included in these studies. We show some differences in rankings for journals ranked between six and ten, and more pronounced differences for those ranked below ten. Then, we show that while some studies do not rank or tend not to rank application journals, those that do, tend to rank journals in the scholarship of application below 30.

Next, we identify significant changes over time in the rankings of many accounting journals and find that five relatively new journals are ranked among the top 34 discovery and integration journals. Then we find that rankings by respondents from the doctoral programs significantly differ from respondents from the non-doctoral programs in ranking more than half of these top journals. Finally, we present differences between studies and within each study for journal rankings across specialized areas. This result is consistent with a faculty bias in favor of journals in their own specialization.

Overall, our synthesis suggests that accounting faculty perceptions on quality of journals generally tend to differ across studies and type of program and have changed over time. Therefore, we provide cross-study averages and detailed comparisons that faculty and administrators can use to generate or update their explicit or implicit lists of journal rankings for personnel decisions such as hiring, tenure, promotion, merit, and teaching assignments for accounting faculty. In addition, the synthesis is useful for building department reputation and prestige, achieving and maintaining business and accounting accreditation, and allocating scarce library resources. These issues motivate our synthesis.

FURTHER MOTIVATION AND CONTRIBUTIONS

We observe a substantial demand for a comprehensive and updated journal ranking that may be used for a variety of personnel decisions. In particular, faculty and administrators realize that new journals commence publication, others cease publication, journal goals change, and faculty perceptions of journal quality may change. Our synthesis responds to this demand.³

Personal intellectual contributions weigh heavily in personnel decisions at schools with a moderate to significant research mission. An updated knowledge or perception of journal quality in accounting is essential for faculty serving on personnel committees, department chairs, deans, and other university administrators as they evaluate faculty intellectual contributions in making personnel decisions. External reviewers also may use updated knowledge and understanding of journal quality to assess a candidate's research record. In addition, a synthesis of journal ranking is useful for personal goals such as faculty choice of a publication outlet, reputation and prestige, mobility, and funding opportunities.

³ We confirm this demand by numerous requests from U.S. faculty and administrators to provide them with the results of our recent survey (OUR 2005). They also indicate that information on journal quality is dated and that they would like to see more studies published.

Some departments use formal journals lists in making personnel decisions and in guiding faculty where to publish, while most do not (Reinstein and Calderon, 2006). The mission-oriented standards for AACSB accreditation make assessment of current journal quality important to any school with a moderate or significant research component to its mission. Thus, schools can use our synthesis to update information on accounting journal quality and to develop or revise a journal list to achieve organizational goals, and to help faculty achieve personal goals.

Our synthesis also contributes to accounting education by providing up-to-date information on the quality of publications used by faculty in teaching certain Ph.D., master, and undergraduate courses. Similarly, it may help doctoral and other graduate students searching for quality references for projects, dissertations, and theses. In addition, it is useful for allocating scarce library resources that provide faculty and students access to important, relevant information for research and teaching.

SUMMARY OF ACCOUNTING JOURNAL RANKING RESEARCH

Table 1 summarizes accounting journal ranking research reported in the 1990s and 2000s. In Panel A we identify six studies that used survey research to examine the perceptions of U.S. accounting faculty regarding journal quality. Hull & Wright (1990; hereafter HW), Brown and Huefner (1994; hereafter BH), and Smith (1994) provide results of surveying accounting faculty during the late 1980s and early 1990s. Ballas and Theoharakis (2003; hereafter BT), OUR (2005; hereafter OUR), and Lowensohn and Samelson (2006; hereafter LS) report more recent results. In addition, the studies from the 2000s report rankings for several new journals not included in the rankings reported by one or more of the studies in the 1990s.

While we provide summaries of the six studies in Panel A, the three studies from the 2000s can be used to update and determine the extent of changes in perceptions of accounting journal quality. BT (2003) provide a global ranking of journals and examine the perceptions of accounting faculty from the European, North American, and other continents. Their results are somewhat limited because they do not explicitly indicate a response rate for the U.S., and they report only a 20.9 percent response rate for North American faculty who comprise 64.6% of the total 1,230 global respondents. In addition, BT provide an initial list of 60 journals that includes six new European journals not ranked in US studies but do not include four of the relatively new U.S. journals ranked among the top 40 in recent studies.

LS (2006) focus on faculty in five areas of specialization, but because of this focus and their research design they exclude three large areas (financial, auditing, and international). Their results are most useful in identifying the perceptions of journal quality in only five specialized areas.

The data collected in our survey (OUR, 2005) is used in this synthesis to achieve the objective of responding to the demand for updated information on accounting journal rankings. First, faculty responses are used to complete a comparative analysis of rankings of the primary accounting journals in the scholarship of discovery and integration and the scholarship of application areas for the period 1990-2005. Second, we use our data to complete a comparative analysis of changes in rankings of the same journals for the period 1994-2005. Third, we compare the responses between doctoral and non-doctoral program faculty, an analysis not provided in other studies, except on a very limited basis in HW (1990). Fourth, the data for

Table 1. Summary of Selected Studies

Panel A: Survey Studies ^a						
Study	Data and Type of Respondents	Number of respondents	Response Rate	Potential Biases	General Comments	
Hull and Wright (1990)	Accounting faculty with doctoral degree or LL.M	278	33.3%	Response rate Sample representation Position	Surveyed only 25% of the population	
Smith (1994)	Accounting department heads and faculty	68 department heads 108 accounting faculty	30.2% department heads 30.9% accounting faculty	Response rate Sample representation Position	Surveyed only part of the population	
Brown and Huefner (1994)	Associate and full accounting professors at "best 40" MBA programs.	181	49.3%	Sample representation Position	Surveyed only the top 40 MBA programs	
Ballas and Theoharakis (2003)	Global faculty survey partitioned by continent	1,230 global 794 North America 285 Europe 87 Australia/NZ 64 Asia	20.6% global 20.9% North America 20.3% European 19.8% Australia/NZ 20% Asia	Lower response rate Uneven representation Position	Do not report separate U.S. results	
Lowensohn and Samelsson (2006)	Accounting faculty from five specialized areas	574	23%	Lower response rate Sample representation	Do not survey three large areas: Financial, auditing, international	
OUR (2005)	Doctoral program versus non-doctoral accredited School accounting faculty ^b	385 from doctoral programs and 221 from other accredited schools	44% from doctoral programs and 25% from other accredited schools	Lower response rate from non-doctoral accredited schools Position	Surveyed all doctoral and non-doctoral accredited accounting graduate programs. Do not survey non-accredited schools	
Panel B: Selected Other Studies						
Brown (2003)	SSRN Downloads	NOR	NOR	Some journals did not enable free loading	18 accounting & finance journals	
Reinstein and Calderon (2006).	Accounting departments ranking documents	146 responding departments	13% (19 departments use ranking documents)	Most do not have ranking documents Un-weighted rankings ^c	Rankings based on departmental journal lists	
Hasselback and Reinstein (1995)	Use prior rankings	NOR	NOR	NOR	Focus on productivity of accounting faculty	
Boumer et al. (2006)	Report Financial Times rankings	NOR	NOR	NOR	Focus on five most influential journals	
Glover et al. (2006)	Use prior ranking and Financial Times	NOR	NOR	NOR	Focus on publication record of faculty promoted	

a. We report studies that include U.S. data. b. Other accredited schools include non-doctoral programs which offer undergraduate and graduate program.
c. Rankings are not weighted by the number of departments for which journals are included on the lists. NOR = Not Relevant.

doctoral program faculty is used to complete an analysis of differences in journal rankings by faculty in specialized areas.

In OUR (2005) we surveyed all tenure-track accounting faculty with the rank of assistant, associate and full professor in 76 active doctoral and 80 nondoctoral programs as reported in the Accounting Faculty Directory (Hasselback 2000-01, 2002-03). The survey included 69 journals--59 included in at least two of four prior studies (HW, 1990; BH, 1994; Smith, 1994; and Hasselback and Reinstein (1995; hereafter HR, who use rankings from prior studies) and ten relatively new journals first published between 1987 and 1996 (including six U.S. journals not ranked in any study from the 1990s). The total number of respondents is larger than in prior U.S. studies. Our response rate for doctoral program faculty is higher than the response rates of prior studies, except for BH (1994) who surveyed only associate and full professors in the 40 leading U.S. MBA programs. The response rate from our non-doctoral program subjects is relatively lower and should be considered as a potential limitation of results reported in our study.

Panel B of Table 1 summarizes five studies from 1995 through 2006 that use other methods to determine accounting journal quality or use rankings reported by prior studies for other specific purposes. Brown (2003) uses SSRN downloads to rank 18 accounting and finance journals. Reinstein and Calderon (2006) focus on journals included on department ranking lists. HR (1995) report and use rankings from HW (1990), Jolly et al. (1995), cluster analysis, and other sources to examine productivity of accounting faculty. Bonner et al. (2006) focus on the most influential journals using primarily the Financial Times journal list.¹ Finally, Glover et al. (2006) examine publication records of faculty promoted using a prior ranking and the Financial Times list. These five studies do not survey accounting faculty. In our synthesis, we do not examine or expand the issues discussed in these articles.

COMPARING STUDIES THAT RANK ACCOUNTING JOURNALS AND ASSIGNING AN AVERAGE RANK

In this section, we synthesize survey-based rankings across studies and provide an average ranking for each journal. Based on Boyer (1990), we provide a partition of journals by scholarship and present changes in rankings across studies and over time.

Table 2 presents comparative analyses of U.S. accounting-faculty rankings of the top-40 journals in the recent literature from 1990 through 2005.² Panel A presents the rankings of 34 leading accounting journals in the scholarship of discovery and integration.³ Panel B shows the five leading journals in the scholarship of application.

We compute the average ranking of each journal across six studies. Then, we assign an overall rank for each discovery and integration journal. The five leading journals: The Accounting Review, Journal of Accounting Research, Journal of Accounting and Economics,

¹ The Financial Times uses a list of 40 business journals for MBA programs. The Financial Times does not rank the journals, and only four accounting journals are included in the list.

² We do not include studies that surveyed only non-U.S. faculty (e.g., Lowe and Locke, 2004), studies reported and used in articles included in Table 2 (e.g., Jolly et al. 1995), an accounting administrators' survey (Johnson et al., 2002), and studies reporting only specific specialized areas (e.g., Lowensohn and Samelson 2006).

³ The list includes 35 discovery and integration journals, but we do not report the ranking for the Journal of Financial Statement Analysis that has not been published in recent years.

Table 2. A Comparative Analysis of Rankings of the Primary Accounting Journals 1990-2005 ^a

Journal	Average Rank	Overall Rank	HW (1990)	Smith (1994)	BH (1994)	HR (1995)	BT (2003) ^b	Our (2005) ^c
Panel A: Scholarship of Discovery and Integration								
Accounting Review	(1.33)	1	2	2	1	1	1	1
J. of Accounting Research	(1.66)	2	1	1	2	2	2	2
J. of Accounting and Economics	(3.00)	3	3	3	3	3	3	3
Contemporary Accounting Research	(4.20)	4	New ^d	5	4	4	4	4
Accounting Organization and Society	(4.67)	5	4	4	5	5	5	5
J. of the American Taxation Association	(7.50)	6	5	12	6	6	9	7
Auditing: A Journal of Practice and Theory	(7.50)	7	9	6**	6	12	6	6
J. of Accounting, Auditing & Finance	(7.83)	8	6	7	10	8	7	9
J. of Accounting and Public Policy	(9.00)	9	10	8	9	11	8	8
National Tax Journal	(10.00)	10	7	NR	8	9	14	12
J. of Business Finance & Accounting	(10.17)	11	8	9	11	10	13	10
Review of Accounting Studies	(12.00)	12	New	New	New	New	11	13
Behavioral Research in Accounting	(12.40)	13	New	13	17	6*	12	14
Accounting Horizons	(13.17)	14	14	10	14	20*	10	11
J. of Accounting Literature	(13.67)	15	11	11	12	14	19	15
J. of Management Accounting Research	(15.00)	16	New	New	16	11	15	18
ABACUS	(15.50)	17	13	16	14	17	16	17
Accounting and Business Research	(17.67)	18	12	19	21	15	20	19
Issues in Accounting Education	(18.17)	19	18	15	18	25*	17	16
International J. of Accounting (I&R)	(19.33)	20	15	17	24	22	18	20
Advances in Accounting	(21.00)	21	17	18	25	24	21	21
J. of Accounting Education	(21.50)	22	16	14	30*	23	23	23
Advances in Taxation	(24.80)	23	NR	22	27	27	22	26
Research in Govt. & Nonprofit Acct.	(25.00)	24	NR	20	23	16	44 ^{b*}	22
J. of Intl Accounting, Auditing, & Taxation	(25.50)	25	New	New	New	New	26	25
J. of Information Systems	(27.33)	26	19	25	26	26	44 ^{b*}	24
Accounting Historians Journal	(27.40)	27	20	NR	32	33 ^f	25	27
Research in Accounting Regulation	(28.75)	28	NR	NR	22*	29	35	29
Advances in International Accounting	(30.20)	29	NR	24	34	31	34	28
Critical Perspective in Accounting	(31.50)	30	NR	NR	35 ^f	35 ^f	24*	32
Accounting Educators' Journal	(31.60)	31	New	26	36	34	28	34
Advances in Public Interest Accounting	(35.50)	32	NR	NR	33	32 ^f	44 ^b	33
J. of Intl Financial Management & Acct.	(37.00)	33	New	New	New	New	44 ^b	30
Intl J. of Intelligent Sys. in Acct. Fin& Mgmt	(37.50)	34	New	New	New	New	44 ^b	31
Panel B: Scholarship of Application^g								
J. of Taxation		1	15	NR	13	NR	23	17
J. of Accountancy		2	32	NR	20	27	16	29
J. of Corporate Taxation		3	25	NR	32	18	NR	32
Management Accounting (Strategic Finance)		4	43	NR	36	27	NR	30
CPA Journal		5	57	NR	41	40	NR	36

Table 2 (Continued)

- a. We summarize the rankings for the 34 primary accounting journals in the scholarship of discovery and integration and five in the scholarship of application. HW, BH, HR, BT, and OJR refer to Hull and Wright (HW, 1990), Brown and Huefner (BH, 1994), Hasselback and Reinstein (HR, 1995), Ballas and Theoharakis (BT, 2003) Northern American ranking, and our study (OJR, 2005). The partition by scholarship is based on Boyer (1990).
- b. BT (2003) include in their 40 ranked journals 30 that were ranked by other studies and ten others (primarily European) not ranked by other prior studies. We report the BT ranking based on the four measures of perceived quality used in their study. They do not rank seven U.S. journals reported in Panel A. We assign a rank of 44 (the median between 41 and 47) to these seven journals five of which are reported among the top 34 journals. The "New" assignments in the HW, Smith, BH and HR columns are not relevant for BT because these journals were not new during their research period. We present the ranking by BT as reported in their Table 2 for North American respondents. Also, their preliminary list of 60 journals includes 20 which they did not rank and probably perceived as lower quality journals.
- c. Our journals are listed based on rankings by 385 useful respondents from doctoral programs with adjustments for deleting scholarship-of-application journals in Panel A.
- d. Several relatively new journals are missing in the top accounting journal listings in HW (1990), Smith (1994), BH (1994) and HR (1995). We use the notation 'New' because these journals were relatively new journals in the early and mid-1990s.
- e. For comparing between studies, we assign 34 ranks to journals reported in Panel A after excluding the applications journals reported in Panel B. The ranks in the scholarship-of-application journals are reported as presented in the studies. We exclude journals in the scholarship from the ranks reported in panel A.
- f. Assigned adjusted ranks.
- * Ranking that deviates significantly from the other three studies and affect the overall rank.
- ** Adjusted due to potential severe deviation from all rankings by other studies.
- NR = Not ranked in the 40 journals or not ranked at all.
- New = Relatively new journals for each study and therefore may not be ranked (see note d).
- NA = Not available.

Contemporary Accounting Research (CAR), and Accounting Organization and Society are ranked with minor deviations in positions at the top of the list by all six studies included in the Table 2, except the CAR which was a new journal when HW (1990) conducted their survey. The next seven journals tend to be ranked between six and 12 by these studies. The ranking for journals with an average rank between 13 and 34 deviates across studies. For specific studies, we assign the ranks “New” and “NR” for new journals and unranked journals respectively.⁴ Finally, in panel B of Table 2, we report the ranks for the top five scholarship-of-application journals. Smith (1994) does not rank these applied journals and two other studies rank only four and two of these journals. We compute the average rank for each journal across studies and list these application journals by the average rank.

Table 3 provides the U.S. accounting-faculty rankings of the top-40 journals in the more recent literature from 1995 through 2005. We report the average rankings of BH (1994) and HR (1995) because these articles were published more than ten years ago. Then, we report the rankings by BT (2003) and our study. We compute the average ranking of each journal across the three columns and assign an overall rank for each discovery and integration journal for 1995-2005. Thus we assign only 1/3 weight to the two articles from the 1990s. Panels A and B show the rankings for discovery and integration journals and the top five scholarship of application journals, respectively.

The last three columns in Table 3 show the changes in rankings across these studies. While the ranks of the top five journals remain unchanged, we find some major changes in rankings of the next five journals across studies and over time. For example, Auditing: A Journal of Practice and Theory is ranked 6 in BT (2003) and in our study (2005) compared to an average of 9 in the studies from the 1990s. Major changes in rankings tend to occur for many journals ranked between 11 and 34. For example, the rank for Accounting Historians Journal improves by 7.5 positions to 25 by BT compared to the average of 33.5 in the 1990s. In addition, we report differences between BT and our rankings for most of the journals ranked between six and 34.

Overall, the results suggest major changes in rankings across studies over time and between studies that survey faculty in about the same period. Our results imply that faculty and administrators should update their knowledge of current accounting journal quality and should rely on more than one study. Our synthesis and the assigned average ranks in Tables 2 and 3 provide the information needed to derive these conclusions and potentially be used to accomplish the purposes discussed in the introduction and motivation sections.

RANKING BY DOCTORAL AND NON-DOCTORAL RESPONDENTS

The lack of comparisons between respondents from doctoral and nondoctoral programs in almost all prior studies is one of our major motivations to survey the accounting faculty during the 2000s. We add our results to the synthesis to provide a more comprehensive analysis of this issue. Table 4 presents the ranking of the 34 major discovery and integration accounting journals in two tiers. Five relatively new journals (those commencing publication in the 1990s)

⁴ Hull and Wright (1990), Brown and Huefner (1994), Smith (1994) and Hasselback and Reinstein (1995) do not include in their ranking six journals which were relatively new in the mid-1990s. We label these journals as ‘New’ in Table 2. These “New” assignments are not relevant for the column representing the Ballas and Theoharkis (2003) study because these journals were not new during their research period. Further, their list of 60 journals and their ranking of the top 40 do not include some new and other U.S. journals ranked only in U.S. studies.

Table 3. A Comparative Analysis of Changes in Rankings of the Primary Accounting Journals: 1994-2005^a

Journal	I-III		Overall Rank	BH&HR		BT		Our		Change in Ranking		
	Average	Rank		Average (I)	(2003) ^b (II)	(2005) ^c (III)	I-II	I-III	II-III			
Panel A: Scholarship of Discovery and Integration												
Accounting Review	(1.00)	1	1	1	1	1	0	0	0			
I of Accounting Research	(1.83)	2	1.5	2	2	2	-0.5	-0.5	0			
I of Accounting and Economics	(3.00)	3	3	3	3	3	0	0	0			
Contemporary Accounting Research	(4.00)	4	4	4	4	4	0	0	0			
Accounting Organization and Society	(5.00)	5	5	5	5	5	0	0	0			
Auditing: A Journal of Practice and Theory	(7.00)	6	9	6	6	6	3	3	0			
I of the American Taxation Association	(7.33)	7	6	9	9	7	-3	1	2			
I of Accounting, Auditing & Finance	(8.33)	8	9	7	7	7	2	0	2			
I of Accounting and Public Policy	(8.67)	9	10	8	8	8	2	2	0			
I of Business Finance & Accounting	(11.17)	10	10.5	13	13	10	-2.5	0.5	3			
National Tax Journal	(11.50)	11	8.5	14	14	12	-5.5	-3.5	2			
Review of Accounting Studies	(12.00)	12	New ^d	11	11	13	NA	NA	-2			
Behavioral Research in Accounting	(12.50)	13	11.5	12	12	14	-0.5	-2.5	-2			
Accounting Horizon	(12.67)	14	17	10	11	11	7	6	-1			
I of Management Accounting Research	(15.50)	15	13.5	15	15	18	-1.5	-4.5	-3			
I of Accounting Literature	(15.67)	16	13	19	15	15	-6	-2	4			
ABACUS	(16.17)	17	15.5	16	17	17	-5	-1.5	-1			
Issues in Accounting Education	(18.17)	18	21.5	17	17	16	4.5	5.5	1			
Accounting and Business Research	(19.00)	19	18	20	20	19	-2	-1	1			
International J. of Accounting (E&R)	(20.33)	20	23	18	18	20	5	3	-2			
Advances in Accounting	(22.17)	21	24.5	21	21	21	3.5	3.5	0			
Advances in Taxation	(24.17)	22	26.5	23	23	23	3.5	3.5	0			
Advances in Taxation	(25.00)	23	New	22	22	26	5	1	-4			
I of Intl Accounting, Auditing, & Taxation	(25.50)	24	New	26	25	25	NA	NA	1			
Accounting Historians Journal	(28.17)	25	32.5 ^f	25	27	27	7.5	5.5	-2			
Research in Govt. & Nonprofit Acct.	(28.50)	26	19.5	44 ^{b*}	22	22	-24.5 ^d	-2.5	22 ^d			
Research in Accounting Regulation	(29.83)	27	25.5	35	29	29	-9.5	-3.5	6			
Critical Perspective in Accounting	(30.33)	28	35 ^f	24 [*]	32	32	11	3	-8			
I of Information Systems	(31.33)	29	26	44 ^{b*}	24	24	-18 ^d	2	20 ^d			
Advances in International Accounting	(31.50)	30	32.5	34	28	28	-1.5	4.5	6			
Accounting Educators' Journal	(31.60)	31	35 ^f	28	34	34	7	1	-6			
Advances in Public Interest Accounting	(36.50)	32	32.5	44 ^b	33	33	-11.5 ^d	-5	11 ^d			
I of Intl Financial Management & Acct.	(37.00)	33	New	44 ^b	30	30	NA	NA	14 ^d			
Intl J. of Intelligent Sys. in Acct, Fin& Mgmt	(37.50)	34	New	44 ^b	31	31	NA	NA	13 ^d			
Panel B: Scholarship of Application^e												
I. of Taxation		1	13	23	17	17						
I. of Accountancy		2	23.5	16	29	29						
I. of Corporate Taxation		3	25	NR	32	32						
Management Accounting (Strategic Finance)		4	31.5	NR	30	30						
CPA Journal		5	40.5	NR	36	36						

Table 3 (Continued)

- a. We summarize the ranks and changes in rankings for the 34 primary accounting journals in the scholarship of discovery and integration and five in the scholarship of application. BH, HR, BT and OUR refer to Brown and Huefner (BH, 1994), Haseelback and Remstein (HR, 1995), Ballas and Theoharakis (BT, 2003) Northern America ranking and our study (OUR, 2005). The partition by scholarship is based on Boyer (1990).
- b. BT (2003) include in their list of 60 journals 40 ranked journals of which 30 that were ranked by other studies and ten others (primarily European) not ranked by our and the three prior studies. We report the BT ranking based on the four measures of perceived quality used in their study. They do not rank seven U.S. journals reported in Panel A. We assign a rank of 44 (the median between 41 and 47) to these seven journals five of which are reported among the top34 journals. The "New" assignments in the BH and HR columns are not relevant for BT because these journals were not new during their research period. We present the ranking by BT as reported in their Table 2 for North American respondents. Also, their preliminary list of 60 journals includes 20 which they did not rank and probably perceived as lower quality journals.
- c. Our journals are listed based on rankings by 385 useful respondents from doctoral programs with adjustments for deleting scholarship-of-application journals in Panel A.
- d. Several relatively new journals are missing in the top accounting journal listings in BH (1994) and HR (1995). We use the notation "New" because these journals were relatively new journals in the early and mid-1990s.
- e. For comparing between studies, we assign 34 ranks to journals reported in Panel A after excluding the applications journals reported in Panel B. The ranks in the scholarship-of-application journals are reported as presented in the studies. We exclude journals in the scholarship of application from the ranks reported in panel A.
- f. Assigned adjusted ranks.
- * Ranking that deviates significantly from the other three studies and affect the overall rank.
- NR = Not ranked in the 40 journals or not ranked at all.
- New = Relatively new journals for each study and therefore may not be ranked (see note d).
- NA = Not available.

are included in the second tier of 24 journals.⁵ The differences in mean (median) ranking distributions between the doctoral and non-doctoral respondents are statistically significant for 7 (4) of the 10 top journals, but only 9 (11) of the next 24 journals within the second tier. The median is used but not reported in Table 4. Further, Chi-Square tests that compare the rankings between the two groups of respondents across journals suggest that the assigned ranks slightly differ for the first tier of journals and substantially differ for the second tier.

Some new journals tend to be ranked relatively higher by doctoral respondents than by non-doctoral respondents. For example, *Review of Accounting Studies* is ranked 13 (mean, 13.51) by doctoral respondents compared to 30 (mean, 28.87) by the non-doctoral respondents. Overall, the findings presented in Table 4 suggest that perceptions on quality differ between doctoral and non-doctoral respondents. The results imply that explicit or implicit departmental lists should be different between doctoral and non-doctoral programs for personnel decisions and research-quality recognition.

RANKINGS BY SPECIALIZED AREAS

We segment the rankings by six areas of specialization (i.e., financial, auditing, managerial, tax, behavioral, and other). To facilitate a synthesis of this subject, the Appendix provides the distribution of the population of U.S. accounting faculty by specialized areas in universities with accounting doctoral program as compiled from Hasselback (2002-03). About 46 percent of the 1,252 faculty identify their primary specialized area as financial. About 17 percent of the faculty members are from the managerial area, 11 percent from tax, 10 percent from auditing, 7 percent from systems, and 3 percent from behavioral. The remaining 5 percent are from other areas.⁶

Table 5 provides the rankings by specialized area from four studies for the top 25 journals reported in Table 2.⁷ The results suggest a specialization bias from respondents in the behavioral and tax specialties toward higher rankings of journals in their specific areas. On the other hand, journals in these two specialized areas are ranked lower by financial and managerial respondents. Overall, the table demonstrates that the distribution of rankings by doctoral program respondents differ across areas of specialization.⁸

The synthesis also suggests that the response rates are relatively greater among doctoral-program faculty from auditing and behavioral compared with their composition in the accounting faculty population. On the other hand, the cross-study response rates relative to the

⁵ We do not report the *Review of Quantitative Finance & Accounting* which was ranked among the top 35 discovery and integration journals in our study, but was not ranked in other journal ranking studies from 1990-2005. The *Accounting Educators' Journal* was not published in 2004 and 2005 but re-commenced publication in 2006 (Volume 16).

⁶ About 40 percent of the 385 useful respondents from doctoral programs in our study are from the financial specialty, 16 percent from auditing, 12 percent from managerial, 13 percent from tax, and 6 percent from behavioral. The remaining 12 percent of the respondents represent the "Other" group. This finding suggests that faculty from auditing, tax and behavioral tend to have higher response rates than faculty from financial and managerial.

⁷ Other studies do not report this category. The respondents classified in the "other" group categorized themselves primarily in education, government, international, and systems, but respondents in each of these subcategories include an insufficient number to be reported separately in our study (2005).

⁸ Untabulated results show at least moderate statistically-significant differences in rankings for all journals among the six areas of specialization (at the ten percent level).

Table 4. Ranking of the Primary Discovery and Integration Accounting Journals in Our Study

Journal ^{a,b}	Respondents from Doctoral Programs N= 385 ⁺		Respondents from Other Accredited Programs N= 221 ⁺⁺		T- Test	Wilcoxon Test
	Mean	Rank	Mean	Rank		
Accounting Review	2.55	1	4.18	1	2.17**	0.42
J. of Accounting Research	3.73	2	5.42	2	1.97**	0.79
J. of Accounting Economics	4.44	3	7.12	3	3.06*	3.53*
Contemporary Accounting Research	5.36	4	8.01	5	3.80*	6.20*
Accounting Organization and Society	7.57	5	7.83	4	0.34	2.19**
Auditing: A Journal of Practice & Theory	8.31	6	9.76	6	2.62*	2.17**
J. of the American Taxation Association	8.77	7	10.40	8	2.54**	1.69
J. of Accounting and Public Policy	9.78	8	10.02	7	0.42	0.20
J. of Accounting, Auditing & Finance	10.19	9	12.50	11	2.56*	1.35
J of Business Finance & Accounting	11.62	10	12.33	10	1.06	0.23
Accounting Horizon	13.29	11	12.24	9	-1.68***	-2.13**
National Tax Journal	13.43	12	16.54	15	3.96*	3.82*
Review of Accounting Studies	13.51	13	28.87	30	8.55*	6.83*
Behavioral Research in Accounting	14.30	14	13.17	12	-1.53	-2.39**
J. of Accounting Literature	15.63	15	15.26	13	-0.63	-1.21
Issues in Accounting Education	17.97	16	16.19	14	-2.42**	-2.73
ABCUS	18.78	17	17.13	16	-2.57*	-3.06*
J. of Management Accounting Research	19.08	18	22.50	22	2.68*	2.54**
Accounting and Business Research	20.44	19	21.10	20	0.73	-0.06
International J. of Accounting	21.43	20	20.07	17	-1.64	-2.29**
Advanced in Accounting	21.83	21	21.01	19	-1.2	-1.54
Research in Govt. & Nonprofit Acct.	22.41	22	21.80	21	-0.84	-0.76
J. of Accounting Education	24.32	23	20.67	18	-4.24*	-4.86*
J. of Information Systems	24.90	24	24.63	23	-0.32	-0.29
J. of Intl Accounting, Auditing, & Taxation	27.64	25	26.49	25	0.56	0.34
Advances in Taxation	27.94	26	25.57	24	0.09	0.31
Accounting Historians Journal	28.26	27	27.59	27	-0.67	-0.61
Advances in International Accounting	28.27	28	27.36	26	-1.27	-1.80
Research in Accounting Regulation	28.92	29	29.77	31	0.69	0.18
J. of Intl Financial Management & Acct.	29.63	30	31.37	32	0.98	0.68
Intl J. of Intelligent Sys Acct, Fina, & Mana	29.81	31	35.18	34	2.79*	2.86*
Critical Perspective in Accounting	29.89	32	28.75	29	-0.86	-1.86***
Accounting Educators' Journal ^c	31.75	33	28.03	28	-3.64*	-3.47*
Advances in Public Interest Accounting	31.83	34	31.89	33	0.05	-0.88

^a The journals are ordered using the ranking by respondents from Doctorate degree programs.

^b We do report the Journal of Financial Statement Analysis that has not been published in recent years.

^c The Accounting Educators' Journal was not published in 2004 and 2005 but re-commenced publication in 2006 (volume 16).

+ 385 useful respondents; ++ 221 useful respondents. NA = Not available.

* Significant at p<0.01; ** Significant at p<0.05; ***Significant at p<0.10.

		Financial	Auditing	Managerial	Tax	Behavioral	Other	ANOVA ^a	Kruskal-W
8. J. of Accounting, Auditing & Finance	HW (1990)	5	7	5	8				
	BH (1994)	8	10	T7	12				
	BT (2003)	5	9	NR	13		NR		
	OUR (2005)	9	8	7	10	8	9	1.03	6.90*
	HW (1990)	9	11	8	9				
9. J. of Accounting and Public Policy	BH (1994)	9	9	T7	9				
	BT (2003)	10	10	NR	9				
	OUR (2005)	8	9	6	8	10	12	0.82	3.46***
	HW (1990)	18	6	11	3				
	BH (1994)	10	8	14	4				
10. National Tax Journal	BT (2003)	NR	NR	NR	4		NR		
	OUR (2005)	13	14	12	7	14	15	8.03*	39.2*
	HW (1990)	6	10	7	9				
	BH (1994)	11	15	11	15				
	BT (2003)	9	NR	NR	NR		NR		
11. J. of Business Finance & Accounting	OUR (2005)	10	10	10	12	11	10	3.19***	21.0*
	HW (1990)	New	New	New	New				
	BH (1994)	New	New	New	New				
	BT (2003)	7	15	NR	NR	18	NR		
	OUR (2005)	11	15	11	17		13	2.84***	13.4**
12. Review of Accounting Studies	HW (1990)	New	New	New	New				
	BH (1994)	New	New	New	New				
	BT (2003)	17	16	16	16				
	BH (1994)	NR	8	13	NR		NR		
	OUR (2005)	15	11	15	11	7	12	6.97*	50.2*
13. Behavioral Research in Accounting	HW (1990)	13	14	20	20				
	BH (1994)	14	12	15	11				
	BT (2003)	8	7	8	8		4		
	OUR (2005)	12	12	13	13	13	11	2.48***	12.4*
	HW (1990)	12	9	12	10				
14. Accounting Horizon	BH (1994)	12	11	12	14				
	BT (2003)	NR	12	NR	NR		11		
	OUR (2005)	14	13	16	14	12	14	2.87***	12.6*
	HW (1990)	14							
	OUR (2005)	14							
15. J. of Accounting Literature	HW (1990)	12	9	12	10				
	BH (1994)	12	11	12	14				
	BT (2003)	NR	12	NR	NR		11		
	OUR (2005)	14	13	16	14	12	14	2.87***	12.6*
	OUR (2005)	14							

	Financial	Auditing	Managerial	Tax	Behavioral	Other	ANOVA F	Kruskal-W
	New	New	New	New				
16. J. of Management Accounting Research	HW (1990)							
	BH (1994)	16	21	10	22			
	BT (2003)	15	NR	4	NR	14		
	OUR (2005)	18	19	14	22	19	18	3.56**
	HW (1990)	11	12	14	19			24.5*
17. ABACTUS	BH (1994)	13	13	13	10			
	BT (2003)	14	14	11	NR	8		
	OUR (2005)	16	18	17	19	16	17	4.40**
	HW (1990)	7	13	10	14			13.8*
	BH (1994)	15	20	20	T22			
18. Accounting and Business Research	BT (2003)	12	NR	12	NR	10		
	OUR (2005)	19	17	19	20	22	20	0.94
	HW (1990)	17	17	21	18			4.60**
	BH (1994)	22	14	18	13			
	BT (2003)	NR	13	NR	NR	15	NR	
19. Issues in Accounting Education	OUR (2005)	17	16	18	15	15	16	0.58
	HW (1990)	15	18	17	11			4.29**
	BH (1994)	19	28	22	17			
	BT (2003)	NR	NR	NR	NR	6	6	
	OUR (2005)	20	22	20	24	20	21	1.24
20. International J. of Accounting (E&R)	HW (1990)	14	19	19	23			2.94***
	BH (1994)	23	18	17	20			
	BT (2003)	NR	NR	NR	NR	NR	NR	
	OUR (2005)	21	21	22	18	17	23	1.74
	HW (1990)	16	15	16	17			10.8*
21. Advances in Accounting	BH (1994)	24	25	29	T22			
	BT (2003)	NR	NR	NR	NR	NR	NR	
	OUR (2005)	23	24	23	24	23	24	0.91
	HW (1990)	16	15	16	17			7.11*
	BH (1994)	28	24	23	18			
22. J. of Accounting Education	BT (2003)	NR	NR	NR	NR	NR	NR	
	OUR (2005)	23	24	23	24	23	24	0.91
	HW (1990)	NR	NR	NR	NR			7.11*
	BH (1994)	28	24	23	18			
	BT (2003)	NR	NR	NR	NR	NR	NR	
23. Advances in Taxation	OUR (2005)	29	25	25	16	25	30	15.0*
	HW (1990)							48.7*
	BH (1994)							
	BT (2003)							
	OUR (2005)							

	Financial	Auditing	Managerial	Tax	Behavioral	Other	ANOVA F	Kruskal-W
24. Research in Government & Nonprofit Acct.	HW (1990)	NR	NR	NR	NR			
	BH (1994)	20	23	T25	T22			
	BT (2003) ^c	NR	NR	NR	NR	NR		
	OUR (2005)	22	20	21	21	21	0.92	3.71*
	HW (1990)	New	New	New	New	New		
25. J. of Int'l Accounting, Auditing, & Taxation	BH (1994)	New	New	New	New	New		
	BT (2003)	NR	NR	NR	NR	13		
	OUR (2005)	26	31	27	24	31	0.80	4.86***
	HW (1990)	New	New	New	New	New		
	BH (1994)	New	New	New	New	New		

- a. We summarize the ranks in the 25 top accounting journals in the scholarship of discovery and integration (see Table 2). HW, BH, BT, and OUR refer to Hull and Wright (HW, 1990), Brown and Huefner (BH, 1994), Ballas and Theodorakis (BT, 2003), and our study based on responses from doctoral programs, OUR (2005). All journals reported in Table 5 are classified in the scholarship of discovery and integration (Boyer, 1990).
 - b. Other include primarily faculty from education, international, government, and systems.
 - c. To save space, the number of respondents is provided in parentheses beside the ranks for the first journal; it is applicable to all 25 journals reported in the table. The numbers for BT (2003) include all respondents including those from North America, but we exclude from BT the respondents who are classified in accounting theory because many are non-U.S. respondents. BT rank only the top 15 journals by area of specialization.
- See notes to Tables 2 and 3 for further information.
- T = Tie in ranking
- NR = Not ranked in the 40 journals or not ranked at all
- New = Relatively new journals for each study and therefore not ranked
- NA = Not available.

population tend to be smaller among faculty from financial. BT (2003), however, include faculty from non-doctoral programs.

CONCLUSIONS

We synthesize studies examining the perceived quality of accounting journals. We find that survey studies substantially differ by data, type of respondents, number of respondents, response rates, potential biases, and population surveyed. While specific research methods tend to be similar across studies, we identify a few differences. Our synthesis reports the rankings across studies, and we present the average ranking for each accounting journal.

We show some differences in rankings for journals ranked between six and ten, and more pronounced differences for those ranked between 11 and 34. While some studies do not rank or tend not to rank application journals, those that do tend to rank journals in the scholarship of application below 30. We identify significant changes over time in the rankings of many journals and find that five relatively new journals are highly ranked among the discovery and integration journals during the 2000s. The rankings by respondents from the doctoral programs significantly differ from respondents from the non-doctoral programs in ranking more than half of the top 34 journals in our synthesis. Finally, we present differences between studies and within each study for journal rankings across specialized area. This result is consistent with a faculty bias in favor of journals in their own specialization.

Our synthesis provides a response to specific demand for more updated studies on perceptions of journal rankings by U.S. faculty and administrators. They can use the information to assess faculty current research productivity for personnel decisions such as hiring, promotion, tenure, and merit. The synthesis is helpful in developing references, context and content for some academic courses and for Ph.D. and other graduate students' research references. It presents an implicit guidance to accounting faculty in choosing research outlets and achieving personal goals such as reputation and prestige, mobility, and funding opportunities. Finally, the synthesis provides essential input for building department reputation and prestige, achieving and maintaining business and accounting accreditation, and allocating scarce library resources.

Each of the studies included in our synthesis has its own limitations. These limitations are noted briefly in Table 1 and some are discussed in each study. They include lower response rates, sample presentations, position bias, and sample and population representation biases. This synthesis does not promote quality as the only criterion for evaluating accounting faculty research. Studies in the scholarship of application, in particular, those affecting standard setters, regulators, and accounting professionals, are extremely important in the accounting.

APPENDIX. Distribution of Faculty Members by Areas in Universities with Doctoral Programs in Accounting

<u>Area*</u>	<u>Tenure-track Faculty (Primary Area)</u>	<u>%</u>	<u>Tenure-track Faculty (Secondary Area)</u>	<u>%</u>	<u>Non-Tenured Faculty (Primary Area)***</u>	<u>%</u>
Auditing (A,IA)	128	10%	89	7%	11	5%
Managerial (C, M, U)	218	17%	243	19%	17	8%
Computer, System (D,S)	85	7%	52	4%	7	3%
Financial (F,SEC)	579	46%	117	9%	128	60%
Tax (X)	142	11%	43	3%	29	14%
Behavioral (B)	39	3%	62	5%	0	0%
Other (G,N,I,E,H,J,L,P,Q,R,T,V,W,Y,Z)***	61	5%	190	15%	20	9%
No 2nd Area			456	36%		
Total Number of Faculty Members	1,252	100%	1,252	100%	212	100%

Compiled from Hasselback 2002-2003.

*Specific area of specialization (e.g., A =audit; M=Managerial; F=Financial); see Hasselback for an explanation of all specialization codes.

**Other areas include primarily Education (E), International (I), and some government (G).

*** Including some instructors. Many non-tenured faculty also list a secondary area.

REFERENCES

- Ballas, A. and V. Theoharakis. 2003. Exploring Diversity in Accounting Journals through Faculty Journal Perceptions. *Contemporary Accounting Research* 20: 619-644.
- Bonner, S.E., J.W. Hesford, W.A. Van der Stede and S.M. Young. 2006. The most influential journals in academic accounting. *Accounting, Organizations and Society* 31: 663-685.
- Boyer, E. L. 1990. *Scholarship Reconsidered: Priorities of the Professoriate*. Princeton, NJ: Carenegie Foundation.
- Brinn, T., M.J. Jones and M. Pendelbury. 1996. UK accountants' perceptions of research journal quality. *Accounting and Business Research* 26:265-278.
- Brown, L.D. 2003. Ranking journals using SSRN downloads. *Review of Quantitative Finance and Accounting*, 29: 291-307.
- Brown, L. D. and R.J. Huefner. 1994. The familiarity with and perceived quality of accounting journals: Views of senior accounting faculty in leading U.S. MBA programs. *Contemporary Accounting Research* 11: 223-250.
- Glover, S. M., D.F. Prawitt and D.A. Wood. 2006. Publication records of faculty promoted at the Top 75 accounting research programs. *Issues in Accounting Education* 21: 195-218.
- Hasselback, J. R. 2000. *2000-2001 Accounting Faculty Directory*. Englewood Cliffs, NJ: Prentice Hall, Inc.
- Hasselback, J. R. 2002. *2002-2003 Accounting Faculty Directory*. Englewood Cliffs, NJ: Prentice Hall, Inc.
- Hasselback, J. R., & Reinstein, A. 1995. A proposal for measuring scholarly productivity of accounting faculty. *Issues in Accounting Education* 10: 269-306.
- Hull, R. P. and G.B. Wright. 1990. Faculty Perceptions of Journal Quality: An Update. *Accounting Horizons* 4: 77-98.
- Johnson, P.M., P.M.J. Reckers and L. Soloman. 2005. Evolving research benchmarks. *Advances in Accounting* 19: 235-243.
- Jolly, S. A., R.G. Schroeder, and R.K. Spear. 1995. An empirical investigation of the relationship between journal quality ratings and promotion and tenure decisions. *Accounting Educators' Journal* 7:47-68.
- Locke, J. and A. Lowe. 2002. Problematizing the construction of journal quality: An engagement with the mainstream. *Accounting Forum* 26: 45-71.
- Lowe A. and J. Locke. 2004. Perceptions of journal quality and research paradigm: results of a web-based survey of British accounting academics. *Accounting, Organizations and Society* 30: 81-98
- Lowensohn, S., and D.P. Samelson. 2006. An examination of faculty perceptions of academic journal quality within five specialized areas of accounting research. *Issues in Accounting Education* 21: 219-239.
- Milne, M.J. 2002. The construction of journal quality: No engagement detected. *Accounting Forum* 26: 72-86.
- Reinstein, A. and T. Calderon. 2006. Examining accounting departments' rankings of the quality of accounting journals. *Critical Perspectives in Accounting* 17:457-490.
- Smith, L. M. 1994. Relative contribution of professional journals to the field of accounting. *Accounting Educators' Journal* 6:1-31.
- Tahai, A. and T.J. Rigsby. 1998. Information processing using citations to investigate journal influence in accounting. *Information Processing and Management* 34: 341-359.
- Zeff, S. A. 1996. A study of academic research journals in accounting. *Accounting Horizons* 10: 18-177.

A COMPARISON OF THE CHARACTERISTICS OF FORTUNE 500 CORPORATE CONTROLLERS: 1994 AND 2005

Antonio Apap, University of West Florida
Arthur Gilbert Jr., University of West Florida

ABSTRACT: Numerous articles have been published concerning the characteristics of Fortune 500 CEOs and CFOs. Although there are numerous sources of information regarding the duties and responsibilities of corporate controllers, after a literature review it appears that little is known about the Fortune 500 controller as an individual. The purpose of this study was to gather demographic, personal, and professional data, develop a profile of the current typical Fortune 500 controller, and compare the findings with data from a similar study completed in 1994. The current study found that the typical corporate controller was a white male, 46 years of age, who was promoted to his present position at age 42. The controller has little facility with foreign languages and has intermediate computer skills. The current typical Fortune 500 controller is well compensated, with 84.1% of the respondents reporting annual compensation over \$300,000. Surprisingly, the 1994 data were very similar to the 2005 data with two notable exceptions. First, 33.4% of the controllers in 1994 reported their computer skills to be at the beginner level or less, whereas, only 3.1% of the controllers in 2005 reported their computer skills to be at the beginner level. Second, 56.1% of the controllers in 1994 reported that they earned above \$200,000 per year, compared to 93.6% of the controllers in 2005 reporting that they earned more than \$200,000 per year.

INTRODUCTION

There is a great deal of information in textbooks, periodicals, and professional educational materials regarding the duties and responsibilities of the typical Fortune 500 corporate controller. It is generally accepted that the controller is the chief accountant of the firm, and has evolved from a relatively low-key position to the highly visible position of corporate officer and corporate strategist over the past two decades. However, after a literature review it is apparent that little is known about the Fortune 500 corporate controller as an individual, and how that individual may have evolved in the 11-year period 1994 – 2005. Therefore, the purpose of this study was to gather current demographic, personal, and professional data, develop a profile of the current typical Fortune 500 controller, and compare the findings with data from a similar study conducted in 1994 (Wade and Apap, 1995).

METHODOLOGY

The questionnaire used in both the 1994 (first study) and 2005 (second study) was a modified version of the survey instrument used in a study of the demographics of insurance executives (Hollman and Murrey, 1984). In the first study, the questionnaire was mailed to the controllers of the Fortune 500 corporations in May 1994. A total of 129 substantially completed questionnaires were returned in May and June of 1994, which equates to a 25.8% response rate. In the second study, the questionnaire was mailed to the controllers of the Fortune 500 corporations in July and August of 2005. Since the response from the first mailing was low (38), a second mailing was completed in early October 2005. The researchers wrote personal notes on the questionnaires in the second mailing requesting the controllers surveyed to respond in an attempt to increase the response rate. Adding personal notes to the questionnaires in the

second mailing appeared to be beneficial, and the second mailing resulted in receipt of 27 additional questionnaires, which resulted in a total of 65 substantially completed questionnaires received. After deducting the two questionnaires that were returned by the Post Office as undeliverable from the total mailed, the overall response rate for the second survey was 13.1%.

RESULTS

Gender: The first survey found that 92.2% of the respondents were male and 7.8% were female. The results of the second survey were almost identical to the results of the first survey. The second survey results found that 92.3% of the respondents were male and 7.7% were female. It is evident that even though the number of females entering accounting as a career field has been increasing over the last two decades, few have ascended the corporate hierarchy to the position of controller. This finding tends to verify the "glass ceiling" concept concerning male dominance in corporate America.

Race: The controllers who responded to the first survey were 96.1% Caucasian, one controller was Hispanic, one was Black, and three controllers did not list their race. In the second study, the controllers who responded to the survey were 95.4% Caucasian, 3.1% Asian, and one respondent chose "other" as his race. None of the respondents to the second survey chose Black as their race. Similar to the results for the survey question regarding the sex of the controllers where most respondents were male, the race of the respondents was overwhelmingly Caucasian for both studies. The reasons for the small percentage of minority groups represented among Fortune 500 controllers could be an area for future study.

Age: In the first study, the ages of the controllers ranged from a low of 32 to a high of 62, and the mean age of the respondents was 47. The ages of the Fortune 500 controllers were similar in the second study, ranging from a low of 32 to a high of 59, with a mean age of 45.6. In the first study, the ages at which the controllers had assumed their present positions ranged from a low of 32 to a high of 56. The mean age at which the respondents in the first study had assumed their present positions was 42, while in the second study the mean age was 41.1. These data indicate that controllers of the largest corporations in the United States were promoted to their executive positions while in their early forties and had been in their positions for five years. These executives have progressed to a very high position at a relatively young age.

Managerial Experience: The first study found that 99.2% of the Fortune 500 controllers who responded to the survey had previous managerial experience, and the second study found that 100% of the controllers who responded to the survey had previous managerial experience. This finding suggests that prior managerial or executive experience is a prerequisite for selection to the position of controller in Fortune 500 companies.

Marital Status: The vast majority of the respondents to both studies were married, 91.5% in the first study and 96.5% in the second study. Eight controllers reported being divorced in the first study only one controller reported being divorced in the second study. The average number of children reported by controllers in both studies were similar, 2.0 children for the first study and 2.4 children for the second study. These findings suggest that controllers are family oriented, and the low divorce rate among these executives could indicate that their positions do not place undue pressure on their marital relationships.

Education: Table 1 shows the educational achievements of the controllers. The percentages for less than bachelors degree, bachelors degree, and juris doctorate are virtually the same for 1994 and 2005. The percentage of controllers holding a masters degree decreased from 44.2% in 1994 to 36.9% in 2005, indicating a lack of pressure on these busy executives to obtain a masters degree. In general, the findings of the study indicate that controllers of Fortune 500 companies are well educated.

Table 1
Educational Achievement of Corporate Controllers

<u>Degree Earned</u>	1994		2005	
	<u>Number</u>	<u>Percent</u>	<u>Number</u>	<u>Percent</u>
Less than Bachelors Degree	2	1.5	1	1.5
Bachelors Degree	127	98.5	64	98.5
Masters Degree	47	44.2	24	36.9
Juris Doctorate	2	1.5	1	1.5

Professional Certifications: Table 2 shows that in both studies controllers of the largest American corporations have demonstrated a strong desire for continuing professional growth and development by acquiring professional certifications. In the first study 93 of the respondents (72.1%) held at least one professional certification, and in the second study 57 of the respondents (87.7%) held at least one professional certification. The predominance of the CPA certification was undoubtedly influenced by the entry level employment of the controllers in public accounting.

Table 2
Professional Certifications of Controllers

<u>Certification</u>	1994		2005	
	<u>Number</u>	<u>Percent</u>	<u>Number</u>	<u>Percent</u>
CPA	89	69.0	54	83.0
CMA	6	4.7	2	3.1
CIA	4	3.1	2	3.1
CFP	2	1.6	1	1.5
CFA	2	1.6	2	3.1

Note: Some respondents had multiple certifications.

Academic Fields of Study: Table 3 presents the academic fields of study of these executives for both studies. In the first study, the business disciplines (Accounting, Finance, and Business Administration) comprised 87% of the bachelors degrees earned by the group, and Business Administration and Accountancy constituted 95% of the graduate degrees earned. In the second study, Accounting, Finance, and Business Administration accounted for 89% of the bachelors degrees, and Business Administration and Accountancy constituted 88% of the graduate degrees earned. It is apparent that these executives knew early in their educational experience that they desired a career in business and particularly in the field of accounting.

Table 3
Field of Study by Earned Degrees

	1994		2005	
	<u>Number</u>	<u>Percent of All Degrees</u>	<u>Number</u>	<u>Percent of All Degrees</u>
<u>Undergraduate Degrees</u>				
Accounting	98	75.4	45	70.3
Business Administration	11	8.4	10	15.6
Finance	4	3.1	2	3.1
Math	4	3.1	3	4.7
History	1	0.8	1	1.6
Management	1	0.8	1	1.6
Mechanical Engineering	1	0.8	1	1.6
Other	<u>10</u>	<u>7.6</u>	<u>1</u>	<u>1.6</u>
Total	130	100.0	64	100.0
<u>Graduate Degrees</u>				
Business Administration	53	88.3	20	80.0
Accountancy	4	6.7	2	8.0
Information Systems	-	-	1	4.0
Industrial Engineering/Statistics	1	1.7	1	4.0
Juris Doctorate	<u>2</u>	<u>3.3</u>	<u>1</u>	<u>4.0</u>
Total	60	100.0	25	100.0

Note: Some controllers earned more than one undergraduate/masters degree.

Occupations of Spouses: Table 4 shows that the spouses of controllers were primarily homemakers in both studies, and supports the earlier finding that controllers are family oriented. Teaching was the only reported occupation outside of the home that was significant in number, with 10 of the spouses in this category in 1994, and 7 reporting this category in 2005. The "other" category in Table 4 contains 25 different occupations which ranged from administrative assistant to auto mechanic.

Table 4
Occupations of Controllers' Spouses

<u>Occupation</u>	1994		2005	
	<u>Number</u>	<u>Percent</u>	<u>Number</u>	<u>Percent</u>
Homemaker	76	64.4	37	57.8
Teacher	10	8.5	7	10.9
Other	<u>32</u>	<u>27.1</u>	<u>20</u>	<u>31.3</u>
Total	118	100.0	64	100.0

Regions of Birth: Table 5 shows the geographical regions of birth of the respondents. The geographical divisions are those which are used by the Bureau of Census. Two regions (Middle Atlantic and East North Central) were the regional areas of birth of 52% of the controllers in the first study and 64.6% of the controllers in the second study. Apparently, the majority of the Fortune 500 controllers were born in areas of high population concentrations.

Table 5
Regional Origin of Controllers

<u>Region of Birth</u>	1994		2005	
	<u>Number</u>	<u>Percent</u>	<u>Number</u>	<u>Percent</u>
New England	4	3.1	2	3.1
Middle Atlantic	29	22.5	21	32.3
South Atlantic	8	6.2	3	4.6
East North Central	38	29.5	21	32.3
East South Central	4	3.1	2	3.1
West North Central	18	14.0	5	7.7
West South Central	12	9.3	6	9.2
Mountain	6	4.6	0	0
Pacific	4	3.1	3	4.6
Outside United States	<u>6</u>	<u>4.6</u>	<u>2</u>	<u>3.1</u>
Total	129	100.0	65	100.0

Size of Birth Town or City: Table 6 Shows that in the first study 45.7% of the respondents indicated they were born in larger cities (over 100,000), and 36.9% of the respondents in the second study indicated they were born in larger cities. Surprisingly, 26.4% of the respondents in the first study and 30.8% of the respondents in the second study were born in small towns (less than 10,000). It appears that the size of the birth town or city has a minimal effect on predicting the success of the respondents.

Table 6
Population of Place of Birth

<u>Size of Community</u>	1994		2005	
	<u>Number</u>	<u>Percent</u>	<u>Number</u>	<u>Percent</u>
Rural or Less than 2,500	20	15.5	9	13.9
2,500 - 10,000	14	10.9	11	16.9
10,000 - 15,000	9	7.0	6	9.2
15,000 - 100,000	27	20.9	15	23.1
Over 100,000	<u>59</u>	<u>45.7</u>	<u>24</u>	<u>36.9</u>
Total	129	100.0	65	100.0

Job Related Activities: Table 7 indicates how the controllers in both studies spend their time during working hours. General and administrative functions was ranked first, and conferences with other accounting and finance leaders was second in time spent each month. Also, respondents reported spending an average of 54.1% of their time on activities ranked 1 and 2 in Table 7. The time controllers spend on the job in a typical day would be an interesting area for future study.

Table 7**Activities During a Typical Month**

1	General and administrative functions including budget review, planning and evaluating company affairs, and policy meetings with the board.
2	Conferences with accounting/finance executives.
3	Attendance at social occasions, community affairs and civil functions.
4	Educational activities and meetings at district and national levels.
5	Conferences with local, state, and national government officials.

Foreign Language Proficiency: Table 8 indicates that for both studies, the Fortune 500 controllers indicated little, if any, proficiency in foreign languages. Also, in both studies Spanish, German and French were the most popular foreign languages chosen by the controllers. These findings appear unusual given the international operations of the largest corporations in the U.S.

Table 8
Foreign Language Proficiency

<u>Language</u>	1994		2005	
	<u>Number</u>	<u>Percent</u>	<u>Number</u>	<u>Percent</u>
Spanish	11	8.5	6	9.2
German	6	4.7	4	6.2
French	13	10.1	3	4.6
Russian	0	-	1	1.5
Chinese	0	-	1	1.5
Greek	0	-	1	1.5
Hungarian	1	0.1	0	-
Italian	1	0.1	0	-
Portuguese	1	0.1	0	-
Japanese	1	0.1	0	-

Computer Skills: Table 9 shows the computer skills of the respondents. These numbers show a dramatic increase in computer skills of the Fortune 500 controllers since Wade and Apap (1995) completed a similar study in 1994. For example, the 1994 study showed that 33.4% of the respondents indicated they had attained beginner computer skills, whereas, the current study shows that only 3.1% of the respondents reported beginner computer skills. In addition, the 1994 study showed that 51.9% of the respondents indicated intermediate computer skills, while the current study shows that 81.3% of the respondents had attained intermediate computer skills.

Table 9
Computer Skills

<u>Computer Skills</u>	1994		2005	
	<u>Number</u>	<u>Percent</u>	<u>Number</u>	<u>Percent</u>
Beginner	43	33.4	2	3.1
Intermediate	67	51.9	52	81.3
Advanced	<u>19</u>	<u>14.7</u>	<u>10</u>	<u>15.6</u>
Totals	129	100.0	64	100.0

Compensation: Table 10 indicates that Fortune 500 corporate controllers are highly compensated executives, especially when compared to the \$116,240 average annual compensation reported by controllers of publicly traded corporations (Reichardt and Schroeder, 2005). The compensation of Fortune 500 controllers has improved substantially since Wade and Apap (1995) conducted their study of Fortune 500 controllers in 1994. In the first study, the most common compensation range reported was \$200,000 or more. In the second study, the most common compensation range was \$300,000 or more annually, with 93.6% of the controllers indicating their compensation exceeded \$200,000 per year and 84.1% indicating their compensation exceeded \$300,000 per year.

Table 10
Annual Compensation

<u>Compensation Range</u>	1994		2005	
	<u>Number</u>	<u>Percent</u>	<u>Number</u>	<u>Percent</u>
\$100,000 or below	6	4.9	1	1.6
\$100,000 - \$200,000	48	39.0	3	4.8
\$200,000 - \$300,000*	69	56.1	6	9.5
\$300,000 or above	-	-	<u>53</u>	<u>84.1</u>
Total	123	100.0	63	100.0

*The highest compensation range in the first study was \$200,000 or above.

CONCLUSIONS

The demographic characteristics of a typical corporate controller, as revealed by this study, indicate that he is a male Caucasian, 46 years of age, who was promoted to his present position at age 41 and has been the controller of his firm for five years. He is well educated and has earned a bachelors degree in accounting. It is highly probable that he is a CPA and has earned an MBA. Public accounting was probably his career entry field, and he had prior managerial executive experience with another firm before assuming his present controllership position. The controller has little facility with foreign languages and has acquired intermediate skills in the use of computers. He is a family oriented individual, married with two children. His wife is a homemaker or teacher. He was probably born in a high-density population region in the United States in a large town or city. The controller spends most of his time on the job dealing with general administrative functions and in conferences with other accounting and finance executives. He is well compensated with a 93.6% probability of earning more than \$200,000 per year and has a high probability (84.1%) of earning more than \$300,000 annually. The primary differences between the 1994 study and the 2005 study are the vast improvement in computer skills and a large increase in annual compensation reported in the 2005 study.

REFERENCES

- Hollman, K. W. and Murrey, Joe H., Jr. (1984). "A Profile of Insurance Executives." *The Journal of Insurance*, Vol. VII, 32-51.
- Reichardt, Karl E. and David L. Schroeder (2006), "2005 Salary Survey." *Strategic Finance*, Vol. 87 Iss. 12., 34-51.
- Wade, Charles M. and Antonio Apap (1995), "A Profile of the Corporate Controller – 1994." *Papers and Proceedings of the Twenty-Second Annual Meeting, Academy of Economics and Finance*, Vol. 19, 605-614.

COMPENSATION ISSUES FOR S CORPORATION OWNER-EMPLOYEES: WAGES OR PROFIT DISTRIBUTIONS?

Angela L.J. Hwang, Eastern Michigan University

ABSTRACT: An S corporation (S-Corp hereafter) owner, who also provides service to the business as an employee, generally prefers receiving payments from the S-Corp as profit distributions instead of wages, so as to avoid employment taxes. However, higher wage payments for such an S owner-employee may be beneficial for several reasons. First, one receives greater retirement benefits by paying higher social security taxes on wages. Second, the portion of FICA tax paid by the S-Corp is a tax-deductible business expense. Third, higher wage payments allow one to make higher tax-deferred retirement contributions. This paper uses a spreadsheet simulation to examine the impact on an S owner-employee's overall tax burden by quantifying and considering both tax and economic factors on receiving wage payments from the S-Corp. The findings dispel the general misconception that tax burden increases as wage payments increase for an S owner-employee taxpayer. In fact, this paper has found that one would suffer long-term economic losses when reporting lower wages and underpaying the social security tax since this translates to lower retirement benefits to be received. Additionally, insufficient wage payments also lead to lower allowed retirement contributions. Hence, one would miss earnings opportunities by forgoing tax-deferred retirement contributions.

INTRODUCTION

Wages are subject to employment or FICA (Federal Income Contribution Act) taxes as high as 15.3 percent. Payments made to a shareholder who also provides services to the S corporation ("S owner-employee" hereafter) can be distinguished between profit distributions and wages for FICA tax purposes. Tempted by significant savings from avoiding paying FICA taxes on wages, S owner-employees are generally in favor of receiving payments as profit distributions rather than wages.

However, wage payments to S owner-employees have tax advantages as well as economic advantages. Higher wage payments allow the business to make greater tax-deductible retirement contributions, up to 25% of wage compensation, to the employee's retirement account. As an employee, one can elect to defer up to \$15,000 in wages to a SOLO 401(k) retirement plan.¹ The two retirement contributions combined are limited to \$44,000 in 2006. In addition, one-half of the FICA taxes paid by the S-Corp is a tax-deductible business expense. Aside from the tax considerations, when one pays higher FICA taxes on higher wages received, one would collect greater social security benefits in the future. Moreover, contributions to a retirement plan instill discipline in savings and provide investment earnings opportunities.

This paper takes a quantitative and comprehensive approach to address compensation issues for an owner-employee individual in an S corporation. It examines the impact on one's overall tax burden by quantifying and collectively considering aforementioned factors on wage payments. A spreadsheet is used to simulate the amount of taxes paid at various wage levels when income before wage and retirement contribution (IBWRC) is initially set at \$200,000 for

¹ The plan also permits participants who are age 50 or older at the end of the calendar year to make catch-up contributions up to \$5,000.

an S owner-employee, who is married and files separate tax returns from the spouse, ignoring individual exemptions and deductions.² IBWRC can be considered the residual income earned by the S-Corp after all business expenses/deductions except for (1) wage compensation, (2) retirement contribution, and (3) the income deduction on FICA tax paid by the S-Corp.

While the wage to an S owner-employee should be set in accordance with the guidelines of the Internal Revenue Service (IRS),³ the wage determination can be subjective. For the purposes of this study, the range of wage has been varied. The findings of the study show that with an IBWRC of \$200,000, paying a wage of \$15,000 results in a total tax burden of \$51,640 **before** social security benefits are factored in. Yet, if the owner-employee receives a wage of \$116,000, total taxes are only \$52,058 on the \$200,000 IBWRC due to tax saving factors such as higher retirement contributions. This finding dispels the general misconception that S owner-employee taxpayers pay higher taxes when receiving higher wages from the business. Additionally, if one is challenged by the IRS, it may be easier to justify a \$116,000 wage than a \$15,000 one.

Furthermore, when using an alternative tax payment measurement, net taxes paid **after** considering the social security benefit to be received in retirement, the result is even more striking. It shows that the net current tax paid decreases monotonically with increasing wage compensation. For instance, if IBWRC is \$200,000, a wage of \$15,000 results in a \$49,780 tax payment after the social security benefits are factored in. Paradoxically, given the same IBWRC, an S owner-employee receiving a wage of \$116,000 pays a much lower tax amount of \$40,377. Higher wages in this case actually result in less tax burden. However, the relationship reverses after wages reach \$116,000 when the tax-saving advantage on retirement disappears. This finding suggests that one suffers long-term economic losses when reporting lower wages and underpaying the social security tax since this translates to lower retirement benefits to be received. Insufficient wage payments also lead to a lower permissible retirement contribution. Hence, one would further miss earnings opportunities by forgoing tax-deferred retirement contributions.

This study contributes to tax research in many ways. It is the first to comprehensively integrate and quantify both tax and economic factors to examine wage compensation issues to an individual, who is the owner and also the employee of the S-Corp. Several tax professionals have confirmed the significance of this issue and provided practical insights to the construction of the spreadsheet simulation. In particular, tax professionals and small business owner-employee individuals can now see how and why taxes vary as wage payments change, and gain a better understanding on wage issues. Finally, the findings of the study suggest that the IRS could save tremendous resources in identifying and auditing fraudulent wage reporting if only taxpayers would realize the tax advantages to be gained by “honestly” reporting higher wage compensations.

² While it is more common for an individual to file a single return (if unmarried) or a joint return (if married), the results based on married filing separately is the most conservative. Section 5.2: Panel D further elaborates reasons that the study begins the analysis with married filing separately. Section 5.3 progresses to provide sensitivity analyses for different filing statuses and for considering exemptions and deductions. The results become more salient as married filing jointly, single filing, and/or higher exemptions/deductions result in much lower tax amounts and effective tax rates.

³ Some factors to be considered include the owner-employee's role in the company and salaries paid by similar companies for similar services (Barry 1994).

The remainder of this paper is organized as follows. Section 2 discusses the benefits of forming an S-Corp for owner-employee individuals. Section 3 elaborates compensation issues with respect to wage payments. Section 4 discusses how a SOLO 401(k) works, comparing it to other options for small-business retirement plans. Section 5 demonstrates the simulation results. Section 6 concludes.

BENEFITS OF SETTING UP AN S-CORP

Forming an S corporation has many advantages over other business organization formats (Doran, Whittenburg and Bunn, 2004). Similar to a C corporation, the owner of an S-Corp is protected against personal liabilities for obligation of the business entity. However, a C corporation is subject to “double taxation” on corporate earnings. Corporate profits are taxed first at the corporate level, and then again when shareholders receive them as dividends. Whereas an S corporation, a regular corporation under state law that meets certain requirements, is taxed under a pass-through system similar to a partnership or a sole proprietorship. That is, these business organizations pass all income and losses to shareholders (owners), who then report it on individual tax returns and are taxed only once at the individual level. In addition to the benefit of avoiding the double taxation problem, an S-Corp also appeals to an owner-employee individual as a means of mitigating employment taxes.

WAGE COMPENSATION ISSUES FOR AN S OWNER-EMPLOYEE INDIVIDUAL

FICA Taxes on Wages

In general, income flowing to owners and partners is subject to FICA taxes for sole proprietorships, partnerships and limited-liability companies. S-Corps also pass all income and losses to shareholders (owners), but payments made to a shareholder, who also provides service to the S-Corp as an employee, can be distinguished between profit distributions and wages for FICA tax purposes (Antognini, 2003; Gerlband, 2004; Segal, 2003; Weaver, 1995). When an individual receives the distribution of net income as an owner/shareholder of an S-Corp, one includes the amount as personal income on Schedule E of Income Tax Form 1040. If the individual provides services as an employee of the S-Corp, one can also receive wages as reflected on Form W-2. However, the wage or W-2 income is subject to employment taxes such as FICA in addition to the regular income tax.

Total FICA taxes amount to as high as 15.3% on wages (12.4% for Social Security and 2.9% for Medicare), borne equally by the employee and employer. The Medicare tax is imposed on all wages at a 2.9% rate, but unlike Medicare, Social Security tax is capped at \$94,200 in 2006 and \$97,500 in 2007 (<http://www.ssa.gov/OACT/COLA/cbb.html#Series>). While one does not receive preferential medical coverage by paying higher Medicare taxes, one does receive higher social security benefits in retirement years by paying higher social security taxes.

In summary, the personal tax return Form 1040 of the S owner-employee would reflect the S Corp's net income from Schedule E, plus the wages for service compensation from Form W-2. However, on the wage payment, the S-Corp pays one-half of the employment taxes and can deduct that amount as a tax-deductible business expense. The individual pays the other half of the employment taxes in addition to the regular federal income tax on wages.

Minimizing wages and maximizing profit distribution creates problems with the IRS

S owner-employees generally believe that it is tax-advantageous to receive profit distributions instead of wages. As each dollar decrease in wages translates to a corresponding increase in profits distribution, employment taxes are thus decreased due to lower wages. Accordingly, the IRS has increased its scrutiny on S-Corps to audit owners who understate their wages to avoid employment taxes. In many cases, the courts have ruled in favor of the IRS's positions to reclassify profit distributions as wages (Antognini, 2003; Gates & Smith, 1995; Gendreau, 1995; O'Brien, 1998, Watters, Persellin, & Greenstein, 1992; Weaver 1995). If the IRS's ruling prevails, the taxpayer will be charged with unpaid employment taxes, penalties, and interest in addition to defense expenditures and the emotional agony involved in an IRS audit.

Advantages of higher wage payments

On the other hand, payment of higher wages rather than distributions to an S owner-employee may be beneficial for several reasons. First of all, one receives greater retirement benefits by paying higher social security taxes on wages. Second, the portion of FICA tax paid by the S-Corp is a tax-deductible business expense and, therefore, permanently reduces the tax burden. Third, higher wage payments allow an S owner-employee to make higher tax-deferred retirement contributions up to \$44,000 in 2006. Not only does the higher retirement contribution provide more investment opportunities, the earnings generated from investing in tax deferred plans allow for further compounding of tax advantages (Saftner and Fink, 2004). Deferring taxes over years is like receiving an interest-free investment loan from the IRS. In general, one accumulates greater wealth when investing with pre-tax funds than after-tax funds.

SOLO 401(k) RETIREMENT PLANS

Small-business retirement plans

Under the Economic Growth and Tax Relief Reconciliation Act (EGTRRA), a small business owner who has no employees (other than a spouse) can set up a SOLO 401(k) plan, which is often referred to as a(n) mini, individual, one-person, one-participant, self-employed, or small-business-owner 401(k) plan. The plan allows a sole owner-employee individual to make greater tax-deferred contributions than would be permitted under a traditional retirement plans such as Profit Sharing Plan, SEP (Simplified Employee Pension), Keogh or SIMPLE-IRA (Savings Incentive Match Plan for Employees of Small Employers). Additionally, unlike the large 401(k) plans, it does not involve complicated testing rules. Kaster (2003) and Scarinci (2005) discuss the pros and cons of using a SOLO 401(k) plan as an option for retirement planning. *Publication 560: Retirement Plans for Small Business* available at the IRS website provides a detailed discussion on the plans (<http://www.irs.gov/publications/p560/>).

How SOLO 401(k) works for an owner-employee individual

There are two components to a SOLO 401(k): "employer" profit-sharing contributions and "employee" elective salary deferral contributions. While the "employer" profit sharing contribution is also available to SEP, Profit Sharing, and SOLO 401(k) plans, the "employee" elective salary deferral contribution is only available to a SOLO 401(k) plan (Failey & Fleming, 2003; Kaster, 2003; Kozol, 2005; Simon, 2004). The total contribution for both components together is limited to \$44,000 in 2006.

The “employer” profit-sharing contribution allows an employer to contribute to an employee’s retirement and reduces the S-Corp’s business income dollar for dollar, up to 25% of the employee’s W-2 wage compensation for an incorporated business. An unincorporated business has a cap of 20% on modified net earnings. These funds, however, will be taxed upon future retirement withdrawals. The tax-deductible “employer” profit-sharing contribution is essentially tax-deferred for the S owner-employee individual.

The bonus component of a SOLO 401(k) is the “employee” elective wages deferral, up to 100% of compensation but no more than the limit for the year. The limit is \$15,000 in 2006 and indexed for inflation in \$500 increments beginning in 2007. While still subject to FICA employment tax, the deferred wage escapes current federal income tax.

For example, Allen Babson, age 45, is the sole owner-employee of AB S-Corp. His wage compensation is \$100,000 in 2006. With a SOLO 401(k) plan, he can make an “employee” elective salary deferral contribution of \$15,000 and the S-Corp can make a tax-deductible “employer” profit-sharing contribution up to \$25,000 (= \$100,000 X 25%). Although Allen does not pay taxes on the total \$40,000 retirement contribution for now, he will be taxed when taking withdrawals from his retirement plan in the future.

The maximum amount of total tax-deferred retirement contribution (\$44,000 for 2006) is the same for SOLO 401(k), Profit-Sharing Plan, SEP, or Keogh. With the advantage of \$15,000 employee wage deferral, available only to a SOLO 401(k), the S owner-employee can maximize the retirement contribution with a wage compensation as low as \$116,000 (= [$\$44,000 - \$15,000$]/25%). However, the wage would need to be \$176,000 (= $\$44,000/25\%$) for a SEP, Profit-Sharing or Keogh plan.

Other beneficial attributes of SOLO 401(k): rollover and loan feature

Allowing the plan owner to borrow from the retirement account is another benefit of a SOLO 401(k). IRA-based retirement vehicles, such as the SEP-IRA or SIMPLE IRA, prohibit plan loans. The loan feature has enhanced since EGTRRA liberalized the rollover rules for post-2001 distributions. That is, an eligible rollover distribution from an IRA, 403(b) annuity, or 457 plan can be rolled over, tax-free, to a 401(k) plan.⁴ This expanded portability allows a business owner to consolidate retirement holdings into the SOLO 401(k) plan and borrow from the plan. Hence, the loan feature and rollover portability afford the plan owner access to funds without incurring the taxes and penalties from taking early retirement plan withdrawals (Kaster, 2003).

RESULTS DISCUSSION

Table 1: spreadsheet

This paper takes a quantitative and comprehensive approach to address compensation issues for an S owner-employee individual. It focuses on the tax implication of payments for wage compensation vs. payments for profit distribution at the federal tax level, using a spreadsheet simulation. To simplify the analysis, without compromising generalizability of the results, state and other local taxes as well as unemployment taxes are excluded from consideration.

⁴ A SOLO 401(k) with plan assets over \$100,000 is required to file Form 5500-EZ, Annual Return of One-Participant (Owners and their Spouses) Retirement Plan.

Table 1: Spreadsheet Simulation

Note:

*Cells require an input to conduct sensitivity analysis**Comparative results due to changes of cells in italics*

Numbers to be updated by current tax codes

Panel A: Input

Income Before Wage and Retirement Contribution (IBWRC)	<i>\$200,000</i>
Wage	<i>\$80,000</i>
Retirement plan: SOLO 401(k) = 1 or SEP = 0	<i>1</i>
Individual tax exemptions and deductions	<i>\$0</i>
Maximum social security taxable wage	<i>\$94,200</i>
Maximum retirement contribution for incorporated business	<i>\$44,000</i>
Maximum employer tax-deductible contribution, % of compensation	<i>25%</i>
Maximum employee wage deferral to SOLO 401(k)	<i>\$15,000</i>

Summary results from Panel F below

Tax BEFORE Social Security Benefit	<i>26.51%</i>	<i>\$53,027</i>
Tax AFTER Social Security Benefit	<i>21.55%</i>	<i>\$43,107</i>

Panel B: Calculation of FICA Tax

Wage	<i>\$80,000</i>	Tax Rate	Tax
Social Security Tax		<i>6.20%</i>	<i>\$4,960</i>
Medical Care Tax		<i>1.45%</i>	<i>\$1,160</i>
FICA tax paid by employee and by S-Corp		<i>7.65%</i>	<i>\$6,120</i>

Panel C: Calculation of Taxable Income

	Reference	S-Corp	Employee
Income Before Wage and Retirement Contribution (IBWRC)	<i>\$200,000</i>	<i>200,000</i>	
Wage	<i>\$80,000</i>	<i>-80,000</i>	<i>\$80,000</i>
Retirement plan: SOLO 401(k) = 1 or SEP = 0	<i>1</i>		
Retirement contribution: S-Corp tax deduction		<i>-20,000</i>	
Retirement contribution: Employee wage deferral to SOLO 401(k)			<i>-15,000</i>
S-Corp Income before tax deduction on FICA tax paid by S-Corp		<i>100,000</i>	
Tax deduction on FICA tax paid by S-Corp		<i>-6,120</i>	
S-Corp Profit		<i>93,880</i>	
S-Corp Profit Distribution to Owner		<i>-93,880</i>	<i>93,880</i>
Taxable income before individual tax exemptions and deductions		<i>0</i>	<i>\$158,880</i>

Panel D: Calculation of Effective Tax Rate Before FICA Taxes

Less: Individual tax exemptions and deductions	<i>0</i>
S owner-employee's total taxable income after individual tax exemptions and deductions	<i>\$158,880</i>

Tax Rate Schedule: Married filing separately

If taxable income increment is

	Marginal Tax Rate	above	below	Incremental Tax
	<i>10%</i>	<i>\$0</i>	<i>\$7,550</i>	<i>\$755</i>
	<i>15%</i>	<i>\$7,550</i>	<i>\$30,650</i>	<i>\$3,465</i>
	<i>25%</i>	<i>\$30,650</i>	<i>\$61,850</i>	<i>\$7,800</i>
	<i>28%</i>	<i>\$61,850</i>	<i>\$94,225</i>	<i>\$9,065</i>
	<i>33%</i>	<i>\$94,225</i>	<i>\$168,275</i>	<i>\$21,336</i>
	<i>35%</i>	<i>\$168,275</i>	<i>No Limit</i>	<i>\$0</i>

*Effective tax rate = Taxable due before FICA tax / Taxable income

Tax due before FICA tax	<i>\$42,421</i>
Effective tax rate before FICA tax	<i>26.70%</i>

Panel E: Calculation of Tax Burden

Wage	<i>\$80,000</i>	Income	Tax
FICA tax paid by employee		<i>6,120</i>	<i>\$21,360</i>
FICA tax paid by S-Corp		<i>6,120</i>	
Tax deduction on FICA tax paid by S-Corp		<i>-1,634</i>	
Net FICA tax paid by employee and by S-Corp			<i>10,606</i>
Retirement contribution: Employee wage deferral to SOLO 401(k)	<i>-15,000</i>		<i>-4,005</i>
S-Corp Profit Distribution to Owner	<i>93,880</i>		<i>25,066</i>
Tax before social security benefit	<i>\$158,880</i>		<i>\$53,027</i>
Less: Social security benefit			<i>-9,920</i>
Tax after social security benefit			<i>\$43,107</i>

Panel F: Calculation of Tax Burden

Tax Rate = Tax Burden / Income before Wages and Retirement Contributions	Tax BEFORE Social Security Benefit	<i>26.51%</i>	<i>\$53,027</i>
	Tax AFTER Social Security Benefit	<i>21.55%</i>	<i>\$43,107</i>

*A downloadable and interactive spreadsheet at <http://ahwang.pageout.net> (under the Research link, then click on "Taxation") can be modified to reflect appropriate filing statuses and tax changes in subsequent years.

• Panel A

Table 1 contains five panels to demonstrate the steps involved in calculating the total tax due. Panel A, the input panel, provides two types of input. The first allows spreadsheet users to enter a wage amount for a given **Income Before Wages and Retirement Contribution (IBWRC)**. The purpose is to allow users to see how taxes change as wage amount varies. IBWRC can be considered the residual income earned by the S-Corp after all business expenses or deductions, except for (1) wage compensation, (2) retirement contribution, and (3) the income deduction on FICA tax paid by the S-Corp. In the spreadsheet example, the IBWRC for the S-Corp is \$200,000 and the wage is \$80,000.

The second type of input, containing reference numbers in shaded boxes, can be changed to reflect current tax codes. This feature allows the table to be used for future years and for different filing statuses. For example, the maximum social security taxable wage is \$94,200 in 2006 and will be changed to \$97,500 in 2007 (Social Security Online <http://www.ssa.gov/OACT/COLA/cbb.html#Series>). Notice that the FICA tax rate column in Panel B and the first two columns of Panel D can also be changed to accommodate any updates in tax codes.

• Panel B

Total FICA taxes amount to as high as 15.3% on wages (12.4% for Social Security and 2.9% for Medicare), borne equally by the employee and employer. As such, the S-Corp and the employee each pay one-half of FICA taxes (6.2% for Social Security and 1.45% for Medicare) on the \$80,000 wage in the amount of \$6,120 (= \$80,000 X [6.2% + 1.45%]) shown in Panel B. However, FICA tax paid by the S-Corp is a tax-deductible business expense. The \$6,120 is also reflected in Panel C as a tax-deductible business expense.

• Panel C

Panel C details the steps in calculating taxable income for the S owner-employee individual. It starts with a given wage amount and concludes with the remaining S-Corp profit being distributed to the owner. The example begins with an IBWRC of \$200,000 and a wage payment of \$80,000. This \$80,000 is paid by the S-Corp and received as a wage by the individual. To minimize the taxable income for the individual, the S-Corp can maximize the retirement contribution by contributing up to 25% of the wage payment, which amounts to \$20,000 for the employee's retirement account. This contribution is tax deductible and, as such, reduces the S-Corp's income. When a SOLO 401(k) is used, the individual, as an employee of the business, can contribute 100% of received wage up to \$15,000 to his/her retirement account. This amount is now excluded from the employee's taxable income in 2006. The spreadsheet also allows the analysis under a SEP plan, which does not have the extra wage deferral bonus. In this case, by specifying the retirement plan as "0", the employee tax deferred wage amount becomes "\$0" as a result.

The S-Corp income is further reduced by the amount of FICA tax, \$6,120 paid by the S-Corp. Now, the S-Corp has a business profit of \$93,880, which is then distributed to the owner. At this point, the individual has a total taxable income of \$158,880. This includes the wage of \$80,000 less the \$15,000 employee wage deferral to a SOLO 401(k), plus the profit distribution of \$93,880 to the owner.

• Panel D

Panel D calculates the effective tax rate for the taxable income given the current IRS tax rate schedule in 2006. The effective tax rate is then applied to Panel E for finding the tax consequence (other than FICA taxes) associated with the wage receipt, wage deferred retirement contribution, and profit distribution. As this paper focuses on the tax impact on a married owner-employee individual, the tax rate schedule based on “married filing separately” is used.⁵ Users should substitute applicable 2006 tax schedules, which are available at the IRS website (<http://www.irs.gov/formspubs/article/0,,id=150856,00.html>) to reflect the appropriate filing status. In addition, the spreadsheet also provides an input cell for individual tax exemptions and deductions available in Panel A and reflected at the top of Panel D. To simplify the analysis, the exemptions and deductions for the individual tax return is assumed to be zero for now. For the \$158,880 taxable income, it results in \$42,421 total tax due before FICA taxes or an effective tax rate of 26.70% (= \$42,421/\$158,880).

• Panel E

Using Panel C’s taxable income, Panel E calculates the corresponding tax consequence for (1) the \$80,000 wage, (2) the \$15,000 wage deferred retirement contribution, and (3) the \$93,888 profit distribution.

Given the effective rate of 26.7%, the federal income tax due on the \$80,000 wage is \$21,360 (= \$80,000 X 26.70%). In addition, FICA taxes are levied on wage compensations. As discussed in Panel B, the employee and the S-Corp each pay a \$6,120 FICA tax. However, the FICA tax paid by the S-Corp is a tax-deductible business expense. It then reduces the tax burden of the S owner-employee individual by \$1,634 (= \$6,120 FICA tax paid by the S-Corp X 26.70%). In summary, the S owner-employee pays a total of \$10,606 net FICA tax calculated as follows: \$6,120 FICA tax paid by the employee + \$6,120 FICA tax paid by the S-Corp – \$1,634 tax deduction for the FICA tax paid by the S-Corp.

The tax deferral of \$15,000 in wages translates to a \$4,005 (= \$15,000 X 26.70%) tax saving. Finally, the S owner-employee receiving \$93,880 in profit distributions will pay taxes of \$25,066 (= \$93,880 X 26.70%). The total tax bill of \$53,027 can also be calculated by adding “tax due before FICA tax” \$42,421 from the bottom of Panel D to the net FICA taxes of \$10,606.

• Consideration of social security benefits

The \$53,027 tax due in 2006 is calculated without considering the future receipt from social security benefits. A precise calculation of the social security benefits, as a result of the social security tax paid, is a daunting task and beyond the scope of this paper. To quantify the present value of the social security benefit to be received in retirement years, this paper simply uses the amount of social security taxes paid in the current year as a proxy.

⁵ There are several reasons that this study begins analysis with married filing separately. One, it produces the most conservative results compared to those of single filing or married filing jointly. Hence, the results discussed here are actually downward biased with respect to the general population of S owner-employees. Two, the results focus on the tax impact to the married owner-employee individual without the confounding effect of having one’s spouse work outside the S-Corp. Third, the analysis can be easily modified to accommodate the situation when both spouses work at the same S-Corp but receive different wages. The SOLO 401(k) privilege extends to the owner-employee individual along with one’s working spouse. In this case, the total tax liability for the household (i.e., married filing jointly) is simply the sum of the two married filing separately returns as if each spouse had a separate IBWRC of \$100,000 to each wage.

Social security benefits can vary due to differences in a taxpayer's earnings level, marital status, gender, and so on. These benefits are positively, but nonlinearly, related to the social security tax paid (Biggs, Brown, & Springstead 2005; Leimer, 1995; Murphy & Stewart 1999). Leimer (1995) finds that historically one receives a greater lifetime social security benefit than one pays in taxes, both figures based on present values. Furthermore, Murphy & Stewart (1999) find that the social security program generates a positive after-tax rate of return. Even the group of workers who are classified to receive the lowest rate of return on their social security contribution, earned at least a 2% after-tax rate of return.

In other words, the social security taxes paid each year is more like an investment in a savings account with benefits to be received in the future. Hence, an alternative tax burden measurement, net taxes paid **after** considering the social security benefit to be received in retirement, is used to measure the tax burden. Measuring social security benefits conservatively, the \$53,027 tax due in 2006 is reduced by the total social security tax paid by both S-Corp and the employee (i.e. $\$9,920 = 2 \times \$4,960$ shown in Panel B). The results are displayed in Panel F. The tax amounts are then divided by the IBWRC set at \$200,000 to find the corresponding tax rates. The \$80,000 example results in a \$53,027 (26.51% = $\$53,027/\$200,000$) tax amount (rate) **before** social security benefit; a \$43,107 (21.55%) tax amount (rate) **after** social security benefit. Allowing readers to see how the tax burden varies as a result of wage changes shown in Panel A, this information from Panel F is also displayed next to the wage input cells of Panel A.

Table 2: SIMULATION RESULTS

Table 2 tabulates the results of the two tax burden measurements and their corresponding tax rates, when the S-Corp pays the owner-employee individual a wage ranging from \$0 to \$200,000 from a pool of \$200,000 IBWRC. The tax burden in dollar amounts is then graphically presented in Exhibit 1. Exhibit 2 plots the corresponding tax rates. Due to the similar pattern shown by Exhibits 1 and 2, the discussion of the results below focuses on Exhibit 1.

• Tax burden before social security benefits

The **solid** line in Exhibit 1 plots the tax dollar amount **before** social security benefit, showing four distinctive segments with three pivotal points. In Segment 1, taxes decrease as wages increase from \$0 to \$15,000. The \$15,000 wage is also the maximum "employee" elective wage deferral amount of a SOLO 401(k) plan. Opposite to Segment 1, this solid line shows that taxes increase as wages increase in Segment 2. Tax burden reaches the peak when wage increases to \$94,200 – the maximum social security taxable wage in 2006. Segment 3 is similar to Segment 1. Taxes decrease as wages increase until wages reach to \$116,000 – the wage amount needed to take full advantage on the \$44,000 maximum contribution for a SOLO 401(k). However, after \$116,000, the tax-saving advantage on retirement contribution disappears and tax burden increases monotonically.

• Tax burden after social security benefits

The **dashed** line in Exhibit 1 (2) plots the tax dollar amount (tax rate) **after** social security benefits are factored in and shows two segments (Segment I: \$0-\$116,000 and Segment II: \$116,000 - \$200,000) with one pivotal point at \$116,000. The wage-tax plot indicates that net tax burdens, in general, decrease until wages reach \$116,000.

Table 2: Tax Burden Variations on Wage Payments
Income Before Wage and Retirement Contribution (IBWRC) = \$200,000

Wage	Before Social Security Benefit		After Social Security Benefit	
	Tax \$	Tax Rate	Tax \$	Tax Rate
\$0	\$56,625	28.31%	\$56,625	28.31%
\$1,000	\$56,292	28.15%	\$56,168	28.08%
\$2,000	\$55,960	27.98%	\$55,712	27.86%
\$3,000	\$55,627	27.81%	\$55,255	27.63%
\$4,000	\$55,294	27.65%	\$54,798	27.40%
\$5,000	\$54,961	27.48%	\$54,341	27.17%
\$6,000	\$54,629	27.31%	\$53,885	26.94%
\$7,000	\$54,296	27.15%	\$53,428	26.71%
\$8,000	\$53,964	26.98%	\$52,972	26.49%
\$9,000	\$53,632	26.82%	\$52,516	26.26%
\$10,000	\$53,300	26.65%	\$52,060	26.03%
\$11,000	\$52,967	26.48%	\$51,603	25.80%
\$12,000	\$52,635	26.32%	\$51,147	25.57%
\$13,000	\$52,303	26.15%	\$50,691	25.35%
\$14,000	\$51,972	25.99%	\$50,236	25.12%
\$15,000	\$51,640	25.82%	\$49,780	24.89%
\$16,000	\$51,658	25.83%	\$49,674	24.84%
\$17,000	\$51,675	25.84%	\$49,567	24.78%
\$18,000	\$51,693	25.85%	\$49,461	24.73%
\$19,000	\$51,711	25.86%	\$49,355	24.68%
\$20,000	\$51,729	25.86%	\$49,249	24.62%
\$21,000	\$51,747	25.87%	\$49,143	24.57%
\$22,000	\$51,765	25.88%	\$49,037	24.52%
\$23,000	\$51,783	25.89%	\$48,931	24.47%
\$24,000	\$51,801	25.90%	\$48,825	24.41%
\$25,000	\$51,819	25.91%	\$48,719	24.36%
\$26,000	\$51,837	25.92%	\$48,613	24.31%
\$27,000	\$51,855	25.93%	\$48,507	24.25%
\$28,000	\$51,873	25.94%	\$48,401	24.20%
\$29,000	\$51,891	25.95%	\$48,295	24.15%
\$30,000	\$51,909	25.95%	\$48,189	24.09%
\$31,000	\$51,927	25.96%	\$48,083	24.04%
\$32,000	\$51,945	25.97%	\$47,977	23.99%
\$33,000	\$51,963	25.98%	\$47,871	23.94%
\$34,000	\$51,982	25.99%	\$47,766	23.88%
\$35,000	\$52,000	26.00%	\$47,660	23.83%
\$36,000	\$52,018	26.01%	\$47,554	23.78%
\$37,000	\$52,036	26.02%	\$47,448	23.72%
\$38,000	\$52,055	26.03%	\$47,343	23.67%
\$39,000	\$52,073	26.04%	\$47,237	23.62%
\$40,000	\$52,091	26.05%	\$47,131	23.57%
\$41,000	\$52,110	26.05%	\$47,026	23.51%
\$42,000	\$52,128	26.06%	\$46,920	23.46%
\$43,000	\$52,146	26.07%	\$46,814	23.41%
\$44,000	\$52,165	26.08%	\$46,709	23.35%
\$45,000	\$52,183	26.09%	\$46,603	23.30%
\$46,000	\$52,202	26.10%	\$46,498	23.25%
\$47,000	\$52,220	26.11%	\$46,392	23.20%
\$48,000	\$52,239	26.12%	\$46,287	23.14%
\$49,000	\$52,257	26.13%	\$46,181	23.09%

Table 2 (Continued)

Wage	Before Social Security Benefit		After Social Security Benefit	
	Tax \$	Tax Rate	Tax \$	Tax Rate
\$50,000	\$52,276	26.14%	\$46,076	23.04%
\$51,000	\$52,295	26.15%	\$45,971	22.99%
\$52,000	\$52,318	26.16%	\$45,870	22.94%
\$53,000	\$52,343	26.17%	\$45,771	22.89%
\$54,000	\$52,368	26.18%	\$45,672	22.84%
\$55,000	\$52,393	26.20%	\$45,573	22.79%
\$56,000	\$52,419	26.21%	\$45,475	22.74%
\$57,000	\$52,444	26.22%	\$45,376	22.69%
\$58,000	\$52,469	26.23%	\$45,277	22.64%
\$59,000	\$52,494	26.25%	\$45,178	22.59%
\$60,000	\$52,519	26.26%	\$45,079	22.54%
\$61,000	\$52,544	26.27%	\$44,980	22.49%
\$62,000	\$52,570	26.28%	\$44,882	22.44%
\$63,000	\$52,595	26.30%	\$44,783	22.39%
\$64,000	\$52,620	26.31%	\$44,684	22.34%
\$65,000	\$52,645	26.32%	\$44,585	22.29%
\$66,000	\$52,671	26.34%	\$44,487	22.24%
\$67,000	\$52,696	26.35%	\$44,388	22.19%
\$68,000	\$52,721	26.36%	\$44,289	22.14%
\$69,000	\$52,747	26.37%	\$44,191	22.10%
\$70,000	\$52,772	26.39%	\$44,092	22.05%
\$71,000	\$52,797	26.40%	\$43,993	22.00%
\$72,000	\$52,823	26.41%	\$43,895	21.95%
\$73,000	\$52,848	26.42%	\$43,796	21.90%
\$74,000	\$52,874	26.44%	\$43,698	21.85%
\$75,000	\$52,899	26.45%	\$43,599	21.80%
\$76,000	\$52,925	26.46%	\$43,501	21.75%
\$77,000	\$52,950	26.48%	\$43,402	21.70%
\$78,000	\$52,976	26.49%	\$43,304	21.65%
\$79,000	\$53,001	26.50%	\$43,205	21.60%
\$80,000	\$53,027	26.51%	\$43,107	21.55%
\$81,000	\$53,053	26.53%	\$43,009	21.50%
\$82,000	\$53,078	26.54%	\$42,910	21.46%
\$83,000	\$53,104	26.55%	\$42,812	21.41%
\$84,000	\$53,130	26.56%	\$42,714	21.36%
\$85,000	\$53,156	26.58%	\$42,616	21.31%
\$86,000	\$53,181	26.59%	\$42,517	21.26%
\$87,000	\$53,207	26.60%	\$42,419	21.21%
\$88,000	\$53,233	26.62%	\$42,321	21.16%
\$89,000	\$53,259	26.63%	\$42,223	21.11%
\$90,000	\$53,284	26.64%	\$42,124	21.06%
\$91,000	\$53,310	26.66%	\$42,026	21.01%
\$92,000	\$53,336	26.67%	\$41,928	20.96%
\$93,000	\$53,362	26.68%	\$41,830	20.92%
\$94,000	\$53,388	26.69%	\$41,732	20.87%
\$95,000	\$53,344	26.67%	\$41,663	20.83%
\$96,000	\$53,283	26.64%	\$41,602	20.80%
\$97,000	\$53,222	26.61%	\$41,541	20.77%
\$98,000	\$53,160	26.58%	\$41,480	20.74%
\$99,000	\$53,099	26.55%	\$41,418	20.71%

Wage	Before Social Security Benefit		After Social Security Benefit	
	Tax \$	Tax Rate	Tax \$	Tax Rate
\$100,000	\$53,038	26.52%	\$41,357	20.68%
\$101,000	\$52,976	26.49%	\$41,296	20.65%
\$102,000	\$52,915	26.46%	\$41,234	20.62%
\$103,000	\$52,854	26.43%	\$41,173	20.59%
\$104,000	\$52,793	26.40%	\$41,112	20.56%
\$105,000	\$52,731	26.37%	\$41,051	20.53%
\$106,000	\$52,670	26.34%	\$40,989	20.49%
\$107,000	\$52,609	26.30%	\$40,928	20.46%
\$108,000	\$52,548	26.27%	\$40,867	20.43%
\$109,000	\$52,486	26.24%	\$40,806	20.40%
\$110,000	\$52,425	26.21%	\$40,744	20.37%
\$111,000	\$52,364	26.18%	\$40,683	20.34%
\$112,000	\$52,303	26.15%	\$40,622	20.31%
\$113,000	\$52,241	26.12%	\$40,561	20.28%
\$114,000	\$52,180	26.09%	\$40,499	20.25%
\$115,000	\$52,119	26.06%	\$40,438	20.22%
\$116,000	\$52,058	26.03%	\$40,377	20.19%
\$117,000	\$52,078	26.04%	\$40,398	20.20%
\$118,000	\$52,099	26.05%	\$40,418	20.21%
\$119,000	\$52,119	26.06%	\$40,438	20.22%
\$120,000	\$52,140	26.07%	\$40,459	20.23%
\$121,000	\$52,160	26.08%	\$40,479	20.24%
\$122,000	\$52,181	26.09%	\$40,500	20.25%
\$123,000	\$52,201	26.10%	\$40,520	20.26%
\$124,000	\$52,222	26.11%	\$40,541	20.27%
\$125,000	\$52,242	26.12%	\$40,561	20.28%
\$126,000	\$52,262	26.13%	\$40,582	20.29%
\$127,000	\$52,283	26.14%	\$40,602	20.30%
\$128,000	\$52,303	26.15%	\$40,623	20.31%
\$129,000	\$52,324	26.16%	\$40,643	20.32%
\$130,000	\$52,344	26.17%	\$40,663	20.33%
\$131,000	\$52,365	26.18%	\$40,684	20.34%
\$132,000	\$52,385	26.19%	\$40,704	20.35%
\$133,000	\$52,406	26.20%	\$40,725	20.36%
\$134,000	\$52,426	26.21%	\$40,745	20.37%
\$135,000	\$52,447	26.22%	\$40,766	20.38%
\$136,000	\$52,467	26.23%	\$40,786	20.39%
\$137,000	\$52,488	26.24%	\$40,807	20.40%
\$138,000	\$52,508	26.25%	\$40,827	20.41%
\$139,000	\$52,528	26.26%	\$40,848	20.42%
\$140,000	\$52,549	26.27%	\$40,868	20.43%
\$141,000	\$52,569	26.28%	\$40,889	20.44%
\$142,000	\$52,590	26.29%	\$40,909	20.45%
\$143,000	\$52,610	26.31%	\$40,929	20.46%
\$144,000	\$52,631	26.32%	\$40,950	20.47%
\$145,000	\$52,651	26.33%	\$40,970	20.49%
\$146,000	\$52,672	26.34%	\$40,991	20.50%
\$147,000	\$52,692	26.35%	\$41,011	20.51%
\$148,000	\$52,713	26.36%	\$41,032	20.52%
\$149,000	\$52,733	26.37%	\$41,052	20.53%

Table 2-4 (Continued)

Wage	Before Social Security Benefit		After Social Security Benefit	
	Tax \$	Tax Rate	Tax \$	Tax Rate
\$150,000	\$52,754	26.38%	\$41,073	20.54%
\$151,000	\$52,774	26.39%	\$41,093	20.55%
\$152,000	\$52,794	26.40%	\$41,114	20.56%
\$153,000	\$52,815	26.41%	\$41,134	20.57%
\$154,000	\$52,835	26.42%	\$41,155	20.58%
\$155,000	\$52,856	26.43%	\$41,175	20.59%
\$156,000	\$52,876	26.44%	\$41,196	20.60%
\$157,000	\$52,897	26.45%	\$41,216	20.61%
\$158,000	\$52,917	26.46%	\$41,236	20.62%
\$159,000	\$52,938	26.47%	\$41,257	20.63%
\$160,000	\$52,958	26.48%	\$41,277	20.64%
\$161,000	\$52,979	26.49%	\$41,298	20.65%
\$162,000	\$52,999	26.50%	\$41,318	20.66%
\$163,000	\$53,020	26.51%	\$41,339	20.67%
\$164,000	\$53,040	26.52%	\$41,359	20.68%
\$165,000	\$53,061	26.53%	\$41,380	20.69%
\$166,000	\$53,081	26.54%	\$41,400	20.70%
\$167,000	\$53,101	26.55%	\$41,421	20.71%
\$168,000	\$53,122	26.56%	\$41,441	20.72%
\$169,000	\$53,142	26.57%	\$41,462	20.73%
\$170,000	\$53,163	26.58%	\$41,482	20.74%
\$171,000	\$53,183	26.59%	\$41,503	20.75%
\$172,000	\$53,204	26.60%	\$41,523	20.76%
\$173,000	\$53,224	26.61%	\$41,543	20.77%
\$174,000	\$53,245	26.62%	\$41,564	20.78%
\$175,000	\$53,265	26.63%	\$41,584	20.79%
\$176,000	\$53,286	26.64%	\$41,605	20.80%
\$177,000	\$53,306	26.65%	\$41,625	20.81%
\$178,000	\$53,327	26.66%	\$41,646	20.82%
\$179,000	\$53,347	26.67%	\$41,666	20.83%
\$180,000	\$53,368	26.68%	\$41,687	20.84%
\$181,000	\$53,388	26.69%	\$41,707	20.85%
\$182,000	\$53,408	26.70%	\$41,728	20.86%
\$183,000	\$53,429	26.71%	\$41,748	20.87%
\$184,000	\$53,449	26.72%	\$41,769	20.88%
\$185,000	\$53,470	26.73%	\$41,789	20.89%
\$186,000	\$53,490	26.75%	\$41,810	20.90%
\$187,000	\$53,511	26.76%	\$41,830	20.92%
\$188,000	\$53,531	26.77%	\$41,850	20.93%
\$189,000	\$53,552	26.78%	\$41,871	20.94%
\$190,000	\$53,572	26.79%	\$41,891	20.95%
\$191,000	\$53,593	26.80%	\$41,912	20.96%
\$192,000	\$53,613	26.81%	\$41,932	20.97%
\$193,000	\$53,634	26.82%	\$41,953	20.98%
\$194,000	\$53,654	26.83%	\$41,973	20.99%
\$195,000	\$53,675	26.84%	\$41,994	21.00%
\$196,000	\$53,695	26.85%	\$42,014	21.01%
\$197,000	\$53,716	26.86%	\$42,035	21.02%
\$198,000	\$53,736	26.87%	\$42,055	21.03%
\$199,000	\$53,756	26.88%	\$42,076	21.04%
\$200,000	\$53,777	26.89%	\$42,096	21.05%

Exhibit 1: Taxes in Dollar Amounts with IBWRC = \$200,000 for Married Filing Separately

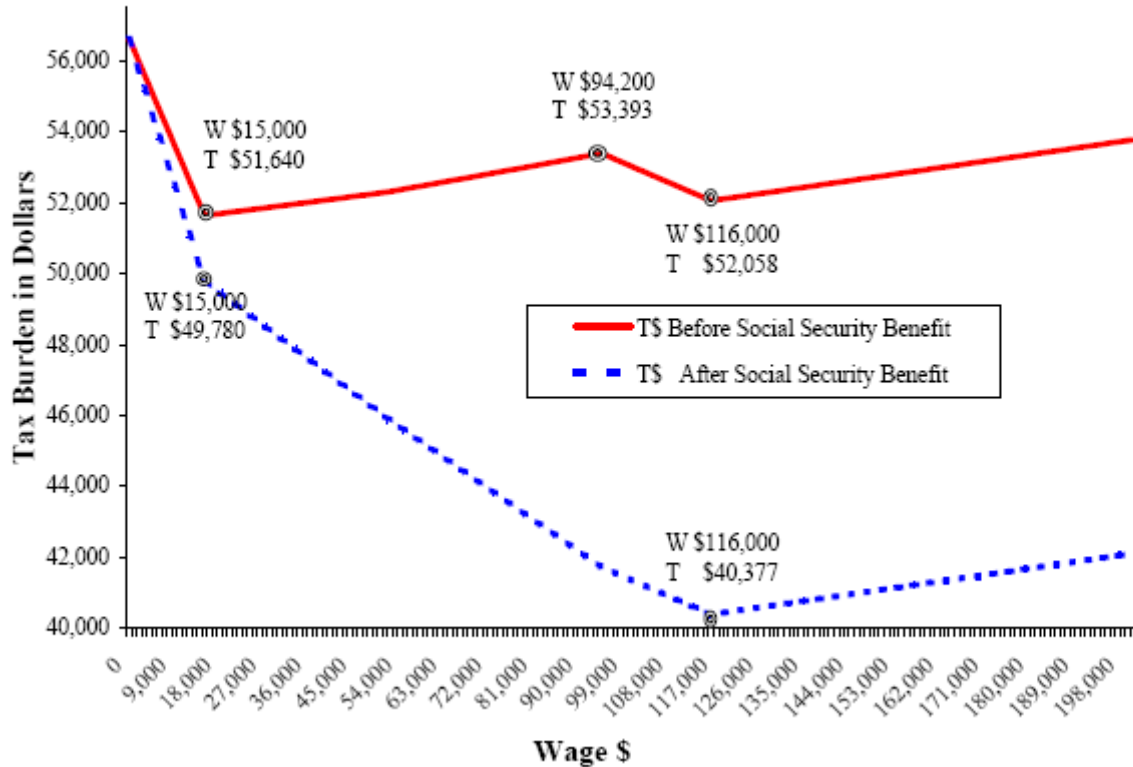
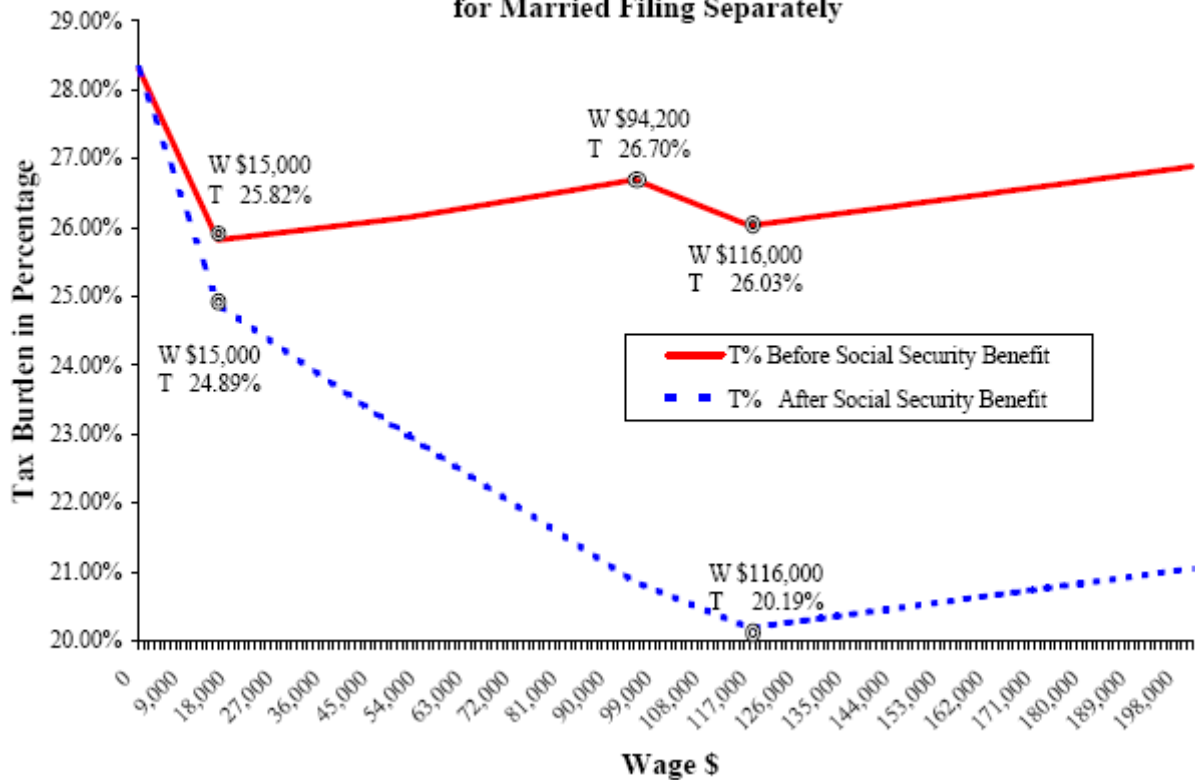


Exhibit 2: Taxes in Percentage with IBWRC = \$200,000 for Married Filing Separately



• Tax Implications

It is not the purpose of this paper to suggest any tax strategies. Nevertheless, some interesting observations can be inferred based on the spreadsheet simulation. The solid line shows that with an IBWRC of \$200,000, paying a wage of either \$15,000 or \$116,000 results in the lowest tax burden **before** social security benefits are factored in. However, taking into consideration of the information presented by both the solid line and the dashed line in Exhibit 1, it becomes clear that a wage of \$116,000 offers more benefits to the S owner-employee individual for the following reasons.

Based on the **solid** line alone, while a \$116,000 wage requires \$418 more in taxes (or 0.2% higher in tax rate) than a \$15,000 wage, the \$116,000 amount is probably less likely to be challenged by an IRS audit with regard to the wage and profit distribution controversy. In addition, the \$116,000 wage also leads to the lowest tax burden in dollar amount (tax rate) **after** considering social security benefits as indicated in the **dashed** line plot. Finally, the \$116,000 wage allows the greatest retirement plan contribution, which can produce more tax-deferred earnings opportunities.

The \$116,000 wage is only optimal when the S owner-employee has no cash flow concerns and intends to maximize the tax-deferred retirement contribution. If these assumptions are not feasible, the wage range segmented based on the solid line can provide useful suggestions. However, Segment 4 is excluded from analysis because it is only useful for taxpayers who have the desire and means to make the maximum contribution to retirement.

If the preference of the remaining three segments is to be ranked, Segment 1 (\$0-\$15,000) apparently leads to the least desirable outcome. It produces the highest tax burden both before and after social security benefits. Worst of all, it invites an IRS audit given an IBWRC of \$200,000. The wage range in Segment 3 (\$94,200 – \$116,000) is preferable to Segment 2 (\$15,000 – \$94,200) for reasons previously discussed when comparing the wages of \$15,000 and \$116,000.

Sensitivity Analyses

To summarize, three pivotal points divide the segments: the maximum employee wage tax deferral – \$15,000, the maximum social security taxable wage – \$94,200, and the wage to take advantage on the maximum retirement contribution of an incorporated business under a SOLO 401(k) plan – \$116,000. The three pivotal points remain the same for the sensitivity analyses discussed next.

Exhibits 3 and 4 show the results when IBWRC is \$300,000. Here, the plot shows a similar pattern to that of \$200,000. However, due to a higher taxable amount and the progressive tax schedule in the U.S., it results in higher tax rate and tax amount. Exhibits 5 and 6 reflect an IBWRC of \$100,000. Apparently, the wage of \$116,000 is not applicable with this reduced IBWRC. Notice that the wage producing the most tax advantage **before** social security benefits is \$15,000.

The previously discussed pivotal points remain the same irrespective to the tax filing status of the S owner-employee. However, due to differences in taxable income for a given tax bracket, the resultant total tax amounts and effective rates ranked from high to low are: Married Filing Separately, Single, and Married Filing Jointly or Qualifying Widow(er). Exhibits 7-10 show that the pattern of the plots remains unchanged but shifts downwards with respect to the Y-axis:

Exhibit 3: Taxes in Dollar Amounts with IBWRC = \$300,000 for Married Filing Separately

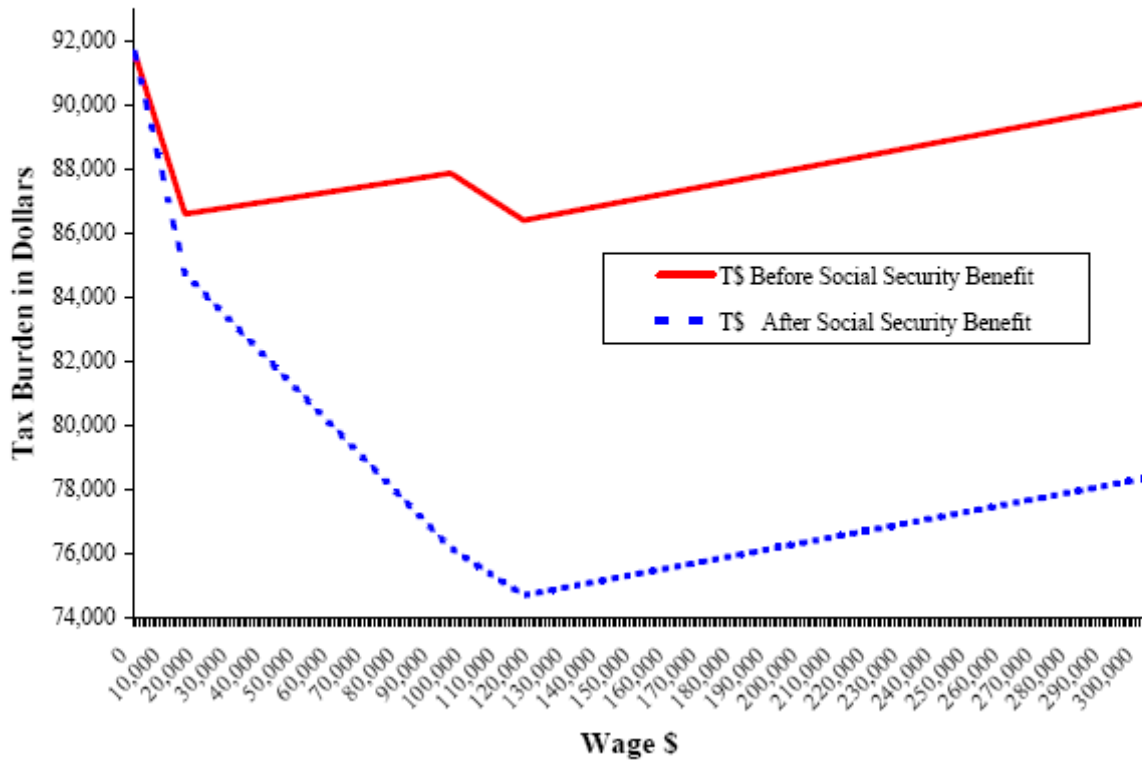
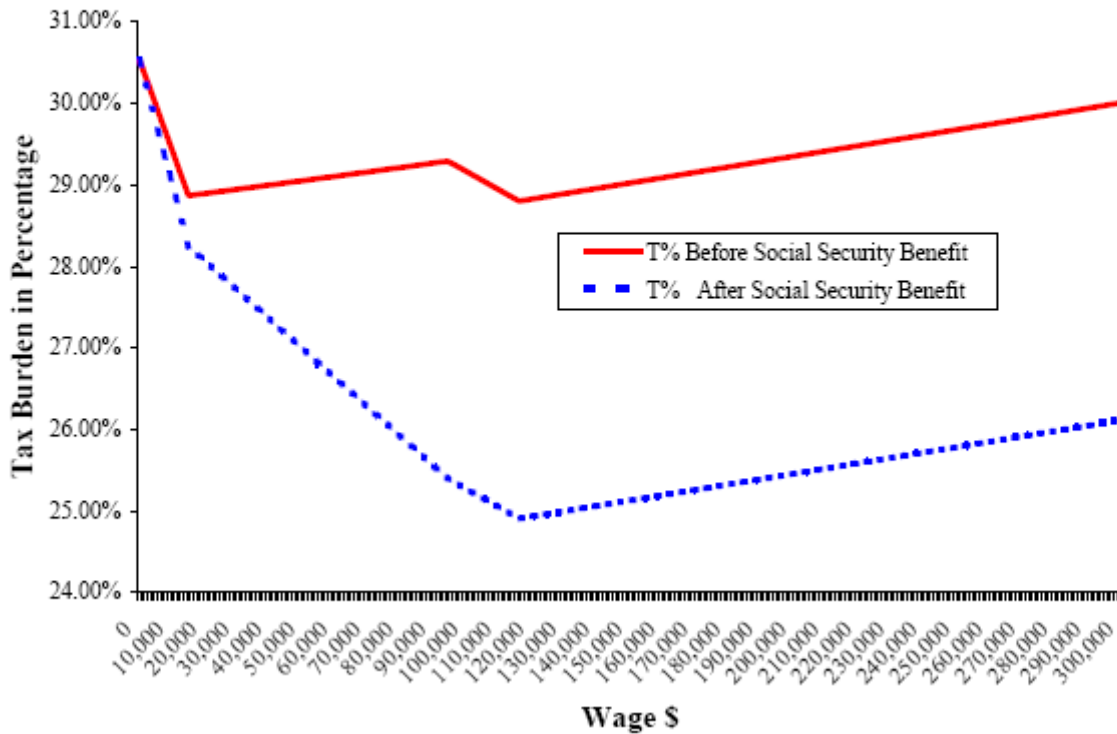
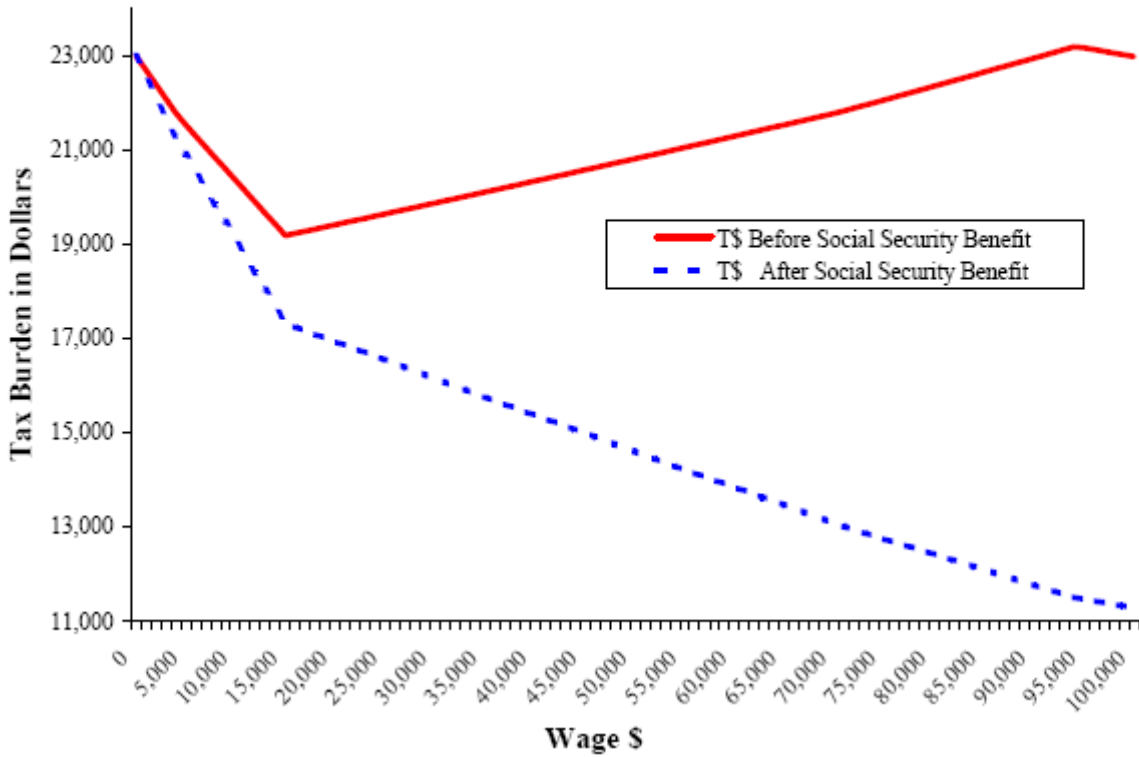


Exhibit 4: Taxes in Percentages with IBWRC = \$300,000 for Married Filing Separately



**Exhibit 5: Taxes in Dollar Amounts with IBWRC = \$100,000
for Married Filing Separately**



**Exhibit 6: Taxes in Percentage with IBWRC = \$100,000
for Married Filing Separately**

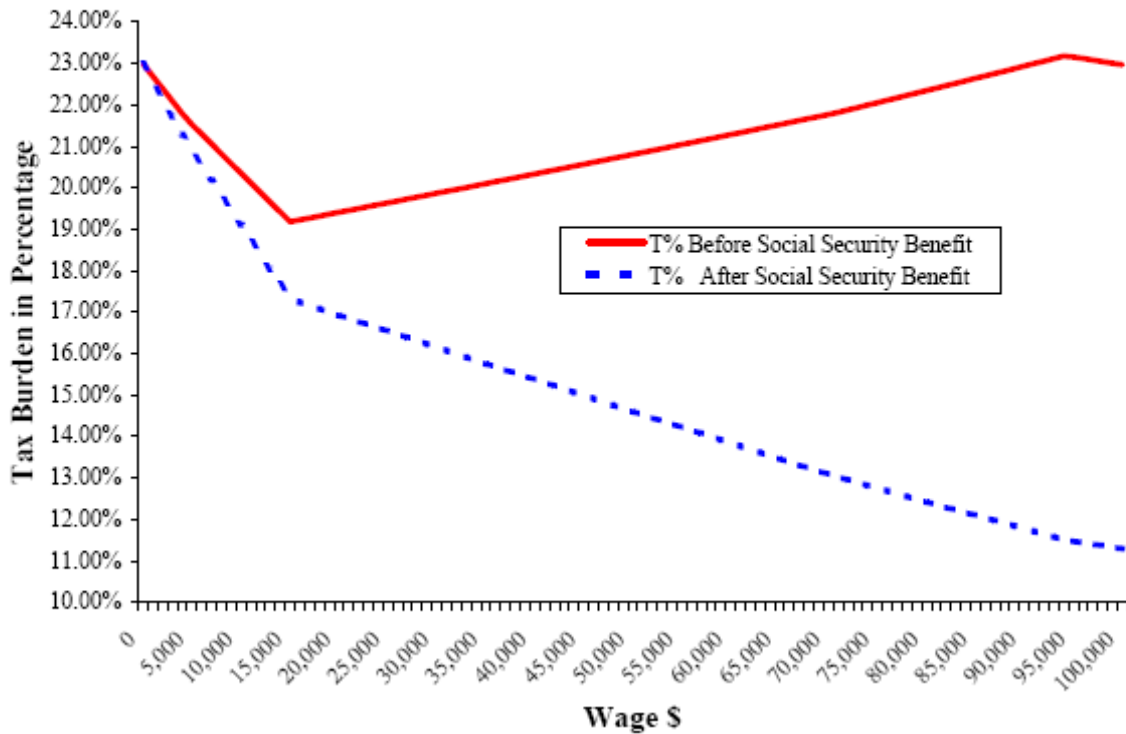


Exhibit 7: Taxes in Dollar Amounts with IBWRC = \$200,000 for Married Filing Jointly or Qualifying Widow(er)

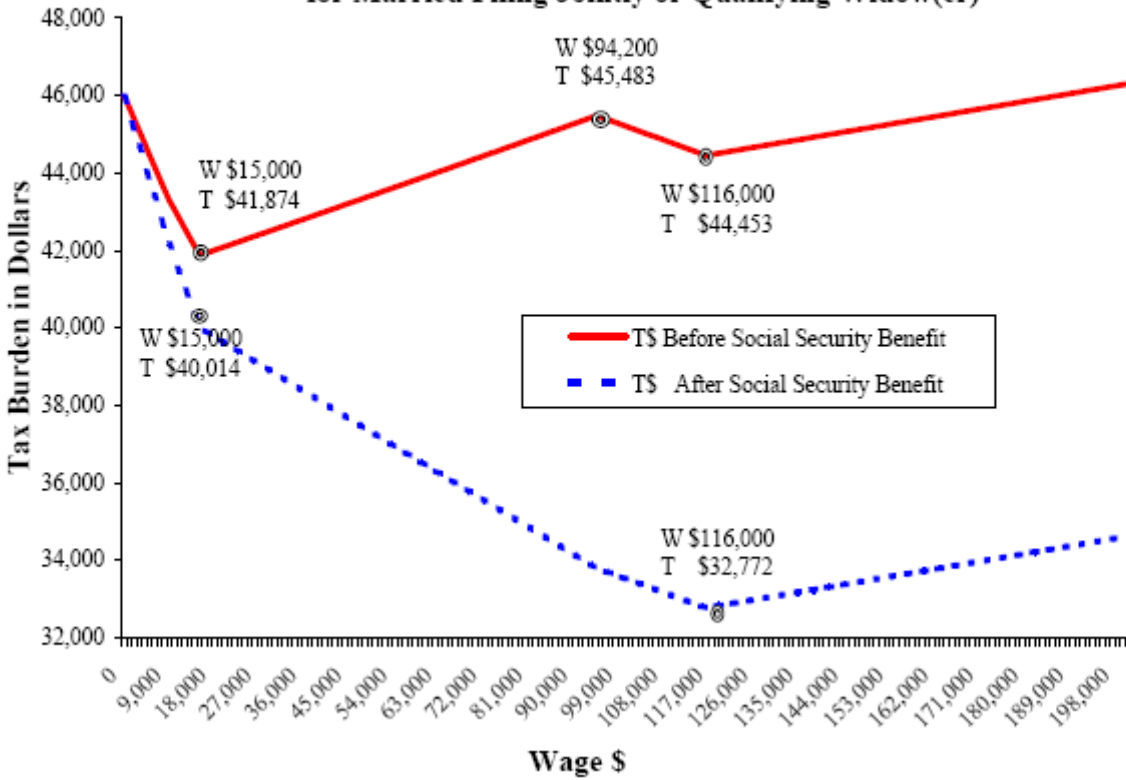
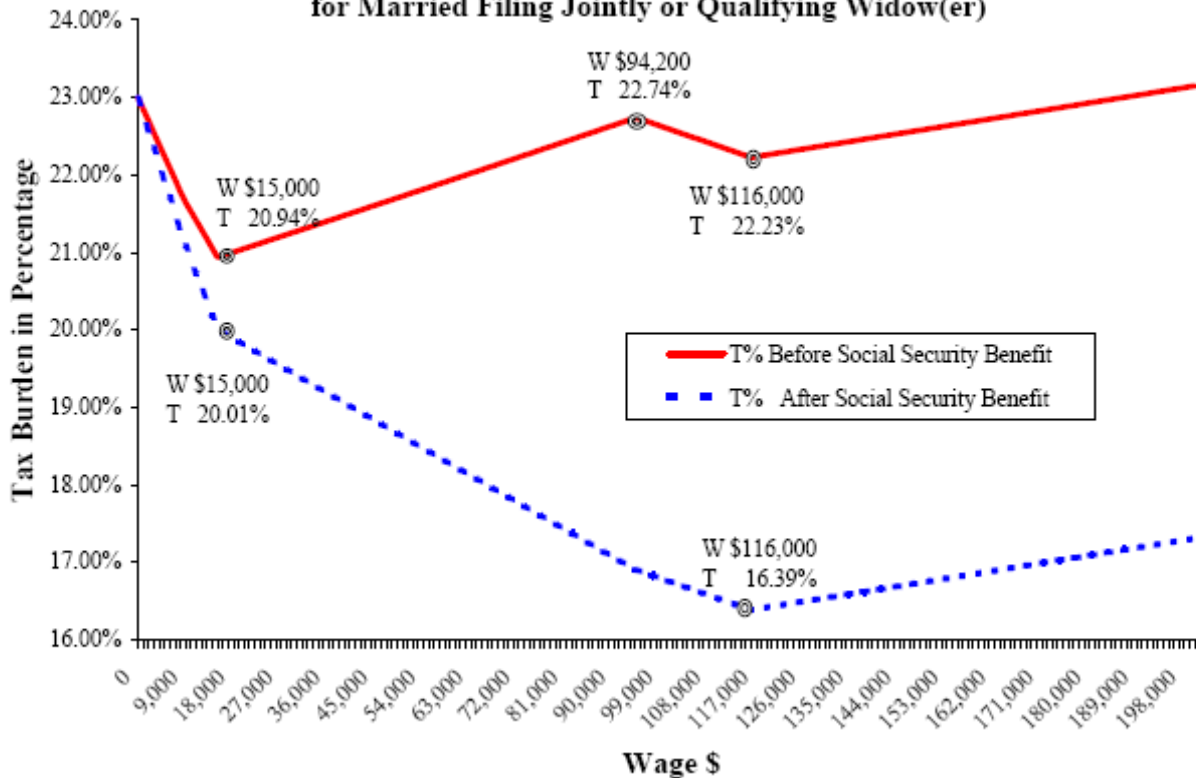
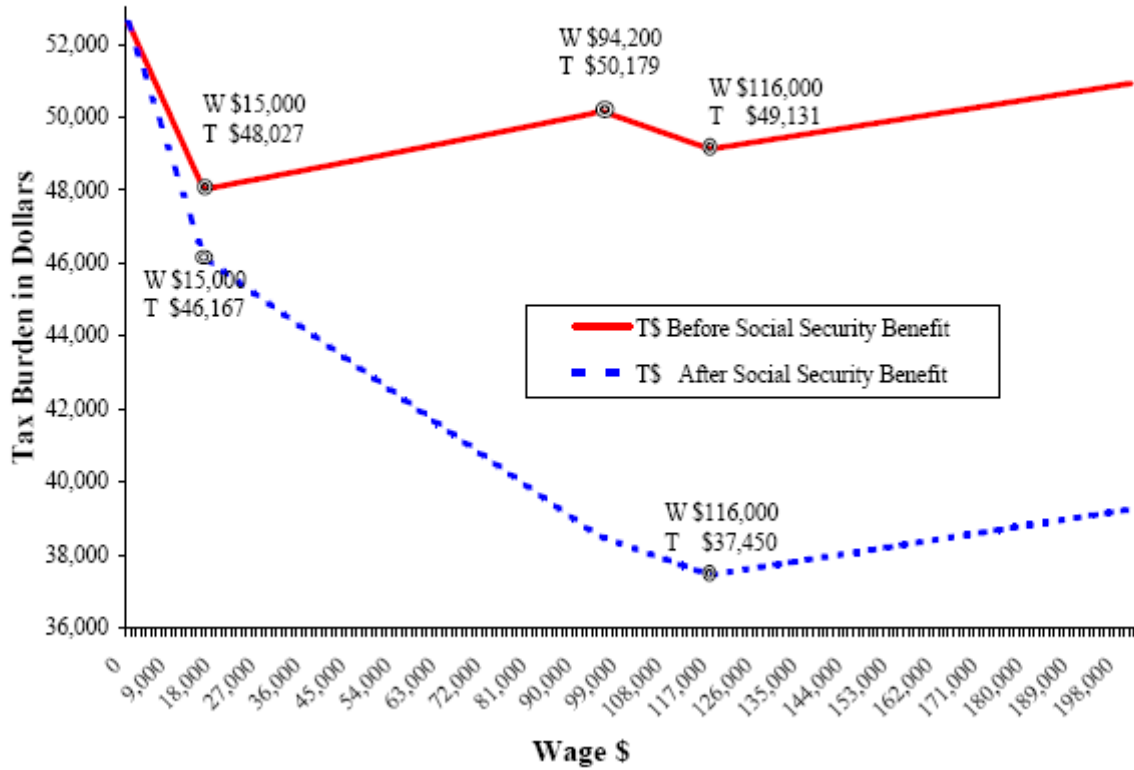


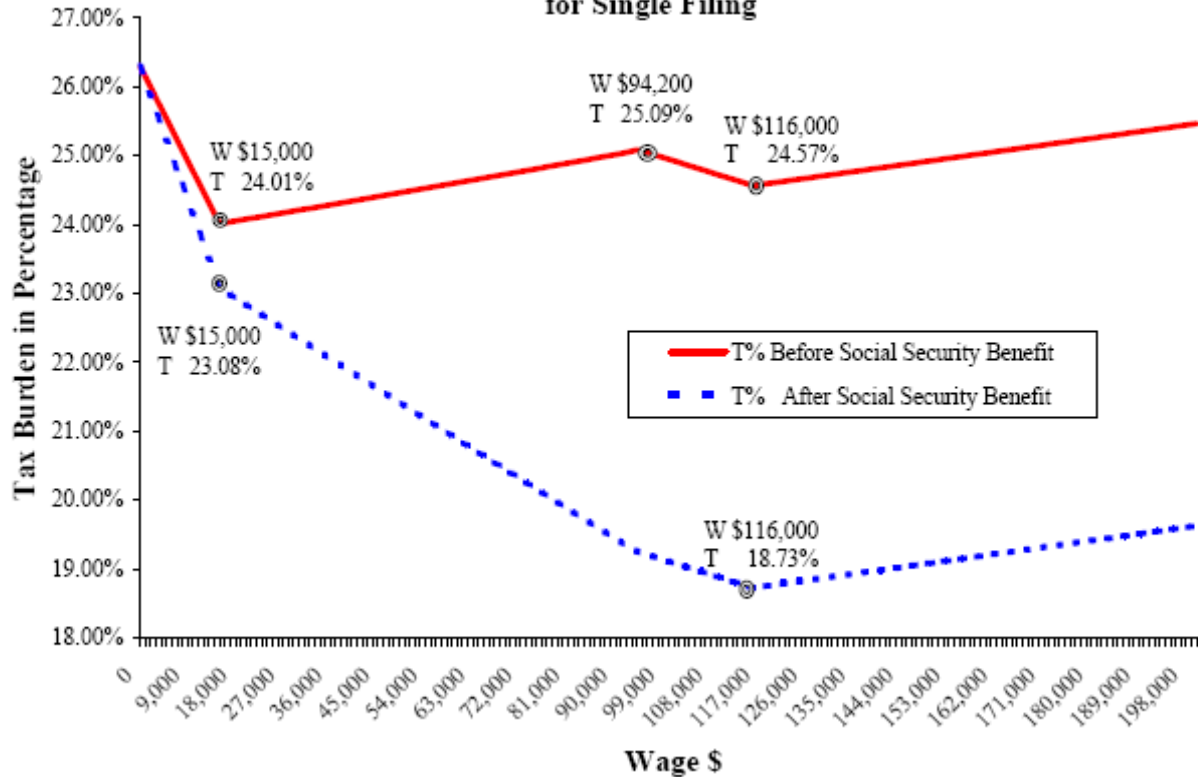
Exhibit 8: Taxes in Percentage with IBWRC = \$200,000 for Married Filing Jointly or Qualifying Widow(er)



**Exhibit 9: Taxes in Dollar with IBWRC = \$200,000
for Single Filing**



**Exhibit 10: Taxes in Percentage with IBWRC = \$200,000
for Single Filing**



tax amount or tax rate. For example, for a wage of \$116,000, the **before** social security benefits tax amount (tax rate) ranked from the highest to the lowest is: the base scenario – married filing separately at \$52,058 (26.03%), single filing at \$49,131 (24.57%), and married filing jointly at \$44,453 (22.23%). The downward-shifted pattern with the same pivotal points is also exhibited when the tax exemptions or deductions are considered.

CONCLUSION

Formation of an S corporation appeals to an individual who is both an owner of the business and a corporate officer providing services to the S-Corp. Among other advantages, it provides an S owner-employee with a means of mitigating employment or FICA taxes, which amount to 15.3 percent of wages paid: 12.4% for Social Security and 2.9% for Medicare. For sole proprietorships, partnerships and limited-liability companies, all income flowing to partners or owners is subject to FICA taxes. S-Corps also pass income and losses to shareholders (owners), who report it on individual tax returns. However, if a payment is made to an S owner-employee as a distribution of profits, it is not subject to FICA taxes. Tempted by the significant saving on employment taxes on wage receipts, an owner-employee of an S corporation may underreport wages and inflate income from profit distributions. If challenged by the IRS, this can result in substantial payments of unpaid employment taxes, penalties, and interests – let alone audit defense expenditures and emotional agony.

Payment of wages rather than distributions to S-Corp shareholders may be beneficial for several reasons. This paper takes a quantitative and comprehensive approach to address wage compensation issues. It examines the impact on one's overall tax burden by quantifying and collectively considering both the tax advantages and disadvantages on wage payments. Specifically, the paper uses a spreadsheet shown in Table 1 to simulate the amount of taxes paid at various wage levels when the Income before Wage and Retirement Contribution (IBWRC) is initially set at a given amount.

The determination of wage payment should follow tax guidelines which require a "reasonable" wage be determined for the services rendered. Due to the subjectivity of interpreting the tax codes, some tax professionals advise clients to use comparable industry figures to justify wage payment and maintain adequate documentation to support their position in determining wage compensation (Berry, 1994; Mochari, 2000; O'Brien, 1998). Other tax professionals advise clients to allocate wage payments at the maximum social security taxable level in order to avoid trouble with the IRS and to avoid excessive Medicare tax, as there is no wage limit to Medicare taxes. This study provides findings contrary to the previous strategy. The spreadsheet demonstrates that paying the maximum social security wage of \$94,000 will result in the highest amount of taxes paid in the current year for a wage range from \$10,000 to \$181,000 of the \$200,000 IBWRC.

The study further finds that the current taxes on \$200,000 IBWRC is symmetric between the wages range of (\$15,000–\$94,200) and (\$94,200–116,000), with the tax burden peaking at \$94,000–the maximum social security wage. For example, one pays a similar amount of taxes when the wage payment is \$15,000 or \$116,000. This is because a higher wage payment, such as \$116,000, allows a higher tax-deductible retirement contribution to be made by the S-Corp. Higher wage payments also allow the S-Corp to take a greater tax-deductible expense on the one-half of the FICA taxes it pays.

Moreover, when using an alternative tax payment measurement, net taxes paid **after** considering the social security benefit to be received in retirement, the net current tax paid

decreases as the wage compensation increases. The wage-tax plot is illustrated by the dashed line of Exhibit 1. While payment of a \$15,000 wage leads to a \$49,780 tax payment **after** the consideration of social security benefits, the owner-employee with an \$116,000 wage pays a much lower tax amount of \$40,377. That is, higher wages actually result in less tax burden. However, the relationship reverses as wages reach \$116,000, at which time the tax-saving advantage on retirement contribution disappears.

The findings of the spreadsheet simulation dispel the general misconception that tax burden increases as wage payments increase for an S owner-employee taxpayer. In fact, one suffers long-term economic losses when reporting lower wages and underpaying the social security tax, since this translates to lower retirement benefits to be received. Insufficient wage payments also lead to lower allowed retirement contribution. Consequently, one would miss earnings opportunities by forgoing tax-deferred retirement contributions. Finally, the findings of the study suggest that the IRS could save tremendous resources in identifying and auditing fraudulent wage reporting if only taxpayers would realize the tax advantages to be gained by "honestly" reporting higher wage compensations.

ACKNOWLEDGEMENTS

I thank helpful comments and suggestions from Ken Leavitt, Linda Burilovich, and participants at the 2007 American Accounting Association Western Region Meeting, the 2007 American Accounting Association Annual Meeting, and the CPE session sponsored by the Small Practitioners: Southfield Monthly Meeting Group in Michigan. In particular, I am indebted to Ken Leavitt for his technical advice and practical insight. I am also grateful for the research provided by my graduate assistants: Mei-Mei Chiang, Yu-Sheng Lai, Steven Barge-Siever and Rosemary McGorey, the financial support from a research grant provided by the College of Business at Eastern Michigan University, and the encouragement from Susan Kattelus.

REFERENCES

- Antognini, W. G. 2003. IRS targeting S corporations paying distributions in lieu of wages. *The CPA Journal*, 73 (10): 72-73.
- Berry, T. J. 1994. Potential recharacterization of S distributions. *The Tax Adviser*, 25 (10): 616-618.
- Biggs, A. G., Brown, J. R. & Springstead, G. 2005. Alternative methods of price indexing social security: implications for benefits and system financing. *National Tax Journal*, 58 (3): 483-505.
- Doran, M., Whittenburg, G. E. & Bunn, R. G. 2004. Limited liability company: Still the best choice for most small businesses. *Journal of Taxation of Investments*, 21 (4): 392-401.
- Failey, J. & Fleming, P. D. 2003. The single-participant 401(k). *Journal of Accountancy*, 195 (3): 49-52.
- Franklin, M. B. 2005. The many pluses of a SOLO 401(k). *Kiplinger's Personal Finance Retirement Planning Guide*, Fall, 83-85.
- Gates, P. S. & Smith, D. A. 1995. Compensation issues for S corporations: Compensation or distributions? *The CPA Journal*, 65 (11): 62-63.
- Gelband, J. F. 2004. The salary conundrum. *Barron's*, 84 (35): 21.
- Gendreau, R. 1995. Distributions to S shareholders held not to be salary. *The Tax Adviser*, 26 (8): 478-480.
- Internal Revenue Service. Publication 560: Retirement Plans for Small Business. <http://www.irs.gov/publications/p560/>
- Internal Revenue Service. 2006 Tax Rate Schedules. <http://www.irs.gov/formspubs/article/0,,id=150856,00.html>
- Kaster, N. J. 2003. One-person 401(k) plan: New retirement planning option. *CCH Focus on Tax*, 90 (50): 1-7.
- Kozol, G. B. 2005. Advantages of 401(k)-profit-sharing plans. *The CPA Journal*, 75 (3): 48-49.
- Leimer, D. R. 1995. A guide to social security money's worth issues. *Social Security Bulletin*, 58 (2): 3-20.
- Mochari, I. 2000. Avoid an audit: Pay yourself right. *Inc.*, 22 (6): 162.
- Murphy, D. P., and Stewart, Y. H. 1999. The effect of alternative methods of taxing social security benefits on individuals. *Journal of Financial Service Professionals*, 53 (6): 48-59.
- O'Brien, R. H. 1998. Compensation of S shareholders: Is it reasonable? *The Tax Adviser*, 29 (5): 313.
- Saftner, D & Fink, P. R. 2004. Review tax strategies to ensure that retirement years are 'golden'. *Practical Tax Strategies*, 72 (5): 266-282.
- Scarinci, C. 2005. IRAs and 401(k)s: How to Pick the Best Plan. *Journal of Accountancy*, 199 (3): 37-43.
- Segal, M. A. 2003. Worker classification and S corporation. *The CPA Journal*, 73(3): 60-62.
- Simon, R. 2004. Wall street boosts 401(k) offerings for self-employed. *Wall Street Journal*, December 23, D2.
- US Social Security Administration. Contribution and Benefit Base. *Social Security Online*. <http://www.ssa.gov/OACT/COLA/cbb.html#Series>
- Watters, M. P. & Persellin, M. B. & Greenstein, B. 1992. Scrutiny of S corporation distributions. *The CPA Journal*, 62 (12): 42-46.
- Weaver, P. 1995. Heightened scrutiny for S corporations. *Nation's Business Washington*, 83 (2): 37.

HOW MUCH DOES A NEW CPA COST?

G. Stevenson Smith, Southeastern Oklahoma State University

ABSTRACT: With resource limitations being imposed on educational programs by state governments and other funding sources, it is important to determine how efficiently available resources are being used in providing educational services. Traditionally, this question has been addressed with counts of the services provided, such as the number of students earning a degree, but little emphasis has been placed on the direct relationship between the use of resource inputs and programs' outputs. A measure is being proposed here for relating accounting programs inputs and outputs. For accounting programs, students, who successfully pass the Examination, are a primary program output that can be matched against program inputs. The argument is made that program efficiency is related to program resources used to prepare students to take the CPA Examination, i.e., faculty salaries, and program output, i.e., the number of students successfully passing the Examination. It is proposed that such a measure can be used as one efficiency benchmark for evaluating accounting programs.

INTRODUCTION

The cost of college tuition has been rising at a rate of 5% to 6% annually for the last decade, and these costs are expected to continue into the future. Every Fall as new freshman enter institutions of higher learning, national headlines herald the increases in tuition costs [Ellis 2006]. At the same time, the number of students at most universities is increasing without a commensurate increase in funding. Tuition costs are being driven by increases in administrative/faculty salaries and operating overhead required to run large institutional universities. Consequently, universities have faced pressure from their oversight bodies to justify these tuition increases and show they are effectively providing services. In most cases, new reporting requirements have been instituted by state legislatures or accrediting agencies that call for the disclosure of specific program performance measures. Such measures include levels of faculty interaction with practitioners, measures of student entry qualifications, student success rates in finding employment, number of refereed articles published by tenured faculty, student retention and graduation rates, credentials of faculty, dollars of external grants received, unpaid community service by faculty, class size measures, special program attendees, various student-teacher ratios, number of student/credit hours taught by faculty, reports of critical thinking activities, and methods used to improve student's written communications. Most of these performance statistics are used to measure program effectiveness without considering a program's resource constraints.

The Secretary of Education's Commission on the *Future of Higher Education* has stated:

*Higher education institutions should improve institutional cost management through the development of performance benchmarks. Also better measures of cost, beyond those designed for accounting purposes, should be provided to enable consumers and policymakers to see institutional results in the areas of academic quality, productivity and efficiency [Miller 2006].*¹

¹ The Commission has also stated: *College and university finances are complex, and made more so by accounting habits that confuse costs with revenues and obscure production costs. The lack of transparency in financing is not just a problem of public communication or metrics—it reflects a deeper set of issues of inadequate attention to cost measurement and cost management within institutions [Miller 2006].*

The need for measures of efficiency related to academic quality is clearly being called for by the Commission. Current practice uses many measures to assess the effectiveness of program operations, but few assessment criteria measure the efficiency of these programs by correlating program outcomes and inputs.

In the *Eligibility Procedures and Standards for Accounting Accreditation*, the Association to Advance Collegiate Schools of Business (AACSB) stated: "The learning expectations derive from a balance of internal and external demands for and *constraints* (italics added) on educational goals." [AACSB 2004] Although there is no further discussion regarding the nature of these constraints, it is likely that efficient use of resources is an acceptable method of dealing with these constraints.

The importance of efficiency measures cannot be understated because without substantial increases in legislative funding, the only way to successfully meet effectiveness measures is through the more efficient use of current resources. This paper reviews efficiency measures that have been used to evaluate universities and their academic programs, and suggests such an efficiency measure for use in benchmarking accounting programs based on CPA Examination ("Examination") pass rates.

EVALUATING PROGRAM EFFICIENCY

During the mid-1990s in New Zealand, the government instituted reforms requiring government managers to become more market-oriented in their delivery of services.² Prior to this period, government managers' only concern was that spending occurred within budget guidelines. Little managerial attention was directed at measuring the "outcomes" produced from using public funds. Nor was there any correspondence between the outputs from a program and the inputs required to achieve those outcomes. The revisions in New Zealand changed this approach to one where program efficiency became a measurable statistic. Outputs from a government agency were considered to be the products produced by a department, as for example policy reports by the Treasury Department. Once an output was identified, its cost, quality, quantity, and time for completion were reported. New Zealand's universities were also required to respond to these changes. Consequently, New Zealand's universities began to report the cost of their outputs separated by academic units, such as the College of Business, Arts and Sciences, or Law School [Victoria University of Wellington 1994]. For each academic unit, cost per equivalent full time (EFT) student was calculated. Thus, resource inputs were matched against an outcome, which in this case was EFT students, to evaluate an academic unit's efficient use of resources. For each academic college, direct costs were considered to be salaries and direct charges for occupancy and operational costs. Operational costs, such as equipment maintenance, were charged based on vendor's invoices, and occupancy charges were allocated based on the space occupied by the college. Overhead charges from human resources, library, student services, information technology, for example, were indirectly allocated based on factors such as the full-time equivalent faculty and students. These efficiency measures were instituted by a government concerned with expanding deficits and dwindling public resources.

² These original legislative reforms were based on The State-Owned Enterprises Act 1986; The State Sector Act 1988; The Public Finance Act 1989; and The Public Finance Act 1992.

New Zealand is not alone in developing university efficiency measures. Efficiency studies of U.S. institutions using quadratic equations have combined teaching and research outputs with faculty salaries to measure program efficiencies [Cohn, Rhine, and Santos 1989]. Other U.S. studies have based efficiency measures on a graduation efficiency index [Gilmore and Hoffman 1997]. This index views efficiency as the time it takes a student to earn a degree.

In the UK, data envelopment analysis (DEA) has been used to analyze the efficiency of universities and academic programs [Tompkins and Green 1988; Glass, et.al 2006]. Theoretically, DEA is a linear programming method used to develop multi-output/input ratios to assess the relative efficiency between incommensurate organizational outputs and inputs along an efficiency frontier contour. In DEA analysis, the assumption is made that at least one of the input or output measures can be administratively adjusted to raise the efficiency of the program or university. The analysis takes outputs with no commonality and develops a comprehensive single index of program output. This index can be compared with other benchmarked programs for making improvements in current operations.

In a DEA analysis of accounting programs, Tompkins and Green [1988] used the following factors in their input/output mix. Inputs were considered to consist of average full-time staff salaries, and "other" expenditures such as travel. Outputs were recognized as average number of undergraduates, research publications, and various measures of income generation for program operations. Obviously there are problems with the classifications and the data. For example, full-time student information was not comparable between Ph.D. students and undergraduates, and the analysis tested program performance rather than cost efficiency. The authors note that quality of output was not accounted for in the analysis either.

In 2006, DEA measures were used to evaluate UK university systems to determine if previously implemented national educational policies of more specialization and increases in university size matched with the authors' DEA analysis and identified efficiency measures [Glass, et. al 2006]. Input was considered to be full-time faculty and staff, research grants, and capital outlays. The results showed a correspondence between educational policies and the selected efficiency measures. Output was research, number of full-time equivalent students adjusted for quality based on a UK assessment measure. The use of DEA as a management tool has not found wide acceptance in the UK or the US.³

All these studies indicate that the largest use of program resources are the expenditures for faculty salaries. As such, salaries must be considered to be the single most important input in any model used to evaluate academic program efficiency.

Educational programs that provide for licensure such as accounting, nursing or law allow for efficiency evaluations to be based on other measures than EFT students. One outcome from such programs is students who successfully pass their licensing examinations immediately after graduation. When such outcomes are combined with the use of program resources, it allows for developing an efficiency measure. Here, a first step is made toward developing such an efficiency measure for accounting program assessment based on direct program costs and

³ An alternative and competitive method of university efficiency evaluation to DEA is stochastic frontier analysis. Although resources outputs are generally considered to be teaching, research, and service, the exact statistic used to measure these factors varies. For example teaching can be measured by full-time equivalent enrollment or by degrees awarded. Research output is measured by publication counts, research grants, or article citations. Input expenditures in these studies have included average faculty salary, other expenditures, and estimated charges for use of capital facilities. Service outputs have largely gone unmeasured in these studies [McMillan and Chang 2006].

student performance on the Examination.

THE DATA

In this model, direct program input is considered to be annual faculty salaries and the output measure is the number of students who annually pass the Examination.⁴ It was believed such a measure would directly show resource providers what they are receiving for their contributions.

Currently, there is no single data source disclosing accounting faculty salaries and program-specific Examination pass rates with a matched program listing of tenured faculty and their rank.⁵ Therefore, three different data sources were combined and used to calculate a per candidate cost for a successful pass on the Examination.

Salary data was provided by the AACSB. The National State Boards of Accountancy (NASBA) annual reports were used to find the number of candidates successfully completing the Examination by accounting program. The number of faculty in each of the sampled programs was aggregated from faculty listings in *Accounting Faculty Directory* [Hasselback 2004].

For this study, the AACSB prepared a file of annual median salaries for tenured faculty for 2003-2004 and 2004-2005 on a state-by-state basis and by rank.⁶ The salary data provided was for those states with eight or more AACSB-accredited business programs within a state.⁷ The AACSB surveyed 528 and 522 accounting departments in 2003-2004 and 2004-2005, respectively. In their annual survey of both member and nonmember programs, the AACSB collects annual salary information paid to assistant, associate, and full professors.⁸ There were twenty-eight states within this AACSB salary grouping. Salary data was not identified with an individual university, but a listing of surveyed schools for each year was available. Using this list of accounting programs within the twenty-eight state sample, each accounting program was separately reviewed for inclusion in each year of the two-year period of the study.

Only those accounting programs (AACSB member and nonmember schools) with undergraduate or graduate students sitting for the Examination, as reported in *Candidate*

⁴ Although research output and service contributions can be matched with resource inputs, here output was limited to successful passes on the Examination as this is the most visible output seen by the general public. On an individual accounting program basis, input/output measurements could be expanded to include inputs such as faculty research output and grant success, but the purpose of this paper is to introduce the idea of using an efficiency measure and describe a method that could be used to calculate such a measure.

⁵ It would be expected that for individual accounting programs budget data and the number of students successfully passing the Examination would be readily available allowing an efficiency measure based on this information to be easily calculated and benchmarked against an internal or national standard.

⁶ Salary information for instructors or lecturers is not collected.

⁷ If there were less than eight accredited universities a state, the AACSB survey confidentiality standards prevented that information from being disclosed.

⁸ Nonmember business schools are those programs that are in the process of seeking accreditation from the AACSB. These business schools are in various stages of AACSB accreditation. No attempt was made to separate the data according to those accounting programs which have been accredited by the AACSB and those that are seeking accreditation.

Performance on the Uniform CPA Examination [NASBA 2005 Revised, NASBA 2004], were included in the analysis.⁹ If a program did not have any undergraduate or graduate students taking the Examination, it was dropped from the sample. If a program did have students taking the exam but none passed the Examination, it was included in the sample.¹⁰ It was assumed that those students successfully passing all parts of the Examination were, in most cases, closer to their accounting program graduation dates than those who had not yet passed.¹¹ Further, it believed that these passers of the Examination had not found it necessary to enroll in a commercial CPA review course which would affect their academic knowledge and thus make their performance less reflective of their university course work.

To determine the number of faculty members in the selected accounting programs within the set of twenty-eight states, faculty numbers and their rankings for each program in the *Accounting Faculty Directory* [Hasselback 2004] were next tallied and classified by rank. If an individual accounting program in one of the states did not have a listing in the *Accounting Faculty Directory* [Hasselback 2004] or its listing did not include any assistant, associate, or full professors, i.e., only instructors, lecturers, or adjuncts, it was not included in the sample.¹² The number of accounting programs in the final grouping was 324 in 2004-2005 and 369 in 2004-2003. Although there was an overlap in the respondents to the AACSB survey over the two-year period, the university programs included in the AACSB sample did vary over the two-year period.

THE ANALYSIS

Among the AACSB member and nonmember schools, the number of students passing the Examination in 2003-2004 and 2004-2005 were 3,233 and 1,311, respectively. For these programs, the number of assistant, associate, and full professors, as listed in the *Accounting Faculty Directory*, was recorded. The direct program cost for each accounting program was computed by multiplying the number of faculty within each ranking times the AACSB median salary for each ranking for that specific state. For each state, the aggregated direct program cost was then divided by the number of students passing the Examination to calculate the Exam Cost Ratio. The Exam Cost Ratio shows the average cost per CPA pass by state.

⁹ Beginning in 2004, the format of the CPA Examination changed to a computerized format. In 2004, CPA candidates sat for the examination continuously during the three periods of: (1) April and May; (2) July and August; and (3) October and November. Additionally, first-time candidates in 2004 were re-defined by the NASBA as those candidates who were sitting for a section for the first time even if they had sat for the Examination before. Previously a first-time candidate was defined as someone who was sitting for the entire Examination for the first time. Although aggregated first-time pass rates are disclosed by the NASBA, these rates were never traceable to candidate counts by accounting program. The 2004 revisions have not affected the manner in which the numbers of candidates who successfully complete all parts of the Examination are counted.

¹⁰ If an accounting program had 10 candidates sitting for the Examination and twenty percent passed all parts, the number of successful passes for that program was considered to be two. It could not be determined from the NASBA data whether these passers were first-time candidates or whether they were candidates who are taking all parts of the Examination over a second time. For example, a candidate could be re-taking the entire Examination after their previous sectional passes had expired or a candidate may not have passed any parts in their first sitting and passed the entire Examination in their second sitting. It was assumed candidates of this nature were not commonly found in the candidate pool.

¹¹ There are no studies that provide support for this assumption. Within individual accounting programs, this information may be better known.

¹² The *Accounting Faculty Directory* [Hasselback 2004] is published every other year; therefore, the 2004 Directory was used to determine the number of faculty for the analysis.

$$ECR = \frac{DirC}{NoP} \quad (1)$$

where *ECR* = Exam Cost Ratio
DirC = Direct faculty salary cost totals for a state
NoP = Number of students passing the Examination for a state

Table 1 shows the Exam Cost Ratio as the direct faculty average cost per successful past on the Examination. The data is reported on a state-by-state basis. The input measure is faculty salaries and the output measure is the number of successful passes on the Examination.¹³ The number of accounting programs in each state sampled over the two-year period is shown in parentheses in Table 1.

There is a wide variation in the cost per pass among the surveyed states as shown in Table 1. It should be noted that in 2004-2005 Maryland's sampled accounting programs had no students pass the Examination. It can be seen that nationally the number of students passing the Examination decreased with the change to the first fully computerized examination in 2004-2005, and the cost per candidate pass increased from the previous year for all states except Oklahoma. The ECR is strongly dependent on the number of exam takers who pass the Examination. Tables 2 and 3 show the states with the highest cost and the lowest cost per successful pass, respectively. Within the groups of states with the lowest cost per pass in Table 2, Wisconsin, Washington, and North Carolina have set a yearly standard for expending the least amount of direct costs in achieving successful pass rates. Even with the sharp increase in cost per successful pass occurring in 2004-2005, within the twenty-eight state sample, these three states were in the lowest cost groupings in both years. The lowest costs per successful pass were \$37,481 and \$104,135 for 2003-2004 and 2004-2005, respectively. It would be useful to know the program characteristics and teaching methods that accounted for these results.

Table 3 lists the states with the highest cost per successful student pass on the Examination. The highest cost was \$394,958 and \$940,539 for states with candidates passing the Examination, excluding Maryland, for 2003-2004 and 2004-2005, respectively. All Maryland's direct cost of \$4,256,500 are included in Table 3 as no candidates passed the Examination in 2004-2005 among the sampled Maryland accounting programs. Among this highest cost group, Maryland, Massachusetts and Connecticut were listed in both years as having the costliest pass rates.

¹³ The ECR is being suggested as a measure of program efficiency. Only direct costs are included here. It would be expected overhead costs should be added to direct costs to arrive at the total cost for each pass, but it would also be expected that the overhead allocation rate would vary widely from program to program.

Table 1. Average Per Candidate Cost of Successful Pass by State

State	Direct Cost of Preparing Candidates who Pass the CPA Examination 2003-2004 (No. of Programs)	Direct Cost of Preparing Candidates who Passed the CPA Examination 2004-2005 (No. of Programs)	Number of Tenured Faculty Per Passing Candidate 2003-2004	Number of Tenured Faculty Per Passing Candidate 2004-2005
Alabama	\$179,013 (7)	\$373,799 (11)	2	4
Arkansas	\$394,958 (8)	\$397,241 (7)	5	5
California	\$58,535 (29)	\$213,944 (36)	1	2
Connecticut	\$275,741 (5)	\$916,096 (7)	3	9
Florida	\$41,566 (10)	\$416,953 (11)	Less than 1	4
Georgia	\$95,888 (13)	\$445,095 (17)	1	5
Illinois	\$73,261 (13)	\$104,135 (15)	Less than 1	1
Indiana	\$71,213 (9)	\$107,103 (11)	1	1
Kansas	\$82,817 (6)	\$219,582 (7)	1	2
Kentucky	\$155,152 (8)	\$469,667 (8)	2	5
Louisiana	\$122,044 (12)	\$345,047 (15)	1	4
Maryland	\$232,291 (7)	\$4,256,500* (6)	3	47**
Massachusetts	\$234,976 (9)	\$744,045 (12)	2	7
Michigan	\$140,907 (12)	\$281,554 (12)	1	3
Minnesota	\$84,628 (6)	\$426,017 (6)	1	5
Missouri	\$70,374 (11)	\$169,959 (14)	1	2
New Jersey	\$143,500 (10)	\$480,258 (9)	1	5
New York	\$79,293 (24)	\$940,539 (30)	1	9
North Carolina	\$63,951 (14)	\$126,129 (15)	1	1
Ohio	\$135,266 (13)	\$259,705 (17)	1	3
Oklahoma	\$179,518 (6)	\$176,875 (4)	2	2
Pennsylvania	\$232,343 (23)	\$476,438 (23)	2	5
South Carolina	\$132,419 (5)	\$447,375 (5)	2	5
Tennessee	\$145,194 (12)	\$357,635 (11)	2	4
Texas	\$71,521 (25)	\$181,531 (32)	1	2
Virginia	\$95,978 (11)	\$275,454 (12)	1	3
Washington	\$59,275 (9)	\$137,167 (7)	1	1
Wisconsin	\$37,481 (7)	\$119,657 (9)	Less than 1	1
Average	\$131,722	\$355,889**		5**
Overall Pass Rate	21%	7%		

*This dollar amount represents the entire direct costs of the Maryland programs as none of the candidates passed in Maryland.

**Maryland acts as an outlier, this average does not include the direct costs for Maryland, when the amount for Maryland is included it increases the average to \$495,196.

Table 2. The States with the Lowest Cost Per Successful Candidate Pass

State	2003-2004	State	2004-2005
Wisconsin	\$37,481	Illinois	\$104,135
Florida	\$41,566	Indiana	\$107,103
California	\$58,535	Wisconsin	\$119,657
Washington	\$59,275	North Carolina	\$126,129
North Carolina	\$63,951	Washington	\$137,167

Table 3. The States with the Highest Cost Per Successful Candidate Pass

State	2003-2004	State	2004-2005
Maryland	\$232,291	New Jersey	\$425,500
Pennsylvania	\$232,343	Massachusetts	\$744,045
Massachusetts	\$234,976	Connecticut	\$916,096
Connecticut	\$275,741	New York	\$940,539
Arkansas	\$394,958	Maryland*	\$4,256,500

*No candidates from the State of Maryland passed the Examination.

In Table 1, columns three and four, the ratio between the numbers of tenure-track faculty members required to teach each student successfully passing the Examination is shown. The ratio is shown for each state. A ratio of 6, for example, means it takes six faculty members to prepare one student to successfully pass the Examination. During 2004-2005, programs in Connecticut required nine faculty members for each student successfully passing the Examination among the sampled AACSB programs. In Wisconsin, on the same Examination the relationship between faculty members and successful passers was one-to-one. This perspective provides another view of how efficiently resources are used in preparing students to successfully pass the Examination.

The expenditures in Tables 1, 2, and 3 include only the direct salary costs of tenure-track faculty. These cost calculations do not include overhead charges which can be expected to vary from institution to institution. Such overhead costs include adjunct instructor's salaries, supplies, facility use charges, IT charges, equipment use charges, library use charges, higher-level administrative salaries, various faculty support costs, and utilities. Additionally, it would be expected that those accounting programs with centers of study or research bureaus would have higher rates of overhead charged against their direct costs. Examples of these overhead charges can be found in the overhead rates used on government contracts administered by universities. Overhead charges on university contracts can reach more than 50%.¹⁴ Adding overhead charges of 50%, as a percentage of direct cost, to the per candidate costs in Table 1 results in selected states paying over \$1 million in 2004-2005 to prepare one student to successfully pass the Examination.

Pass rates can be viewed from an accounting program perspective also. In Table 4 and Table 5, the number of programs, by state, with one or more students passing (column one) and

¹⁴The University of Pittsburgh charges overhead rates from 5.8% to over 20% for facilities and administrative overhead. See: <http://www.bc.pitt.edu/rca/documents/arUnivOverheadRates.pdf>. At the University of Calgary, contracts with the U.S. Government used negotiated overhead rates. For the Canadian government a rate of 25% is used. See: http://www.ucalgary.ca/uofc/research/html/policies/over_indcosts.html. Stanford University charges an overhead rate of 56.5%. See: <http://snf.stanford.edu/Access/Fees.html>.

two or more students passing the Examination (column two) are shown. Table 4 shows the results for the 2003-2004, and the 2004-2005 results are shown in Table 5. Many accounting programs could have one student pass the Examination, but a more reflective measure of a program's efficient use of resources is whether more than one student can pass the exam when taking it. The results in both tables (column one) show that high percentages of the sampled accounting programs have at least one taker passing the exam. For each state and the programs in that state, the number of two or more takers passing the Examination (column two) shows a substantial percentage decrease. The decrease ranges from zero to sixty-six percentage points and zero to fifty percentage points for 2003-2004 and 2004-2005, respectively. The results are consistent with the lower pass rates for the 2004-2005 Examination as compared with the 2003-2004 Examination.

Accounting programs with students passing the Examination is not limited to a small set of elite universities in a state. In the two tables, when the percentages in column one and two are equal, it indicates the same handful of accounting programs in a state, with one student passing, were from the same universities with two or more students passing the exam. In 2004-2005, only Missouri, Oklahoma, and Virginia had pass percentages tied to the same set of universities, and in 2003-2004, only Florida, Kansas, Virginia, and Washington exhibited this pattern.

To determine if there was a difference between the average cost of successful passers attending public and private universities, the data for the states was modified into public and private university groupings. Table 6 and Table 7 show the average cost of passes for private and public universities. Table 6 shows the results as a state average cost, and Table 7 shows the results on a per program average cost. The average cost per candidate pass was calculated by separating the direct costs for public and private universities for all states into two groups, aggregating the result, and dividing by the number of states or the number of programs in each grouping. Over the two-year period, public universities have a lower cost per pass for successful takers than private universities. The results show that program outputs, i.e., successful passes, from public universities are consistently lower over the two-year period when compared with private universities. This dispels the idea that elite private universities are driving the successful pass rates on the Examination.

Table 4. Programs with Students Passing the CPA Examination, 2003-2004

State	Percent of Accounting Programs with One or More Examination Takers Passing	Percent of Accounting Programs with Two or More Examination Takers Passing
Alabama	100%	86%
Arkansas	88%	25%
California	100%	86%
Connecticut	60%	60%
Florida	100%	100%
Georgia	92%	85%
Illinois	100%	92%
Indiana	100%	67%
Kansas	100%	100%
Kentucky	100%	88%
Louisiana	75%	42%
Maryland	100%	44%
Massachusetts	89%	78%
Michigan	92%	75%
Minnesota	100%	83%
Missouri	100%	73%
New Jersey	80%	70%
New York	83%	75%
North Carolina	71%	64%
Ohio	100%	85%
Oklahoma	67%	67%
Pennsylvania	78%	57%
South Carolina	80%	60%
Tennessee	83%	67%
Texas	96%	68%
Virginia	91%	91%
Washington	100%	100%
Wisconsin	100%	86%

Table 5. Programs with Students Passing the CPA Examination, 2004-2005

State	Percent of Accounting Programs with One or More Examination Takers Passing	Percent of Accounting Programs with Two or More Examination Takers Passing
Alabama	73%	45%
Arkansas	71%	57%
California	69%	63%
Connecticut	57%	43%
Florida	64%	55%
Georgia	59%	24%
Illinois	93%	73%
Indiana	64%	55%
Kansas	71%	43%
Kentucky	63%	25%
Louisiana	60%	47%
Maryland*	0	0
Massachusetts	75%	42%
Michigan	67%	42%
Minnesota	83%	33%
Missouri	79%	79%
New Jersey	78%	56%
New York	43%	27%
North Carolina	67%	40%
Ohio	76%	53%
Oklahoma	50%	50%
Pennsylvania	48%	35%
South Carolina	40%	20%
Tennessee	45%	36%
Texas	63%	50%
Virginia	58%	58%
Washington	100%	86%
Wisconsin	89%	89%
*no candidates passed the Examination		

Table 6. Per Candidate Average Direct Cost of Successful Passes Divided by States-- Public v. Private Schools

Year	Private Universities (No. of States)	Public Universities (No. of States)
2004-2005	\$545,433 (25)*	\$489,383 (28)
2003-2004	\$229,374 (25)*	\$134,551 (28)

* In three states, the sample did not include any private universities.

Table 7. Per Candidate Average Direct Cost of Successful Passes Divided by Programs -- Public v. Private Schools

Year	Private Universities (No. of Programs)	Public Universities (No. of Programs)
2004-2005	\$117,550 (116)	\$54,161 (253)
2003-2004	\$61,001 (94)	\$16,380 (230)

The results in the series of tables show that total expenditures, including an overhead charge, for passes on the Examination range from a high cost per pass of over \$1 million to a low cost of slightly over \$50,000. The question to be raised by college administrators, program accreditation associations, and state and private university funding agencies is whether there should be an efficiency standard established. In a period of tightening budgets, it needs to be determined whether the cost of certification for any educational program should be benchmarked and processes re-engineered to improve operational efficiencies.

PROGRAM BENCHMARKING AND EFFICIENCY

Benchmarking identifies and evaluates the key service components in an organization. The overall purpose of benchmarking is to develop a managerial tool that can be used in improving performance. Educational benchmarking is used to develop a continuous improvement process as programs measure their performance against accepted standards. These measures are set by the leader in a field.¹⁵ It is in this sense that an ECR pass rate is being introduced.¹⁶

Many educational benchmarks used by accrediting associations such as the AACSB are based on countable output measures such as the number of students completing a program or the number of research articles published.¹⁷

Such direct tallies of outputs are a natural disadvantage to smaller accounting programs.

¹⁵ Process benchmarking is used to identify those processes performed by another institution that make them a leader in the field [Alstete 1995]. The purpose of such benchmarking is to allow an organization to identify its internal process to find improvements that can help it reach higher performance goals. Internal benchmarking may be performed, but if the program is going to meet national standards, its performance measures need to be based on leaders of excellence [McGregor and Attinasi 1998].

¹⁶ Individual accounting programs have the expenditure data they need to compute a statistic like the ECR to measure program efficiencies rather than relying on data from national organizations as was done here to illustrate how to develop such an efficiency measure.

¹⁷ Through their *Knowledge Services*, the AACSB provides program information about the number of graduates, the number of faculty, mission, and other program characteristics. See the AACSB website.

However, efficiency measures where input is matched against output make small and large programs more comparable with one another for benchmarking purposes. It is unlikely that an outside academic accrediting agency would concern itself with evaluating program efficiencies in achieving educational outputs. Such groups view efficient output as an internal organizational matter. Therefore, development of efficiency benchmarks is left to program administrators or government funding agencies with responsibility to ensure resources are not only used, but that they are efficiently used. Without a doubt, the development and selection of an efficiency measure is a difficult and controversial matter.¹⁸

Accounting administrators who do believe it is important for their students to pass the Examination need to assess how well their graduates are performing, and measure their program's efficient use of resources in achieving reasonable pass rates. In these cases, a program's results need to be benchmarked against another viable standard. It is not being argued here that the ECR statistic is the only viable measure to evaluate the efficiency of accounting programs.¹⁹

Accounting programs that do not consider Examination results a key service component in their mission do not need to use an efficiency measure like the one suggested here, but efficiently producing measured program outputs should be a concern to every educational institution in today's constrained budget environment.

If it is believed that a program's objectives and characteristics are unique, it is possible to form a consortium among such accounting programs and establish separate benchmarking standards to measure efficiency [Payne and Whitfield 1999]. Regardless of the uniqueness of accounting programs, it is difficult to understand how such uniqueness makes the efficient creation of outcomes and outputs unimportant and outside the realm of academic review. For example, if a low percentage of accounting majors exhibit interest in becoming CPAs, the ECR statistic can be adjusted downward, but it is difficult to argue that low interest rules out any measures of program efficiency.

LIMITATIONS OF THE ANALYSIS

A limitation of the study is that all the data is self-reported. Salary data is collected from AACSB surveys sent to member and nonmember schools, the CPA candidates are responsible for reporting the university where they received their degrees, and the faculty member listings and ranks are reported by each surveyed accounting program. Additionally, as the information is taken from three different sources, there is variation in the closing dates for when the information was collected.

¹⁸ There have been some studies attempting to benchmark university efficiency. In the McMillan and Wing study [2006], efficiency scores were developed for universities using DEA and stochastic frontier outcomes to separate universities into high and low efficiency groups. This DEA approach found such a measure of efficiency did not significantly separate the two groupings from each other.

¹⁹ For example, it may be possible to develop an efficiency measure based on course outputs.

SUMMARY

In the general environment of education, better programs are viewed as those that spend more money on each student.²⁰ Yet, in a period of tightening budgets and reduced resources, it is questionable whether this attitude is sustainable. In accounting programs and other programs where success on a professional examination is a sought-after goal for entry into the profession, it is possible to show a relationship between the rates of student success in passing a national exam and resource inputs.

Here, one such efficiency measure has been suggested as a means of evaluating this input/output relationship. It is not being argued that this is the only efficiency measure that should be used to evaluate accounting programs, but it is being argued that program efficiency measures should be considered a valid means of evaluation. Although the steps in benchmarking begin with the identification of benchmarks and end with their implementation and the subsequent monitoring of program achievement against such standards, this paper has only suggested the use of one benchmark, provided comparative statistics, and shows that such statistics can be developed within individual accounting programs. The interpretation of “goodness” or “badness” to the ECR or any other efficiency measure must be established before such a metric can be applied. No such interpretation has been presented here. The argument being made here is that academic programs should be evaluated by means other than measures of effectiveness, i.e., program counts, and reviewing program efficiencies is one such alternative.

²⁰ Education reports at the secondary and university level continually focus on input expenditures on a per student basis as a measure of quality without any matching against the output from the educational system. The examples are numerous, but see: (1) Online Newshour: School Funding (http://www.pbs.org/newshour/backgrounders/school_funding.html); (2) USA Today (<http://www.usatoday.com/news/nation/2002/05/23/school-spending.htm>); (3) State Higher Education Officers (www.shceo.org/finance/shef/SHEF%20FY05%20Press%20Release%2003-17-2006.pdf); and (4) National Education Association (<http://www.nea.org/newsreleases/2003/nr030521.html>).

REFERENCES

- AACSB 2004. *Eligibility Procedures and Standards for Accounting Accreditation* (American Association of Collegiate Schools of Business: St. Louis, MO).
- Alstete, J. 1995. *Benchmarking in Higher Education, ASHE-ERIC Higher Education Report, No. 5.* (George Washington University, Graduate School of Education and Human Development: Washington, D.C.).
- Ellis, D. 2006. "College costs: Up, up and away" *CNNMoney.com* (August). <http://money.cnn.com/2006/08/17/pf/college/college_costs/index.htm?postversion=2006081716>.
- Gilmore, G. and Hoffman P. 1997. "The Graduation Efficiency Index: Validity and Use of an Accountability and Research Measure," *Research in Higher Education* Vol. 38, 6: 677-698.
- Glass, J., McCallion, G., McKillop, D. Rasaratnam, S., and Stringer, K. 2006. "Implications of Variant Efficiency Measures for Policy Evaluations in UK Higher Education," *Socio-Economic Planning Sciences* Vol. 40, 2:119-142.
- Hasselback, J. R. 2004. *Accounting Faculty Directory 2004-2005* (Prentice-Hall: Upper Saddle River, NJ).
- McGregor, E. and Attinasi, L. 1998. *The Craft of Benchmarking: Finding and Utilizing District-Level, Campus Level, and Program Level Standards* (Pima Community College, Office of Research and Planning: Tucson, AZ).
- McMillian, M. and Wing, C. 2006. "University Efficiency: A Comparison and Consolidation of Results from Stochastic and Non-stochastic Methods." *Education Economics*, Vol. 14: 1, 1-30.
- Miller, Charles. 2006. *The Future of Higher Education*. Draft report released by the Secretary of Education's Commission of the Future of Higher Education (U.S. Department of Education: Washington, D.C.).
- NASD 2004. *Candidate Performance on the Uniform CPA Examination* (National Association of State Boards of Accountancy: Nashville, TN).
- NASD 2005 Revised. *Candidate Performance on the Uniform CPA Examination* (National Association of State Boards of Accountancy: Nashville, TN).
- Payne, S and Whitfield, J. 1999. "Benchmarking for Business Schools/Colleges: Implementing an Alternative Partnership Approach." *Journal of Education for Business*, Vol. 75: 1, 5-9.
- Tompkins, C. and Green R. 1988. "An Experiment in the Use of Data Envelopment Analysis for Evaluating the Efficiency of UK University Department of Accounting" *Financial Accountability & Management*, Vol. 4, 2: 147-164.
- Victoria University of Wellington, 1994 *Annual Report and Financial Statement* (Victoria University of Wellington: Wellington, NZ: 1994).

A LOOK AT WAL-MART DOMINANCE IN RETAIL TRADE

Edward Nissan, The University of Southern Mississippi
George Carter, The University of Southern Mississippi

Abstract: By constructing an index of concentration, the Herfindahl (H), the general merchandisers industry is compared with another consumer product industry, food and drug stores, for the years 1996 and 2005. Both industries showed positive trends in concentration for the period. The paper will show that the increase in concentration in the general merchandisers industry is statistically significant and larger with respect to the other industry. It appears that the increase in concentration is due mostly to Wal-Mart influence.

INTRODUCTION AND REVIEW OF LITERATURE

In a comprehensive work on the economics of Wal-Mart, Irwin and Clark (2006) cite impressive statistics about the range of Wal-Mart influence. According to Wal-Mart (2006), Wal-Mart is the largest retailer in the world: having \$285.2 billion in sales in 2005, employing 2.8 million in the United States and around the world, having 3,800 stores in the United States and 2,400 stores in the rest of the world, and having 138 million customers per week. Basker and Van (2005) estimate that sales of Wal-Mart account to about seven percent of all retail sales in the United States. Lahart (2005) contends that in 2004, Wal-Mart purchases from China amounted to \$18 billion (10 percent of total U.S. imports from China). Furthermore, according to Bianco and Zellner (2003), at least one Wal-Mart purchase was made in 2002 by 82 percent of U.S. households. Wal-Mart controls big shares of retail business for most consumer products; for example, Dial (28 percent), Del Monte Foods (24 percent), Clorox (23 percent), and Revlon (23 percent). Agnese (2005) estimates that as a food retailer, Wal-Mart sales in 2004 were \$80 billion.

How did Wal-Mart become so influential? Irwin and Clark provide some answers. Of importance is the use of cost-saving technologies, advances in transportation, and economic globalization which increased the mobility of goods, services, labor, technology and capital worldwide. Mobility also includes foreign direct investment (FDI), multinational corporations, integration of world capital markets, and reach of government policies. The factors that led to global integration are the same for Wal-Mart, namely technological innovations, which made it possible to import low-cost supplies. The price savings ranged between 17 percent to 39 percent. Among the innovations in technology were "just-in-time" deliveries and tracking buying habits of customers at specific stores during specific weeks and hours.

In fact, Head (2004) attributes the growth of U.S. productivity (output per worker) during the years of the new economy, exemplified by the high-tech bubble on Wall Street between 1995 and 2000, to two sectors of the economy. The two sectors, which account for over half of growth in productivity, are retail and wholesale. Wal-Mart, in the opinion of Head, directly or indirectly was responsible for the greatest share of the acceleration in productivity. Wal-Mart's lead in productivity over its rivals was 44 percent in 1987 and 48 percent in 1995. Even though competitors have responded by following its strategy, Wal-Mart's lead remained at 41 percent in 1999. Also, with millions of employees all over the world, Wal-Mart's workforce in 2004 was larger than General Motors, General Electric, Ford, and IBM combined.

Fishman (2006) describes a Washington, D.C. meeting in 2004 with the theme, "Buyer Power." The theme was in the sense that some companies because of their bigness, such as

Wal-Mart, are simultaneously powerful as sellers and buyers of goods; power that many economists consider a threat to market competition. To economists, seller power is termed monopoly while buyer power is termed monopsony. This characterization fits well with Wal-Mart.

Fishman (2006) provides statistics for the spread of Wal-Mart throughout the United States. With 110 million households, 59 million lived within five miles of a Wal-Mart store and 99 million within 15 miles. According to Wal-Mart, as cited by Fishman, 100 million people shop at their U.S. stores each week. For the buying power of Wal-Mart, which Fishman gives ample examples, one needs only cite the remark of Rob Walton, Chairman of the Board of Wal-Mart, in the 2004 annual meeting (Fishman, page 83) about the company's suppliers: "Our supplier relationships are special: We do not consider ourselves customers of our suppliers; instead, we are partners." Fishman goes on to explain that the academicians of the papers presented at the Washington, D.C. conference were convinced that suppliers were affected by a powerful buyer such as Wal-Mart.

According to Bain (1959) and Scherer and Ross (1990), when dealing with markets, a framework is required to identify major characteristics of the markets. The central characteristic is the degree of concentration. When industry concentration is high, cartelization and oligopolistic behavior are feared. Unconcentrated industries are competitive and thus favored because they promote efficient pricing. According to Demsetz (1973), Ravenscraft (1983), Branch (1980), Gale and Branch (1982) and Bhuyan (2002), corporate bigness and high industry concentration are consequences of efficient production at the lowest cost. The increase in concentration does not necessarily lead to excessive profits. Greer (1992) explains that a company can grow in two ways. The first way is internally because of its efficiency (selling power) in the given market. The second way is externally, through mergers and acquisitions. Whether the growth of a company is internally or externally, there is a potential for monopolization.

Of special interest in this research is the degree of concentration in the general merchandisers industry due to the Wal-Mart effect. High concentration may significantly reduce the choices of consumers. This means that a small number of firms dominate the market for daily services, a special concern to the antitrust department of the Federal Trade Commission. This concern is especially important because of the wave of mergers in recent years. According to Green (2006), Wal-Mart bigness was questioned on many fronts such as outsourcing manufacturing jobs to poor countries, driving wages and benefits down, and poor healthcare policy for its workers. On the other hand according to Schroeder (2006), Wal-Mart plans to enter industrial-lending banking with no antitrust concerns being raised. Thus, research to detect the increase in general merchandisers industry concentration due to Wal-Mart power is timely.

The purpose of this paper is the construction of an index of concentration for the general merchandisers industry to be compared with a related industry, the food and drugstores, between 1996 and 2005 in a similar manner as Rhoades (1982) who compared the concentration of the largest banks in a country to the largest corporations irrespective of the nature of their outputs. The rationale of this exercise by Rhoades was to show that large U.S. banks can compete with large international banks to provide credit needs for large U.S. industrial corporations.

THE DATA

The concern of this paper is measuring sales concentration in the general merchandisers industry to probe the Wal-Mart effect among the group of major companies in which Wal-Mart is a member. Of interest is to find out if the level of concentration has been increasing at a level to be statistically significant.

Fortune magazine's early listings of the largest U.S. corporations until 1995 were for industrial enterprises. Directory listings from 1995 have added corporations that provide services, thus changing the title from "The Largest Industrial Corporations" to "The Largest U.S. Industrial and Service Corporations." For example in the *Fortune* 1996 edition, the new entrant, Wal-Mart Stores, is ranked fourth with \$93.6 billion in sales, trailing General Motors, Ford Motor, and Exxon, who ranked in the first three spots with respective sales (in billions) of \$169, \$137, and \$110. In the 2005 *Fortune* edition, Wal-Mart Stores moved into the first slot with sales of \$288 billion, leaving Exxon, General Motors, and Ford behind with respective sales (in billions) of \$271, \$191, and \$172 in the respective ranks of second, third, and fourth. By comparison, Microsoft ranked at 41 with \$37 billion.

The data on the general merchandisers industry as well as the food and drug stores industry are obtained from *Fortune*. *Fortune*, each year, provides information on the 1,000 largest companies. There are some 62 industries included among the 1,000 companies, classified according to type. The companies comprising the 62 industries are ranked by revenue. The choice of the number of observations in this research will be dictated by the availability of data, in the general merchandisers industry in 2005 which had data on 17 enterprises. As suggested by Dunning and Pearce (1985), an equalized number of observations to compare industries avoids the danger of systematic bias due to different numbers of observations. Furthermore, for the sake of testing for statistical significance of concentration between time periods and between the industries and for the test statistics employed to be valid, equal sample sizes are required.

As summary information from *Fortune* for the 17 general merchandisers enterprises; Table 1 provides the name of the company, its revenue, and its market share. Wal-Mart had revenues of about \$94 billion and captured about 35 percent of the market in 1996. Total revenues and profits of the 17 enterprises were approximately \$266 billion in 1996. By 2005, as shown in Table 1, Wal-Mart revenues jumped to \$288 billion, capturing 57 percent of the market, with total revenues of \$504 billion for the 17 enterprises. Table 2 provides contrasting information similar to Table 1 for the food and drug stores industry. Kroger in 1996 had revenues of \$24 billion, capturing 16 percent of the market. By 2005, its revenues jumped to \$56 billion, capturing 20 percent of the market. Total revenues of the 17 enterprises were \$146 billion in 1996 and \$274 billion in 2005. Casual observation of Tables 1 and 2 shows the disappearance in the 2005 list of some companies present in 1996 and the consequent appearance of new ones. A plausible reason for this phenomenon is consolidation through takeovers and simply through change of names.

Table 1: Summary Data of General Merchandisers, 1996 & 2005

Rank	1996 Company	1996		2005 Company	2005	
		Revenue (\$millions)	Share		Revenue (\$millions)	Share
1	Wal-Mart Stores	93,627	0.3516	Wal-Mart Stores	288,189	0.5723
2	Sears Roebuck	35,181	0.1321	Target	49,934	0.0992
3	K-Mart	34,654	0.1301	Sears Roebuck	36,099	0.0717
4	Dayton Hudson	23,516	0.0883	J.C. Penney	25,678	0.0510
5	J.C. Penney	21,419	0.0804	K-Mart Holding	19,701	0.0391
6	Federated Stores	15,049	0.0565	Federated Stores	15,630	0.0310
7	May Dept Stores	12,187	0.0458	May Dept Stores	14,441	0.0287
8	Dillard Dept Stores	6,097	0.0229	Kohl's	11,701	0.0232
9	Nordstrom	4,114	0.0154	Dillard's	7,816	0.0155
10	Fred Meyer	3,429	0.0129	Dollar General	7,661	0.0152
11	Harcourt General	3,242	0.0122	Nordstrom	7,131	0.0142
12	Mercantile Stores	2,944	0.0111	Saks	6,437	0.0128
13	Caldor	2,764	0.0104	Family Dollar Stores	5,282	0.0105
14	Ames Dept Stores	2,121	0.0080	Retail Ventures	2,698	0.0054
15	Fingerhut	2,110	0.0079	Belk	2,388	0.0047
16	Venture Stores	1,929	0.0072	Stein Mart	1,461	0.0029
17	Kohl's	1,926	0.0072	Bon-Ton Stores	1,315	0.0026
	TOTAL	266,309	1.0000		503,562	1.0000

Source: Fortune (1996, 2005)

Table 2: Summary Data of Food and Drug Stores, 1996 & 2005

Rank	1996 Company	1996		2005 Company	2005	
		Revenue (\$millions)	Share		Revenue (\$millions)	Share
1	Kroger	23,938	0.1643	Kroger	56,434	0.2060
2	American Stores	18,309	0.1257	Albertson's	40,052	0.1462
3	Safeway	16,398	0.1126	Walgreen	37,508	0.1369
4	Albertson's	12,585	0.0864	Safeway	35,823	0.1308
5	Winn-Dixie Stores	11,788	0.0809	CVS	30,594	0.1117
6	Walgreen	10,395	0.0714	Publix	18,686	0.0682
7	Publix Markets	9,471	0.0650	Rite Aid	16,600	0.0606
8	Vons	5,071	0.0348	Winn-Dixie Stores	11,733	0.0428
9	Eckerd	4,997	0.0343	Longs Drug Stores	4,608	0.0168
10	Thrifty Payless	4,659	0.0320	Pathmark Stores	3,994	0.0146
11	Rite Aid	4,534	0.0311	Whole Foods	3,865	0.0141
12	Revco Dept Stores	4,432	0.0304	Stater Bros.	3,705	0.0135
13	Supermks Gen'l	4,182	0.0287	Ruddick	2,869	0.0105
14	Stop & Shop	4,116	0.0283	Ingles Markets	2,137	0.0078
15	Giant Food	3,696	0.0254	Weis Markets	2,098	0.0077
16	Circle K	3,566	0.0245	Marsh	1,654	0.0060
17	Penn Traffic	3,537	0.0243	Duane Reade	1,598	0.0058
	TOTAL	145,674	1.0000		273,958	1.0000

Source: Fortune (1996, 2005)

To give an idea of the growth of Wal-Mart revenues relative to total revenues in the general merchandisers industry between 1996 and 2005, Wal-Mart shares are calculated and shown below:

Year	Industry Revenue (\$Billion)	Wal-Mart Revenue (\$Billion)	Wal-Mart Share
1996	273	94	0.342
1997	293	106	0.362
1998	324	119	0.368
1999	350	139	0.396
2000	385	167	0.433
2001	417	193	0.463
2002	447	220	0.492
2003	471	247	0.523
2004	484	259	0.535
2005	504	288	0.572

The display shows that in a matter of ten years, Wal-Mart increased its share of the market by more than 20 percent.

RESEARCH METHODS

Measurement of concentration among the chosen industries utilizes the well-known Herfindahl index (H). The index is used in the Merger Guidelines by the Department of Justice Antitrust Division of the Federal Trade Commission in merger and monopolization cases (Rhoades 1995).

The Herfindahl is defined as the sum of the squared market shares of the firms in an industry. By letting P_i be the i^{th} firm's total revenue share of an industry, $i=1, \dots, n$; the H index weights each P_i by itself, then sums the squares. That is

$$H = \sum_{i=1}^n P_i^2, i = 1, \dots, n, \frac{1}{n} \leq H \leq 1.00 \quad (1)$$

When all shares are held by one company, the case of monopoly, $H=1.00$; when all shares are held equally by all the companies, $H=1/n$. A "numbers equivalent"

$$m = \frac{1}{H} \quad (2)$$

for a given H for n firms each with market share $1/n$, the index will correspond to m equally sized firms.

There is a relationship between H and CV, the coefficient of variation $[S/\bar{P}]$ where

$$\bar{P} = \sum_i \frac{P_i}{n} = \frac{1}{n},$$

and

$$S = \left[\frac{\sum_i (P_i - \bar{P})^2}{n} \right]^{\frac{1}{2}}$$

This relationship according to Clarke (1985) is

$$(CV)^2 = nH - 1, \quad (3)$$

which is useful for testing a hypothesis of equality of variances by the F-distribution obtained as

$$F^* = \frac{(CV)_i^2}{(CV)_j^2}, i > j \quad (4)$$

where i and j denote two different industries, or two different time periods, i and j . In essence, the ratio of equation (4) is reduced to a ratio

$$F^* = \frac{S_i^2}{S_j^2} \quad (5)$$

because $\bar{P} = 1/n$ is the same for all industries and for all time periods which cancels out in equation (4). That is, for two industries, or two time periods, i and j , each consisting of n companies,

$$\begin{aligned} F^* &= \frac{(CV)_i^2}{(CV)_j^2} \\ &= \frac{\frac{S_i^2}{\bar{P}_i}}{\frac{S_j^2}{\bar{P}_j}} \end{aligned}$$

Since $\bar{P}_i = \bar{P}_j = \frac{1}{n}$, \bar{P}_i and \bar{P}_j cancel out with the result for this special case

$$\begin{aligned} F^* &= \frac{(CV)_i^2}{(CV)_j^2} \\ &= \frac{S_i^2}{S_j^2} \end{aligned}$$

Therefore, the use of the F-distribution for testing equality of two variances is legitimate. The computed F^* is compared with tabular $F(\alpha, n_i-1, n_j-1)$, where α is the significance level of the test

and n_i-1 and n_j-1 are the degrees of freedom associated with industries i and j , respectively. For a significance level $\alpha=0.05$ and for $n_i=n_j=17$, the tabular value is $F(0.05,16,16)\cong 2.35$. Thus, if $F^*>2.35$, a conclusion can be made that the concentration of industry or time period i is statistically significant at the 5 percent level as compared to the concentration of industry or time period j .

EMPIRICAL RESULTS

The results of computing H by equation (1), m by equation (2) and $(CV)^2$ by equation (3) for 1996 are shown below. The display shows that the general merchandisers industry is the more concentrated industry, with the largest H and the smallest m .

Concentration of Two Industries, 1996			
Industry	H	m	$(CV)^2$
General Merchandisers	0.1791	5.58	2.045
Food and Drug Stores	0.0876	11.41	0.489

Below are concentration computations for 2005. For general merchandisers, the increase in H from $H=0.1791$ to $H=0.3500$ and the decrease of m from $m=5.58$ to $m=2.86$ signals a substantial increase in concentration. To find out whether the increase in H for the general merchandisers between the two periods 1996 and 2005 is statistically significant, the F -ratio of equation (5) is employed. From the displays, the squared coefficients of variation for the respective periods are 2.045 and 4.950, giving $F^*=(4.950)/(2.045)=2.42$. An $F^*=2.42$ indicates statistical significance at the 5 percent level when compared to tabular $F=2.35$. By the same argument, the food and drug stores industry, with an increase in H between 1996 and 2005 has an $F^*=(1.100)/(0.489)=2.25$, indicating that the increase in H is not statistically significant at the 5 percent level.

Concentration of Two Industries, 2005			
Industry	H	m	$(CV)^2$
General Merchandisers	0.3500	2.86	4.950
Food and Drug Stores	0.1235	8.10	1.100

Of interest in this research is concentration in the general merchandisers industry because of the Wal-Mart effect as well as acquisitions and mergers in recent years. The interesting finding here is that in actuality, there was an increase in concentration. To depict whether the different values of H between the two industries differ significantly by the use of equation (3), the industries are arranged in a descending order of their $(CV)^2$ magnitudes. By dividing the $(CV)^2$ of each industry by the other industry's $(CV)^2$, it can be seen whether the observed differences in concentration of the pair of industries are statistically significant by equation (4) as compared to $F=2.35$ at the 5 percent significance level. The results of this procedure for 1996 are $F^*=(2.045)/(0.489)=4.18$, and for 2005 $F^*=(4.950)/(1.100)=4.50$, both of which are statistically significant, and also indicate an increase in concentration in the general merchandisers as compared to the food and drug stores.

A further form of analysis is to determine whether the trends in concentration indexes are significant over the period 1996-2005. A simple way to do this is to apply the suggestion by Lapin (1993) that time series covering a small number of years may be fitted by a straight line of the form

$$Y_t = a + bt \quad (6)$$

where Y_t is the computed value of the dependent variable and t is a code for time serving as the independent variable. Thus for 1996-2005, $t=1,2,\dots,10$. The slope "b" measures the annual increase or decrease in the time series and "a" is the intercept. The test statistic for significance of b is

$$t = b/S_b \quad (7)$$

where S_b is the standard error of the slope b.

The results are:

<u>Industry</u>	<u>b_i</u>	<u>S_{b_i}</u>	<u>t-value</u>	<u>P-value</u>
General Merchandisers	0.0209	0.00147	14.24	0.000
Food and Drugstores	0.0073	0.00108	6.75	0.000

Thus for both industries, there was a positive significant trend in concentration. However, the trend for the general merchandisers, $b_{gm}=0.0209$ is larger than for food and drugstores with $b_{fd}=0.0073$.

The hypothesis of equality of trends is tested in accordance with the suggestion of Bailey (1985) by the test statistic

$$t^* = (b_1 - b_2)/[s_{b_1}^2 + s_{b_2}^2]^{1/2} \quad (8)$$

where b_1 and b_2 are the slope coefficients for the two industries and $s_{b_1}^2$ and $s_{b_2}^2$ are their squared standard errors. The results of this exercise are $t^*=7.31$ with $P\text{-value}=0$ which rejects an hypothesis of equality of the slopes of the two industries.

CONCLUDING REMARKS

Many scholars such as Adams and Brock (2004), Crook (1996), Shleifer and Vishny (1991), and Sikora (1995) addressed many issues relating to consolidation and concentration of business in corporate America. The topics range between description of the consolidation and take-over cycles, to the pro and con of consolidation and the government role in administering antitrust laws.

This paper has undertaken a brief look at concentration in the general merchandisers industry to have a look at the Wal-Mart influence in the level of concentration by constructing a concentration index, the Herfindahl (H). The conclusion, based on the computations so far, indicates that concentration in the general merchandisers industry is statistically significant as compared to the food and drug stores industry. However, Troutman (2005) is of the opinion that consolidation of an industry is done to achieve economies of scale, to expand market penetration in different geographic areas, and to show shareholders improvements in revenue/earnings growth.

REFERENCES

- Adams, W., and J.E. Brock, 2004, *The Bigness Complex: Industry, Labor, and Government in the American Economy.*, Stanford, California: Stanford University.
- Agnese, J. 2005, "Supermarkets Face Supersize Rivals," *Business Week* (July 14, <http://businessweek.com/investor/content/Jul2005/pi041.htm>).
- Bailey, N.T.J., 1985, *Statistical Methods in Biology*, London: Hodder and Stongleton.
- Bain, J.S., 1959, *Industrial Organization*, Berkeley, California: John Wiley & Sons, Inc.
- Basker, E., and P.H. Van, 2005, "Putting a Smiley Face on the Dragon: Wal-Mart as Catalyst to U.S.-China Trade," <http://economics.missouri.edu/~baskere/papers/Dragon.pdf>.
- Bhuyan, S., 2002, "Impact of Vertical Mergers on Industry Proliferation: An Empirical Evaluation," *Review of Industrial Organization*, 20(1): 61-79.
- Bianco, A., and W. Zellner, 2003, "Is Wal-Mart Too Powerful?" *Business Week* (October 6), http://www.businessweek.com/magazine/content/03_40/63852001_mz001.htm
- Branch, B.S., 1980, "The Law of the Market Place and ROI Dynamics," *Financial Management*, 9(2): 58-65.
- Clarke, R., 1985, *Industrial Economics*, New York, New York: Basil Blackwell.
- Crook, J., 1996, "Short and Long Run Movements in U.S. Merger Activity," *Review of Industrial Organization*, 11(3): 307-323.
- Demsetz, H., 1973, "Industry Structure, Market Rivalry and Public Policy," *Journal of Law and Economics*, 16:1-9.
- Dunning, J.H., and R.D. Pearce, 1985, *The World's Largest Industrial Enterprises*, New York, New York: St. Martin's Press.
- Fishman, C., 2006, *The Wal-Mart Effect*, New York: The Penguin Press.
- Fortune, 1996, "Fortune 1000 Ranked Within Industries," (April 1996).
- Fortune, 2005, "Fortune 1000 Ranked Within Industries," (April 2005).
- Gale, B.T., and B.S. Branch, 1982, "Concentration Versus Market Share: Which Determines Performance and Why Does It Matter?," *Antitrust Bulletin*, 27(1): 83-105.
- Green, J., 2006, "The New War Over Wal-Mart," *The Atlantic*, 297(5), (June): 38-44.
- Greer, D.F., 1992, *Industrial Organization and Industrial Policy*. New York, NY: Macmillan Publishing Company.
- Head, S., 2004, "Inside the Leviathan," *New York Review of Books*, 11 (December 16): 80, 85-86, 88-89.
- Irwin, E.G., and J. Clark, 2006, *The Local Costs and Benefits of Wal-Mart*, The Ohio State University (February 23, 2006), <http://aede.osu.edu/programs/ComRegEcon/retail.htm>.
- Lahart, J. 2005, "Ahead of the Tape," *The Wall Street Journal* (February 17).
- Lapin, L.L., 1993, *Statistics for Modern Business Decisions*. Fort Worth, Texas: The Oryen Press.
- Ravenscraft, D.J., 1983, "Structure-Profit Relationships at the Line of Business and Industry Level," *Review of Economics and Statistics*, 65(1): 22-31.
- Rhoades, S.A., 1995, "Market Share Inequality, the HHI, and Other Measures of the Firm-Composition of a Market," *Review of Industrial Organization*, 10: 657-674.
- Rhoades, S.A., 1982, "The Relative Size of Banks and Industrial Firms in the U.S. and Other Countries," *Journal of Banking and Finance*, 6:579-585.
- Scherer, F., and D. Ross, 1990, *Industrial Market Structure and Economic Performance*. Boston, Massachusetts: Houghton Mifflin Company.
- Schroeder, M., 2006, "Wal-Mart Gains Allies for Bank Plan: Manufacturers, Wall Street Firms Back Bid to Run Industrial-Lending Company," *The Wall Street Journal*, (March 20): A-4.
- Shleifer, A., and R.W. Vishny, 1991, "Takeovers in the '60s and the '80s: Evidence and Implications," *Strategic Management Journal*, 12(1): 51-59.

- Sikora, M., 1995, "The Winding Trail: A 30-year Profile of M&A Dynamism," *Mergers and Acquisitions*, 30(1): 45-51.
- Troutman, M., 2005, "What Goes up Must Come Down: Mergers and Acquisitions Continue to Shrink the HMO Industry, but New Opportunities Keep Emerging all the Time," *Contingency* (September/October): 38-44.
- Wal-Mart, 2006, "Wal-Mart Fact Sheets," <http://www.Walmartfacts.com/doyouknow/>.

OVER-OPTIMISM AND THE UNDER-FUNDING OF DEFINED-BENEFIT PENSION PLANS

Jennifer J. Gaver, University of Georgia
Jeffrey S. Paterson, Florida State University

Abstract: A growing number of plan terminations and mounting deficits at the Pension Benefit Guaranty Corporation (PBGC) are causing many experts to be concerned about the viability of many of the nation's largest defined-benefit pension plans. We examine IRS Form 5500 to determine the funding status of 17,389 defined-benefit plans during 1995-2002. Our analysis suggests that plan managers use their discretion to hide funding problems in these plans. Firms are three times more likely to under-estimate than over-estimate their pension costs. They use their discretion to dampen extreme values of the fund balance and eliminate funding deficiencies. Most disturbingly, firms that successfully mask funding deficiencies in one year are usually able to repeat the strategy in the next year, further delaying the possibility of remedial action.¹

INTRODUCTION

Estimates indicate that the Social Security Disability Income fund will be exhausted in 2027 and the Old Age, Survivors, and Disability Insurance fund in 2043 (Board of Trustees 2005). Uncertainty surrounding the viability of government-sponsored benefits makes private-sector pension plans crucial to the financial security of most individuals. Unfortunately, the GAO finds that by 2002 about a quarter of the 100 largest defined-benefit pension plans were underfunded and "because of leeway in the actuarial methodology and assumptions sponsors may use to measure plan assets and liabilities, under-funding may actually have been more severe and widespread than reported." (GAO 2005) The Pension Benefit Guaranty Corporation (PBGC), a federal corporation and quasi-government agency, is charged with providing workers with retirement funds when their employers cannot. Despite the PBGC's role as guarantor of the basic pension benefits for 44 million Americans, it faces severe financial problems itself. The PBGC's annual report for fiscal year 2006 shows a deficit of \$18.1 billion. Total underfunding of PBGC-insured single-employer plans is approximately \$350 billion (PBGC 2006). Some experts warn that the situation could require a taxpayer bailout reminiscent of the savings and loan debacle of the nineteen-eighties (Walsh 2004). Whether employers will provide promised retirement benefits and whether the PBCG will adequately insure these benefits are questions on the minds of many pension experts.

The issue addressed in our study is the extent to which bias in actuarial assumptions impacts the funding status of defined-benefit pension plans and hides funding shortfalls. This is important because misrepresentation of funding status misleads both regulators and pension beneficiaries. To assess funding status, we examine the balance of the plan's "funding standard account," reported in Schedule B of Internal Revenue Service (IRS) Form 5500. Our analysis suggests that plan managers use their discretion to hide funding problems in these plans. Firms are three times more likely to under-estimate than over-estimate their pension costs. They use their discretion to dampen extreme values of the fund balance and eliminate

¹ We gratefully acknowledge the financial support of the J. M. Tull School of Accounting and the Terry College of Business.

funding deficiencies. Most disturbingly, firms that successfully mask funding deficiencies in one year are usually able to repeat the strategy in the next year, further delaying the possibility of remedial action.

BACKGROUND

Defined-benefit plans

Pensions are classified as either defined-contribution or defined-benefit plans. In a defined contribution plan, the sponsoring employer contributes a fixed amount each period into a pension trust. Ultimate disbursements to plan beneficiaries depend on the plan's investment experience, with pensioners bearing all investment risk. In contrast, a defined-benefit plan specifies the payments that employees will receive during retirement. Payments are usually based on a formula that takes into account employee salary levels and years of service. A corporate sponsor of a defined-benefit plan has a fiduciary responsibility to ensure that fund assets are sufficient to satisfy promised future benefits. The measurement of these benefits, however, depends on highly discretionary actuarial assumptions. As a result, managers of defined-benefits plans have considerable latitude in funding decisions. Defined-contribution plans, in contrast, offer no managerial discretion concerning funding strategy because the employer's contribution is pre-specified according to a fixed formula.

Department of Labor (DOL) statistics indicate that in 2004, 39.2% of all pension plan beneficiaries participated in a defined-benefit plan (DOL 2007). This is a decrease from 1979, when more than 80 percent of workers covered by a pension plan had defined benefits (Ippolito 1997). Despite the recent trend away from defined-benefit plans, they remain an important element of deferred compensation for many individuals. The DOL reports that in 2004 there were more than forty-seven thousand defined-benefit plans in the United States with more than 41.7 million participants and total assets in excess of two trillion dollars.

The economic significance of defined-benefit pension plans coupled with the discretion that they afford managers regarding funding strategy raises important public policy issues. On one hand, possible termination of under-funded plans is a concern for employees and labor unions. At the other end of the spectrum, over-funding of defined-benefit plans reduces federal tax revenues due to the tax-deductibility of pension contributions.

The Funding Standard Account

All employee benefit plans that cover 100 or more participants are required to submit an audited Form 5500 to the IRS on or before the last day of the seventh month after the close of the plan-year. Defined-benefit pension plans must also file Schedule B with Form 5500, which presents the "funding standard account" (FSA). The FSA summarizes the estimated costs of operating the plan during the year, projected interest charges or credits, employer contributions to the plan, and the change in the fund balance from the beginning to the end of the plan-year. Plans with charges in excess of credits in the funding standard account are identified as having a funding deficiency (ERISA Sec. 1082(a) (2); IRC Sec. 412(a) (2)). The IRS imposes nontrivial costs on the corporate sponsors of under-funded plans.² Constraints on over-funding are

² Specifically, there is an immediate 10-percent nondeductible excise tax on the amount of the funding deficiency (IRC Sec. 4971). A second nondeductible excise tax of 100 percent is imposed if the deficiency is not corrected within a specified period (ERISA Sec. 1082(a) (1); 26 IRC Sec. 412(a) (1)). This is known as the "taxable period," and begins at the end of the plan-year in which there is a deficiency and ends on the earlier of (1) the date of a mailing of a notice of deficiency with respect to the 10-percent tax or (2) the date on which the 10-percent tax is assessed by

achieved through limitations on the maximum allowable contribution that qualifies for tax-deductibility.³

Line 9 of Schedule B reconciles beginning and ending balances of the funding standard account, including the estimated current costs of meeting future pension obligations. Managers can influence these costs (up or down) in three ways. First, they can change the terms of the pension plan by eliminating certain benefits or adding others. Second, they can change from one ERISA-approved actuarial funding method to another. Third, they can manipulate actuarial assumptions. The first means of adjusting the fund balance, a plan amendment, is distinct from the second two choices because it involves a change in the economic substance of the plan. This is a costly strategy for achieving a desired funding level because it modifies the ability of the pension plan to attract and motivate employees. The second method of adjusting pension costs, changing funding methods, has the typical disadvantages of any change in accounting method: it is highly visible to outsiders, and is a blunt tool for fine-tuning account balances. In contrast to the first two strategies, discretion over actuarial assumptions provides managers with a flexible, low-cost means of adjusting fund balances.⁴

Beginning in 1995, the DOL and IRS began requiring fund managers that use certain actuarial cost methods (unit credit and entry age normal) to disclose annual "experience gains and losses."⁵ Experience gains and losses result when actuarial projections of pension costs and returns on pension assets differ from actual performance (Winklevoss 1993). Managers can *intentionally* bias the estimates in order to manage the level of the reported fund balance (GAO 2005). Experience results are useful from a research perspective, because they provide an objective gauge of this bias.

REPORTING INCENTIVES

Firms are subject to costs when their defined-benefit pension plans are either over- or under-funded. Asthana notes that firms with over-funded plans are vulnerable to takeover attempts (Mittelstaedt 1989; Ippolito and James 1992) and demands from labor unions for additional benefits (Bulow, Scholes, and Menell 1983). On the other hand, firms with under-funded plans become targets for politicians and the news media. These firms are also subject to litigation from employee groups and pressures from the DOL and the PBGC to accelerate funding (Mittelstaedt 1989). We conjecture that scrutiny from external groups is highest when

the IRS. Firms with deficiencies can avoid penalties if they obtain a minimum funding waiver from the IRS. However, the likelihood of obtaining a waiver is low. Asthana (1999) reports that during the 1990-1992 period, the IRS granted minimum funding waivers to less than 0.2 percent of firms reporting on form 5500.

³ This maximum is determined relative to accrued plan liabilities. Firms that are deemed to have overstated pension liabilities in order to increase the level of allowable contributions are subject to a tax equal to 10 percent of the nondeductible contributions (IRC Sections 4972 and 4779) and possibly an additional excise tax on the underpayment of taxes. A 20 percent penalty is imposed on the underpayment of tax if the actuarial determination of pension liabilities is between 300 and 399 percent of the amount determined to be correct. If the actuarial determination is 400 percent or more of the correct amount, the penalty is increased to 40 percent (IRC Sec. 6662).

⁴ In our sample, bias in actuarial assumptions (as reflected in experience gains and losses) accounts for the overwhelming majority of all discretionary adjustments to the funding standard account.

⁵ Under ERISA, defined-benefit pension plans are allowed to choose among seven acceptable actuarial methods for determining pension costs. Winklevoss (1993) provides a description of these methods, which are the unit credit method, the entry age normal method, the attained age normal method, the frozen initial liability method, the aggregate method, the individual aggregate method, and the individual level premium method. Two of the most commonly used methods, unit credit and entry age normal, separately report experience gains and losses.

firms report extreme funding levels of either sign for their defined-benefit plans. This suggests that pension fund managers have incentives to select actuarial assumptions that *moderate extreme balances in the funding standard account*.

Although there are costs associated with both over- and under-funded plans, the costs of over-funding only become important when fund balances are relatively high. Moderate over-funding does not trigger penalties as long as employer contributions are within IRS limits. In contrast, *any* deficiency in the funding standard account results in IRS sanctions. As a result, pension fund managers also have incentives to select actuarial assumptions that *prevent a reported funding deficiency*.

One means for managers to avoid negative balances in the funding standard account, and extreme values of either sign, is to select actuarial assumptions consistent with these reporting objectives. To investigate this possibility, we subtract the currently reported experience gain or loss from the ending FSA balance of the *prior* year. This leaves us with an amount equal to what the balance would have been if there was no estimation bias in the reported amount. We refer to this number as the “pre-managed FSA” to distinguish it from the “reported FSA” obtained from Form 5500. Our analysis suggests that the observed distributions of pre-managed and reported fund balances will differ in the following ways:

- 1. When compared to the cross-sectional distribution of *pre-managed* funding levels of defined-benefit pension plans, the distribution of *reported* funding levels exhibits fewer extreme values.**
- 2. When compared to the cross-sectional distribution of *pre-managed* funding levels of defined-benefit pension plans, the distribution of *reported* funding levels exhibits fewer negative values.**

Finally, we contend that managers will use their discretion to postpone the revelation of a funding shortfall into future periods.

- 3. Managers of pension plans that show a funding deficiency on a pre-managed basis but use their reporting discretion to eliminate the deficiency can repeat this strategy in the following year.**

This prediction, if supported, would be of particular concern to regulators and pensioners, because it means that potentially critical remediation of pension shortfalls might be delayed.

SAMPLE AND DATA

Our initial sample consists of all 186,256 Form 5500 filings received by the DOL from 1995 through 2002 from defined-benefit pension plans sponsored by a single employer. In order to remain in the sample, the plan must have complete information in Form 5500 on plan assets, funding standard account balances, and subsequent-year experience results. It must also use either the unit credit or entry age normal actuarial cost method.⁶ These screens leave 55,745 plan-year observations in our final sample, encompassing 17,389 defined-benefit pension plans sponsored by 13,324 firms.⁷ The sample selection procedure is summarized in

⁶ Of our initial sample of 185,925, there are 70,607 plan-year observations (38%) that use one of these approaches.

⁷ On average, each plan has 2.9 annual filings during the 1995-2002 period and each firm sponsors 1.3 unique plans.

Table 1.

Table 1
Sample Selection Criteria and Associated Plan-Year Observations for Defined-Benefit Pension Plans Filing Form 5500 with the Department of Labor During the Years 1995 through 2002^a

	Total
Single-employer defined-benefit plan-years ^b	186,256
Less:	
Plan-years that use an actuarial cost method with unobservable new experience gains/losses ^c	(115,502)
Plan-years with missing or unusable data ^d	(15,009)
Usable plan-year observations	55,745

- a. The Internal Revenue Code (I.R.C.) Section 412 and Employee Retirement Income Security Act (ERISA) Section 302 require defined benefit plan sponsors to file Form 5500, Annual Return/Report of Employee Benefit Plan, with the Internal Revenue Service and Department of Labor (DOL), respectively. The 1995-2002 time period is chosen to coincide with the years in which new experience gains and losses are separately disclosed on Schedule B of Form 5500.
- b. The analysis is restricted to defined-benefit pension plans because defined-contribution plans offer no managerial discretion concerning funding strategy. We require all plans to be sponsored by a single employer to control for firm-specific reporting and tax incentives.
- c. To be retained for analysis, an actuarial cost method that permits separate reporting of new experience gains and losses must be used during the plan-year. These are the unit credit and entry age normal.
- d. Required data include the current year's funding standard account balance and plan assets. In addition, experience gains and losses reported in the following year must be available. Plan assets must be greater than zero because they are used as a scaling metric in our analysis.

Table 2 presents descriptive statistics on subsequent year experience gains and losses, a measure of forecast bias. Experience gains and losses reflect both intentional bias and unintentional error. The sign and magnitude of the unintentional error likely depends on exogenous factors such as conditions in the financial markets. With this in mind, table 2 reports scaled experience gains and losses by sample year (1995-2002) and for the complete sample. Significantly negative mean amounts are observed in all years except 1997 ($p < 0.0001$), reflecting the preponderance of experience losses despite the "best actuarial assumptions" requirement of the DOL and IRS. The lopsided number of losses relative to gains also suggests a consistent, negative bias that is not readily explained by exogenous factors. For the full sample, experience gains or losses occur in 66.3% of all plan-years. More than three-quarters of the adjustments (28,466 of 36,992, or 77.0%) are experience losses which increase the reported fund balance by an average amount that is significantly different from zero.

Table 2
Experience Gains (Losses) Revealed in Period (t+1) Scaled by Plan Assets, Recorded by
Defined-Benefit Pension Plans between 1995 and 2002^{a,b}

Year	Sample ^c	Number of experience gains ^d	Number of experience losses ^d	Mean experience gain (loss) ^e	p-value ^f
1995	4,473	44	3,323	-0.0579	0.0001
1996	5,892	1,452	2,649	-0.0132	0.0001
1997	5,599	1,715	1,952	-0.0024	0.1284
1998	4,111	994	1,455	-0.0097	0.0001
1999	6,390	1,328	2,239	-0.0136	0.0001
2000	8,935	1,132	4,143	-0.0335	0.0001
2001	9,984	933	5,662	-0.0596	0.0001
2002	10,361	928	7,043	-0.0879	0.0001
All years	55,745	8,526	28,466	-0.0409	0.0001

- The sample consists of 55,745 plan-year observations from 1995-2002 for defined-benefit pension plans filing form 5500 with the U.S. Department of Labor. These observations represent 17,389 defined-benefit plans and 13,324 sponsoring firms.
- Experience gains and losses, reported in year t+1, reflect the difference between expected and actual results for the year, and are used as a proxy for managers' manipulation of actuarial assumptions in year t.
- The number of pension plans in the sample corresponding for each year.
- The number of pension plans that identify this type of adjustment to the funding standard account.
- The mean experience gain (loss) for each year.
- The p-statistic for testing the hypothesis that the mean experience gain (loss) is zero.

RESULTS

We predict that, when compared to the cross-sectional distribution of pre-managed funding levels, the distribution of reported funding levels exhibits fewer extreme values of either sign, and fewer negative values of any amount. This is because extreme values of the funding standard account invite external scrutiny of the sponsoring firm with attendant "visibility costs" (Asthana 1999), and funding deficiencies (of any amount) result in IRS-imposed penalties.⁸

Table 3 compares distributions of reported and pre-managed funding levels. Panel A presents frequency counts for seven intervals of the pre-managed distribution of the funding standard account balance. Pre-managed balances are reported funding levels, purged of experience gains or losses reported for the plan at the beginning of following year. The distribution of pre-managed balances provides insight into what funding levels would be in the absence of actuarial bias. The bulk of the observations (39,356 of 55,745; 70.6%) are positive, with a large bulge (15,139 of 55,745; 27.2%) in the interval just to the right of (and including)

⁸ In our analysis we report positive funding standard account balances as indicating over-funding and negative balances to show a funding deficiency.

zero.⁹ An explanation is that managers make cash contributions to their pension plans to avoid a funding deficiency. At the same time, however, they limit contribution levels to minimize over-funding.

Table 3
Frequency Counts for Seven Intervals around Zero for Reported and Pre-managed Values of the Funding Standard Account^{a,b}

PANEL A: Pre-Managed Values of the Funding Standard Account (scaled by plan assets)^c

Funding Standard Account Interval	Frequency	Standardized Difference ^e
(infinity, 0.020]	20,729	--
(0.020, 0.015]	1,001	-1.08
(0.015, 0.010]	1,122	-1.49
(0.010, 0.005]	1,365	-104.26
(0.005, 0.000]	15,139	129.51
(0.000, -0.005]	1,018	-112.04
(-0.005, -0.010]	790	-3.28
(-0.010, -0.015]	791	0.81
(-0.015, -infinity)	13,790	--
Total	55,745	

PANEL B: Reported Values of the Funding Standard Account (scaled by plan assets)^d

Funding Standard Account Interval	Frequency	Standardized Difference ^e
(infinity, 0.020]	24,652	--
(0.020, 0.015]	1,479	-0.47
(0.015, 0.010]	1,734	-4.86
(0.010, 0.005]	2,485	-140.14
(0.005, 0.000]	24,670	195.01
(0.000, -0.005]	103	-205.79
(-0.005, -0.010]	30	-4.91
(-0.010, -0.015]	36	0.63
(-0.015, -infinity)	556	--
Total	55,745	

⁹ An indication of the significance of the discontinuity of the distribution at zero is given by the standardized difference reported for each interval. Beaver et al. (2003) explain that for a smooth probability distribution, the expected number of observations in an interval is equal to the average of the number in the two adjacent intervals. The difference between the actual and expected number of observations in an interval divided by the estimated standard deviation of the difference is distributed as a standardized normal random variable. For our sample, the standardized difference for the first interval above zero in the pre-managed distribution is 124.31, while the standardized difference for the first interval below zero is -107.57. This means that there are many fewer small negative observations in the pre-managed distribution than would be expected for a smooth probability distribution, and many more small positive values.

- a. The Internal Revenue Code (IRC) Section 412 and Employee Retirement Income Security Act (ERISA) Section 302 require defined benefit plan sponsors to file Form 5500, Annual Return/Report of Employee Benefit Plan, with the Internal Revenue Service and Department of Labor (DOL), respectively. In our analysis, positive balances of the funding standard account indicate over-funding, while negative balances show a funding deficiency.
- b. The sample consists of 55,745 plan-year observations from 1995-2002 for defined-benefit pension plans filing form 5500 with the U.S. Department of Labor. These observations represent 17,389 defined benefit plans and 13,324 sponsoring firms.
- c. Pre-managed values of the funding standard account balance are the reported funding standard account purged of the experience gain or loss reported in the following year (line 7 of schedule B of IRS form 5500).
- d. Reported funding standard account balances are taken from line 9 of Schedule B to Form 5500.
- e. The difference between the actual and expected number of observations in the indicated interval, divided by the estimated standard deviation of the difference. For a smooth probability distribution, the expected number of observations in an interval is the average of the number of observations in the two immediately adjacent intervals. The computed amount is distributed as a standardized normal random variable.

In panel B of table 3, pre-managed fund balances are replaced by reported amounts. Comparison of the reported fund balance distribution to the pre-managed frequency counts reported in panel A highlights the incremental effect of actuarial bias on reported funding levels. Qualitatively, the distribution of reported funding levels echoes the results for the pre-managed values: the mass of the distribution is in the positive range, and there is a large build-up of observations just to the right of zero. However, the shape of the reported funding level distribution is more pronounced than that of the pre-managed distribution. Fully 98.7% (55,020 of 55,745) of reported fund level balances are positive, and a whopping 44.3% (24,670 of 55,745) fall in the interval immediately to the right of (and including) zero.¹⁰

In contrast with the pre-managed distribution, the reported frequency counts exhibit fewer extreme values (the standard deviation of the reported distribution, 0.116, is significantly lower than the standard deviation of the pre-managed distribution, 0.178; $p < 0.0001$). Comparison of panels A and B of table 3 show that while 4.7% (2,599 of 55,745) of pre-managed observations fall into the three intervals immediately below zero, only 0.3% (169 of 55,745) of the observations in the reported distribution do so. Further, although 29.5% (16,389 of 55,745) of pre-managed observations indicate a funding deficiency, deficiencies are only reported 1.3% (725 of 55,745) of the time. This difference is significant at the 0.0001 level.

Table 3 suggests that managers adjust actuarial choices to eliminate funding deficiencies and to reduce extreme over-funding.¹¹ More specific information regarding the

¹⁰ Compared to the pre-managed distribution, there is an even *greater* continuity at zero for the reported distribution. The standardized difference for the first interval above zero is 180.87 (compared to 124.31 for the pre-managed distribution), while the standardized difference for the first interval below zero is -191.22 (compared to -107.57 for the pre-managed values). This means that there are many fewer small positive observations in the reported distribution than would be expected for a smooth probability distribution, and many more small negative values. While a similar effect is noted in the pre-managed distribution, the relative size of the standardized differences suggests that actuarial choices tend to widen the discontinuity at zero in the distribution of reported funding standard account balances compared to the discontinuity observed using pre-managed values.

¹¹ Qualitatively identical results are obtained for subsets of the sample partitioned by time into "bull" (1995-1999) and "bear" (2000-2002) markets.

prevalence of this activity is provided in panel A of Table 4. Roughly 93% (10,501 of 11,221) of plan-years with pre-managed deficiencies are able to mask the problem in the Form 5500 report. In contrast, only 23 of the 44,534 cases that are fully-funded on a pre-managed basis

Table 4
Cross-tabulation of the Sign of the Funding Standard Account Balance Based on Reported and Pre-managed Results^{a,b}

Panel A: The Effect of Actuarial Choices on the Funding Standard Account Balance in the Current Year

		Frequency Counts for the Reported Funding Standard Account Balance ^c			
		≥ 0	< 0		
Frequency counts for the Pre-Managed Funding Standard Account Balance ^d	≥ 0	44,511	23	44,534	79.9%
	< 0	10,501	710	11,211	20.1%
	Total	55,012	733	45,957	
	%	98.7%	1.3%	100.0%	

Panel B: The Effect of Actuarial Choices on the Funding Standard Account Balance over Two Consecutive Periods

Classification in the Current Year ^e	Number of Observations	Second-Year Classification for Observations in Each Current-Year Group ^e			
		Pass pre-managed/ Pass reported	Pass pre-managed/ Fail reported	Fail pre-managed/ Fail reported	Fail pre-managed/ Pass reported
Pass pre-managed/ Pass reported	21,049	18,012	16	116	2,905
Pass pre-managed/ Fail reported	39	23	1	7	8
Fail pre-managed/ Fail reported	262	114	12	69	67
Fail pre-managed/ Pass reported	6,635	3,325	16	99	3,195
Total	27,985 ^f	21,474	45	291	6,175

Table 4, Continued
Cross-tabulation of the Sign of the Funding Standard Account Balance Based on
Reported and Pre-managed Results^{a,b}

- a. The Internal Revenue Code (IRC) Section 412 and Employee Retirement Income Security Act (ERISA) Section 302 require defined benefit plan sponsors to file Form 5500, Annual Return/Report of Employee Benefit Plan, with the Internal Revenue Service and Department of Labor (DOL), respectively.
- b. The full sample consists of 55,745 firm-year observations from 1995-2002 for defined-benefit pension plans filing form 5500 with the U.S. Department of Labor. These observations represent 17,389 defined benefit plans and 13,324 sponsoring firms.
- c. Reported funding standard account balances are taken from line 9 of Schedule B to Form 5500.
- d. Pre-managed values of the funding standard account balance are the reported funding standard account purged of the experience gain or loss reported in the following year.
- e. "Pass" means to have a non-negative funding standard account balance; "fail" means to have a negative (under-funded) funding standard account balance. "Current year" classification is the funding standard account status of plan *i* in year *t*; second year classification is the status for plan *i* in year *t*+1. For example, of the 21,049 observations where the plan passed the funding standard account on both a current and pre-managed basis in the current period, 18,012 were able to repeat the strategy in the following year.
- f. The full sample consists of 55,745 plan-year observations from 1995-2002. For a subset of 27,985 observations, we are able to determine the funding standard account balance (before and after experience gains/losses) in both the current and subsequent year. For example, an observation from 1995 for plan *i* is part of the full data set of 55,745 if we have 1995 data for the funding standard account and experience gain/loss data in 1996. To be included in the sub-sample of 27,985, we must have data for the 1996 funding standard account data and new experience gain/loss in 1997.

report a funding deficiency. This asymmetrical pattern is inconsistent with random forecast error in plan investment returns and operating costs. While most plans (44,511 of 55,745, or 79.8% of the sample) use cash contributions to achieve full funding levels, in more than one in five sample observations (10,501 of 55,745) *forecast bias alone* results in a reclassification of pre-managed under-funding to full funding on a reported basis.

Our data suggests that managers can hide funding deficiencies at least into the following year. For 27,985 of the full sample of 55,745 plan-year observations, we are able to determine funding standard account balances (before and after actuarial adjustments) in both the current and subsequent year.¹² Panel B of table 4 reports that 6,635 observations from this set of 27,985 have a pre-managed deficiency in year *t* that is eliminated in the Form 5500 report. This strategy is repeated in the year *t*+1 by the majority of plans with continuing deficiencies. Specifically, in 3,294 (99 + 3,195) of the firm-years, the plan again shows a pre-managed deficiency in the subsequent year. Of this set of 3,294 observations, 3,195 (97.0%) successfully manage funding levels to avoid reporting a deficiency. These findings support prediction three. Not only are marginal plans able to successfully mask funding shortfalls by managing discretionary actuarial assumptions and methods, they are often able to sustain this strategy for repeated periods.

¹² For example, if an observation from 1995 for plan *i* is part of the full data set of 45,957, that observation is included in the sub-sample of 27,985 if we also have experience gain/loss data from 1997 to compute pre-managed results for 1996.

CONCLUSION

Our study investigates the degree to which actuarial assumptions hide funding shortfalls in defined-benefit pension plans. We use reports filed with the Department of Labor (DOL) to separate “true” pension funding levels from actuarial bias for a sample of 16,016 defined-benefit pension plans for the years 1995 through 2002. Our results suggest that managers select actuarial assumptions to dampen extreme values of the fund balance and to eliminate funding deficiencies. In many cases, these manipulations mask funding shortfalls for multiple periods.

Optimistic actuarial assumptions can mask problems that ultimately lead plans to seek PBGC protection. However, the long-term viability of the PBGC itself is uncertain. Recent cost figures indicate that the PBGC had a \$18.1 billion deficit at the end of 2006, which increased from \$8.8 billion in August 31, 2003 (PBGC, 2006). While a sharp decline in the stock market was certainly a factor, the GAO concluded that “the current minimum funding rules and other rules designed to encourage sponsors to fully fund their plans were not effective at preventing it from being severely under-funded at termination” (GAO, 2003, p. 3).

REFERENCES

- Asthana, S. 1999. Determinants of funding strategies and actuarial choices for defined-benefit pension plans. *Contemporary Accounting Research* 16 (Spring): 39-74.
- Beaver, W., M. McNichols, and K. Nelson. 2003. Management of the loss reserve accrual and the distribution of earnings in the property-casualty insurance industry. *Journal of Accounting and Economics* 35 (August): 347-376.
- Board of Trustees, Federal Old-Age and Survivors Insurance and Disability Insurance Trust Fund. The 2005 annual report of the board of trustees of the federal old-age and survivors insurance and disability insurance trust funds. <http://www.ssa.gov/OACT/TR/TR02/tr02.pdf>.
- Bulow, J., M. Scholes, and P. Menell. 1983. Economic implications of ERISA. In *Financial Aspects of the United States Pension System*, eds. Z. Bodie and J. B. Shoven, 37-53. Chicago: University of Chicago Press.
- Ippolito, R. 1997. *Pension Plans and Employee Performance: Evidence, Analysis, and Policy*. The University of Chicago Press: Chicago, IL.
- Ippolito, R., and W. James. 1992. LBOs, revelations and implicit contracts. *Journal of Finance* 47,;: 139-167.
- Mittelstaedt, H. F. 1989. An empirical analysis of the factors underlying the decisions to remove excess assets from overfunded pension plans. *Journal of Accounting & Economics* 11 (November): 399-418.
- Pension Benefit Guaranty Corporation, PBGC Release Fiscal Year 2006 Financial Results. <http://www.pbgc.gov/media/news-archive/news-releases/2006/pr07-05.html>
- Thomas, J. 1989. Why do firms terminate their overfunded pension plans? *Journal of Accounting and Economics* 11 (November): 361-398.
- U.S. Department of Labor, Employee Benefits Security Administration. 2007. Private Pension Plan Bulletin Historical Tables: Abstract of 2004 Form 5500 Annual Reports. <http://www.dol.gov/ebsa/pdf/privatepensionplanbulletinhistoricaltables.pdf>.
- U.S. General Accounting Office (GAO). 2003. Pension Benefit Guaranty Corporation: Single-employer pension insurance program faces significant long-term risks. U.S. Government Printing Office, Washington, DC.
- U.S. General Accounting Office (GAO). 2005. Private Pensions: Recent Experience of Large Defined Benefit Plans Illustrate Weaknesses in Funding Rules. U.S. Government Printing Office, Washington, DC.
- Walsh, M., "Bailout Feared if Airlines Shed Their Pensions." *The New York Times*, August 1, 2004.
- Winklevoss, H. 1993. *Pension Mathematics with Numerical Illustrations*. Pension Research Council, Wharton School of the University of Pennsylvania and University of Pennsylvania Press: Philadelphia, PA.

JOURNAL OF BUSINESS ISSUES

EDITORIAL POLICY AND MANUSCRIPT GUIDELINES

The Journal solicits unpublished manuscripts not currently under consideration by another publication. Papers submitted in connection with a formal program may be submitted provided the manuscript does not appear in whole or in part (other than a brief abstract) in the proceedings of the event. Each author must provide the Editor with a statement that the manuscript or a similar one has not been published and is not, nor will be, under consideration for publication elsewhere while being reviewed by the *Journal of Business Issues*. Manuscripts with more than four authors are discouraged.

Manuscripts should be typed on 8½" by 11" good quality white paper and be double-spaced, except for indented quotations. Only one side of the page should be used. Margins of at least one inch from the top, bottom, and sides should facilitate editing and duplication.

Manuscripts should include a cover page which indicates the author's name, address, affiliation, and any acknowledgements. The author should not be identified anywhere else in the manuscript.

Manuscripts should include a separate abstract page not exceeding 250 words. The title but not the author's name and affiliation should appear on the abstract. The abstract should contain a concise statement of the purpose of the manuscript, the primary methods or approaches used, and the significance of the findings and contribution.

In order to be assured of an anonymous review, authors should not identify themselves directly or indirectly in the text of the paper. Reference to unpublished working papers and dissertations should be avoided. If necessary, authors may indicate the reference is being withheld because of self-citation.

Tables, figures, and exhibits should appear on separate pages. Each should be numbered and have a title.

Indent all new paragraphs with a tab. Place two spaces between each sentence. Use tabs to align columns in charts and exhibits rather than spacing over with the space bar.

Footnotes and references should appear at the end of the manuscript. However, every effort should be made to incorporate material into the body of the paper.

Three copies of each manuscript and diskettes containing the manuscript should be submitted. Manuscript copyright will be transferred to the *Journal of Business Issues*.

The *Journal of Business Issues* is a double-blind refereed journal publishing articles of interest to the business community and business faculty members. The journal is an academic journal sponsored by the College of Business at the University of West Florida and dedicated to excellence in Business.

Journal of Business Issues
College of Business
University of West Florida
Pensacola, FL 32514

2007, No. 1

JOURNAL OF BUSINESS ISSUES