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Gender and motives for accountancy

Yasuo Nishiyama, Angelo A. Camillo and Robert C. Jinkens
School of Business, Woodbury University, Burbank, California, USA

Abstract

Purpose – The purpose of this paper is to investigate whether some motives for the choice of an accounting career, disproportionately stronger among women than among men, explain disproportionately more women (60 percent) than men (40 percent) in the accounting profession.

Design/methodology/approach – The ordered probit model is used to analyze online survey data of approximately 580 responses collected from members of the American Institute of Certified Public Accountants.

Findings – This study finds three reasons why more women (than men) enter the accounting profession: locational freedom, social status, and income stability. Women who choose accounting as a career value these three offered by accounting more than do men who choose accounting as a career. These findings represent mainly those of older CPAs (who are older than 50). The finding related to social status is reversed in the case of younger CPAs.

Research limitations/implications – The paper's findings may be limited to some extent because the authors investigate only three motives for the choice of an accounting career. Also, the online survey data may not be generalized to the entire CPA population.

Originality/value – The hypothesis that relates motives for the choice of an accounting career to more women in the accounting profession is carefully derived using Bayes' theorem. This hypothesis is tested by the ordered probit method.

Keywords Gender, Ordered probit, Accounting career, Career motives

Paper type Research paper

Introduction

In 2010, there were more female accountants (60 percent) than male accountants (40 percent) in the USA (Bureau of Labor Statistics, 2011). Why did more women (than men) decide to enter the accounting profession? This paper attempts to answer this question. Our attempt draws from an insight that an explanation of the observed disproportionate (though not extremely disproportionate) gender composition requires similarly disproportionate motivating factors (underlying reasons) between women and men in their decisions to pursue an accounting career. To test this insight, we measure the degree of the influence (in terms of probability), by gender, of these underlying reasons on their decisions, while we control for personality types in this investigation. A greater degree of the influence of a motivating factor is inferred, in this paper, from a higher probability of choosing an accounting career because of this motivating factor.

The paper contributes to, and extends, the literature in three ways. First, using Bayes' theorem, our insight is formalized theoretically and then transformed into a statistical hypothesis. Our derivation of the hypothesis is completely new in the literature. Second, in measuring the degree of the influence of underlying factors on

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career decisions, we use the ordered probit method. To the best of our knowledge, no previous studies have used the ordered probit method on the issues investigated in this paper. Also, no previous studies have measured, or quantified, the degree of the influence of underlying factors, by gender, on career decisions. Third, many of our findings are new in the literature (explained in detail below). In particular, this study finds three reasons why more women (than men) enter the accounting profession: locational freedom, social status, and income stability. Women who choose accounting as a career value these three offered by accounting more than do men who choose accounting as a career. Hence, our study provides a more elaborate answer to the paper's question than casual observations such as "women have become aware of the career opportunities now available in a once male-dominated profession" (Mutchler *et al.*, 1987).

The paper is organized as follows. The next section presents a review of prior studies that are related to this paper's investigation. Then, we explain the derivation of the paper's hypothesis through the application of Bayes' theorem, followed by the description of data used in this study, an explanation of the statistical technique (ordered probit), and the presentation of estimation results. We discuss some limitations of this paper's findings. The last section gives a brief summary of the paper's findings.

Background literature and this paper's investigation

Our investigation is related to three strands of existing research on accountants/ accounting students (see Figure 1):

(1) research on accountants' (or accounting students') personality types;

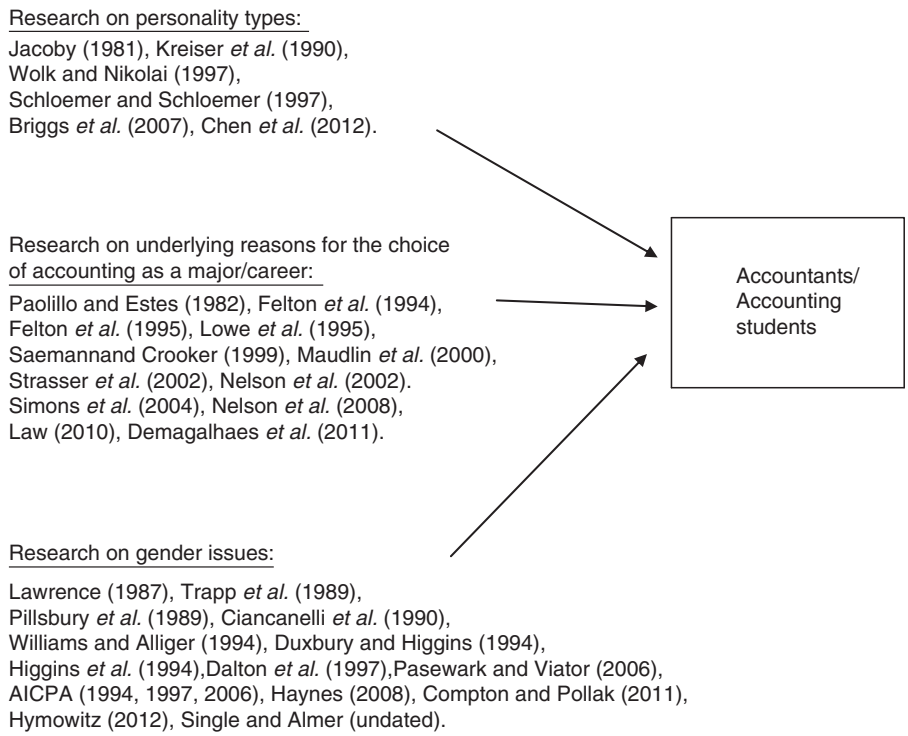


Figure 1.
Three strands of research on accountants/ accounting students

(2) research on the underlying reasons for the choice of accounting as a major/career; and

(3) research on gender issues.

In an attempt to answer the paper's question, we juxtapose these three strands of research.

Research on personality types finds convincing evidence that accountants (and accounting students) are very well characterized, using the Myers-Briggs typology (Myers *et al.*, 2003), as the STJ (sensing-thinking-judging) personality type (selected references in Figure 1). The STJ type, including both ISTJ (introversion STJ) and ESTJ (extraversion STJ), is characterized as practical, organized, logical, and detail-oriented (Myers *et al.*, 2003). It is noted that the STJ type shares similar personality characteristics with the "conventional" type (careful, methodical, orderly, practical) in the Holland's hexagonal model (Holland *et al.*, 1994); however, the STJ type and the conventional type appear to be only moderately correlated (Chen *et al.*, 2012).

Factors that affect the choice of accounting as a major or career have been extensively investigated in the literature, and selected references are shown in Figure 1. (Factors influencing the choice of accounting as a major may not be identical, but are likely related, to those influencing the choice of accounting as a career. We do not carefully distinguish between the two groups of factors in this brief literature review.) A comprehensive survey of the findings by Simons *et al.* (2004) suggests that, although the findings vary, the following factors appear to be consistently found across studies: "earnings" (Paolillo and Estes, 1982; Cohen and Hanno, 1993; Felton *et al.*, 1994, 1995; Lowe and Simons, 1997; Strasser *et al.*, 2002), "availability of employment" (Paolillo and Estes, 1982; Felton *et al.*, 1994), and "interesting subject/exciting profession" (Cohen and Hanno, 1993; Lowe and Simons, 1997; Strasser *et al.*, 2002). Nelson *et al.* (2008) show the results from a longitudinal study (2000 and 2006 surveys) of characteristics of accounting students at 20 major universities. In the 2006 survey (Nelson *et al.*, 2008), both senior accounting majors and graduate students in the professional accounting master's degree program chose "availability of jobs" as the single most influential factor for them to pursue accounting as a major (33.3 and 33.4 percent of senior accounting majors and graduate students in the professional accounting master's degree program, respectively), followed by "money/good salaries" (18.4 and 15.7 percent, respectively) and "interesting/exciting profession" (17.8 and 18.7 percent, respectively).

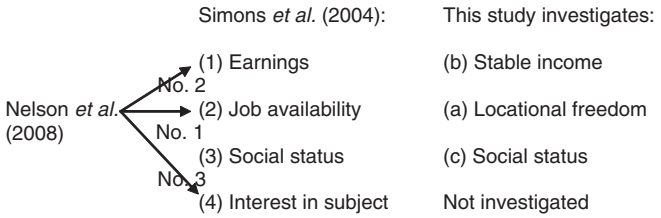
Finally, research on gender issues (primarily issues related to women in the accounting profession) was greatly stimulated by a survey by the American Institute of Certified Public Accountants (AICPA) in 1993 (American Institute of Certified Public Accountants, 1994) (this AICPA survey and other selected references are shown in Figure 1). This survey revealed that an apparent slow upward movement of female professionals was associated with, in part, higher female turnover (Single and Almer, undated). Dalton *et al.* (1997) showed that disproportionate turnover among female accountants in Big 6 firms was due primarily to work/family conflict. Also, Pasewark and Viator (2006) show (based on a web-based survey of CPAs) that females are much more likely than males to experience turnover intentions when their "work interferes with the family" (as opposed to "family interfering with work"). Surprisingly, however, female turnover is in general not higher than male turnover in the 1993 AICPA survey. Subsequent surveys (1997, 1999, and 2004), summarized in the 2006 report (American Institute of Certified Public Accountants

(AICPA), 2006), also show that the turnover for men is actually slightly higher than for women at each level. However, the report (AICPA, 2006) adds the following explanation for this puzzling survey result. "This finding [similar turnover rates between men and women] may be viewed as surprising, given that this survey reveals women are not progressing upwards through the ranks as expected. However, the survey does suggest possible explanations for this finding. Women make up the majority of professionals who are working part-time, are on non-partner career tracks, and are using some form of flexible arrangements. Each of these changes to the work structure or career path likely helps retain women […]."

What underlies women's turnover, likely associated with work/family conflict, is the well-documented fact that women have greater responsibilities than men for house work and childcare (Williams and Alliger, 1994; Duxbury and Higgins, 1994; Higgins *et al.*, 1994; Pasewark and Viator, 2006; Haynes, 2008). More generally (aside from the accounting profession), Hymowitz (2012) notes that, "One study by the American Association for University Women looked at women who graduated from college in 1992-1993 and found that 23 percent of those who had become mothers were out of the workforce in 2003; another 17 percent were working part-time. Fewer than 2 percent of fathers fell into those categories. Another study, of MBA graduates from Chicago's Booth School, discovered that only half of women with children were working full-time ten years after graduation, compared with 95 percent of men." Also, Compton and Pollak (2011) show (aside from the accounting profession) that close geographical proximity to mothers or mothers-in-law has a substantial positive effect on employment of married women with young children.

This study uses survey-response data, a common data collection method in the literature (Simons *et al.*, 2004). We employ the ordered probit estimation method, which is considered most appropriate for the type of data used in this study. Both data and the statistical technique (ordered probit) are explained in detail below. The marginal analysis based on the ordered probit method makes it possible to calculate a woman's probability of choosing an accounting career for a specific reason (e.g. choosing an accounting career because of locational freedom) separately from a man's probability. Then, the disproportionately greater share of women in the accounting profession may be traced to this specific reason if the specific reason contributes to a substantial probability difference between women and men.

We investigate three motivating factors (underlying reasons), shown below, that are selected based on four broad categories of Simons *et al.* (2004) and the results of the longitudinal study summarized by Nelson *et al.* (2008). The order of importance in Nelson *et al.* (2008, Table III) – No. 1, No. 2, and No. 3 – is based on the results of senior accounting majors in the 2006 survey.



The longitudinal study (Nelson *et al.*, 2008) shows that "availability of jobs" is by far the most dominant single factor that influenced students' decisions to pursue

accounting as a major (in the 2006 survey, and for both senior accounting majors and graduate students in the professional accounting master's degree program). "Availability of jobs" may be interpreted as "one can find an accounting job at any time and at any place." "At any place" implies a desired geographic location that may be unrelated to family considerations (e.g. a desired metropolitan location) or related to family considerations (e.g. a desire to be close to one's family). In this study, we investigate "locational freedom" in place of "job availability." We suspect that this motivating factor contributes to a higher women's probability (of choosing an accounting career) if family considerations weigh more heavily on women, and hence a desired geographic location close to the family is a (much) more important factor for women than for men. "Earnings" is cited repeatedly as an important factor in many studies (Simons *et al.*, 2004) and also in the longitudinal study (Nelson *et al.*, 2008). Therefore, we investigate "stable income." In addition, we investigate "social status" (or prestige), although previous studies generally do not find it as an important factor (e.g. Giacomino and Akers, 1998; Nelson *et al.*, 2008). The last category of Simons *et al.* (2004), "interest in subject," was not surveyed and is not investigated in this study. Given the finding of Lowe and Simons (1997) that the inherent nature of the subject matter is more important for female accounting majors (than male majors), this omission may limit our findings. However, the omission does not affect the paper's results at all.

Derivation of the hypothesis and claim

Figure 2 shows the derivation. The following notations are used:

$P(M)$	denotes the (prior) probability that a randomly selected person is a male.
$P(F)$	denotes the (prior) probability that a randomly selected person is a female.
$P(Y\|M)$	denotes the (conditional) probability that a randomly selected person says, "Yes," given that the person is a male.
$P(Y\|F)$	denotes the (conditional) probability that a randomly selected person says, "Yes," given that the person is a female.
$P(M\|Y)$	denotes the (posterior) probability that a randomly selected person is a male, given that the person said, "Yes."
$P(F\|Y)$	denotes the (posterior) probability that a randomly selected person is a female, given that the person said, "Yes."

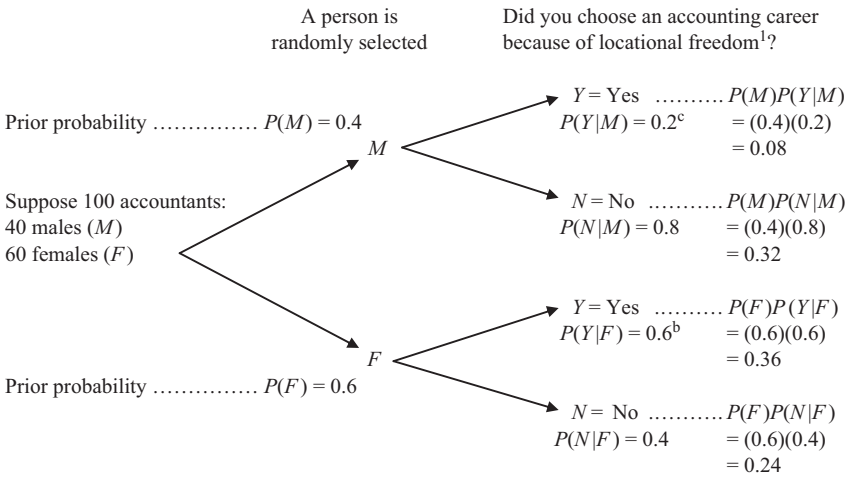
Suppose there are 100 accountants, 40 males and 60 females, thus reflecting the observed reality that 60 percent of accountants are women. Suppose there are only two reasons, Y and N (for example, Y represents locational freedom, and N represents all other reasons combined – other than Y), why a person becomes an accountant. Suppose there is a high probability, 60 percent (a lower probability, 20 percent), that Y motivates women (men) to enter the accounting profession. Conversely, suppose there is a high probability, 80 percent (a lower probability, 40 percent), that N motivates men (women) to enter the accounting profession. Among those (men and women) who entered the accounting profession because of Y, we expect to observe that 82 percent are women, i.e. $36/44 \approx 0.82$ (see Figure 2). That is, if Y is the sole reason why a person (male or female) becomes an accountant, then 82 percent of individuals in the accounting profession are women. Similarly, if N is the sole reason why a person (male or female) becomes an accountant, then only 43 percent of individuals in the accounting profession are women, i.e. $24/56 \approx 0.43$ (see Figure 2). The motivating reason Y (when both Y and N are considered) raises

Suppose there are 100 accountants, 40 males and 60 females, which reflects the observed reality of 60 percent women. Suppose there are only two reasons, Y and N (for example, Y represents locational freedom[a], and N represents all other reasons combined – other than Y), why a person becomes an accountant. Suppose there is a high probability, 60 percent[b] (a lower probability, 20 percent[c]), that Y motivates women (men) to enter the accounting profession. Conversely, suppose there is a high probability, 80 percent (a lower probability, 40 percent), that N motivates men (women) to enter the accounting profession.

	Y	N	Total
M (Male)	8 (= 40 × 0.2)	32 (= 40 × 0.8)	40
F (Female)	36 (= 60 × 0.6)	24 (= 60 × 0.4)	60
Total	44	56	100

Among those (men and women) who entered the accounting profession because of Y, we expect to observe that 82 percent are women ($36/44 \approx 0.82$). That is, if Y is the sole reason why a person (male or female) becomes an accountant, then 82 percent of the accounting profession are women. Similarly, if N is the sole reason why a person (male or female) becomes an accountant, then only 43 percent of the accounting profession are women ($24/56 \approx 0.43$). The motivating reason Y (when both Y and N are considered) raises the proportion of women in the accounting profession from 43 percent to the observed reality of 60 percent. Hence, the reason why we observe more women in the accounting profession (60 percent) is Y. This paper's objective is to find a reason (or reasons) such as Y.

Formal Derivation Using Bayes' Theorem



Having learned that a person (who was randomly selected) chose an accounting career because of locational freedom, what is the probability that the person is a female?

Figure 2.
Derivation of hypothesis and claim

(*continued*)

Posterior probability … $P(F|Y) = P(F)\,P(Y|F) / [P(M)\,P(Y|M) + P(F)P(Y|F)] = 0.36/0.44 \approx 0.82$

Having learned that a person (who was randomly selected) chose an accounting career because of reasons other than locational freedom, what is the probability that the person is a female?

Posterior probability … $P(F|N) = P(F)\,P(Y|N) / [P(M)\,P(N|M) + P(F)P(N|F)] = 0.24/0.56 \approx 0.43$

Hypothesis

$P(F|Y) > P(F) = 0.6 > P(F|N)$, or equivalently,[d] $P(Y|F) > P(Y|M)$

If Y is the sole reason why a person (male or female) becomes an accountant, then 82 percent of the accounting profession are women, i.e., $P(F|Y) = 0.82$. If N (all other reasons combined) is the sole reason why a person (male or female) becomes an accountant, then only 43 percent of the accounting profession are women, i.e., $P(F|N) = 0.43$. The hypothesis implies that the motivating reason Y (when both Y and N are considered) raises the proportion of women in the accounting profession from 43 percent ($P(F|N) = 0.43$) to the observed reality of 60 percent($P(F) = 0.6$).

Claim

Alternatively stated, the hypothesis (if supported) implies that Y brings more women into the accounting profession. Hence, the fact that the accounting profession has disproportionately more women can be traced to a disproportionately stronger preference of women for this reason Y (locational freedom).

Paper's Objective

First we estimate $P(Y|F)$ and $P(Y|M)$, and then we examine whether $P(Y|F) > P(Y|M)$ holds. If $P(Y|F) > P(Y|M)$ holds, then the hypothesis (and hence the claim) is supported. We investigate three motivating reasons, i.e., Y: locational freedom, income stability, and social status.

[a] In addition to locational freedom, we also invest igate income stability and social status.
[b] The paper's actual estimate is 60.7 percent (shown in Table IV).
[c] The paper's actual estimate is 21.8 percent (shown in Table IV).
[d] It can be easily proved (using the posterior probability formula) that $P(F|Y) > P(F) \Leftrightarrow P(Y|F) > P(Y|M)$, and $P(F) > P(F|N) \Leftrightarrow P(Y|F) > P(Y|M)$.

Figure 2.

the proportion of women in the accounting profession from 43 percent to the observed reality of 60 percent. Hence, the reason why we observe more women in the accounting profession (60 percent) is Y. This paper's objective is to find a reason (or reasons) such as Y.

The paper's hypothesis and claim can be formally developed using Bayes' theorem. Given 60 female and 40 male accountants (thereby reflecting the observed reality of 60 percent women), the prior probabilities are $P(M) = 0.4$ and $P(F) = 0.6$. Assume $P(Y|M) = 0.2$ (the paper's actual estimate = 0.218 in Table IV) and $P(Y|F) = 0.6$ (the paper's actual estimate = 0.607 in Table IV) when the specific reason for choosing an accounting career is locational freedom. Among those who chose an accounting career because of locational freedom, the proportion of females, or the posterior probability, is $P(F|Y) \approx 82$ percent (see Figure 2). That is, if locational freedom is the sole reason why a person (male or female) becomes an accountant, then 82 percent of the accounting profession are women. Similarly, if other reasons collectively are the

sole reason why a person (male or female) becomes an accountant, then only 43 percent of the accounting profession are women or $P(F|N) \approx 0.43$ (see Figure 2). The motivating reason, locational freedom, raises the proportion of women in the accounting profession from 43 percent to the observed reality of 60 percent. In other words, locational freedom motivates more women to enter the accounting profession, thereby contributing to a disproportionate number of women in the accounting profession (the paper's claim). Hence, the paper's hypothesis is $P(F|Y) > P(F) = 0.6 > P(F|N)$. However, using the posterior probability formula, it can be easily proved that $P(F|Y) > P(F) \Leftrightarrow P(Y|F) > P(Y|M)$, and that $P(F) > P(F|N) \Leftrightarrow P(Y|F) > P(Y|M)$. Therefore, our main goal in this paper is to calculate, and find out any disproportionate differences between $P(Y|F)$ and $P(Y|M)$. The greater the difference between $P(Y|F)$ and $P(Y|M)$, the greater the contribution of Y (locational freedom) to the higher number of women in the accounting profession. In addition to locational freedom, we also investigate income stability and social status.

Finally, it is noted that the observed gender composition (60 and 40 percent) is the net result, i.e. the number of women (men) who entered the accounting profession minus the number of women (men) who left the profession. The explanation in this section does not consider those who leave the accounting profession. This omission may be justified, however, because turnover rates of men and women appear very similar in the AICPA survey (as explained in the introduction).

Survey data

During July-August 2011, we collected e-mail addresses of approximately 5,000 members of the AICPA from the AICPA web site (www.aicpa.org/Pages/Default.aspx). These e-mail addresses were available under "For the Public" (by clicking on "Find A CPA," and then clicking on, for example, "Certified in Financial Forensics (CFF) Credential Holders" and choosing a state). An e-mail survey invitation letter with a link to the survey web site was sent to these e-mail addresses; however, only 3,369 members had active e-mail accounts. We received 582 responses (462 males and 120 females), a response rate of approximately 17 percent. However, 11 male responses had missing values and were not usable and, hence, 571 responses are used in this study. The web survey responses were downloaded into an Excel spreadsheet. This survey was originally designed for several research purposes and hence included a variety of questions. Only a portion of the survey is relevant to this study.

There are several issues related to the survey data that serve as a caveat to conclusions drawn in this paper. First, in contrast to a random sample obtained from the well-defined population, a convenience survey (or a non-probability sample), such as one in this study, entails a problem of generalizing results to the entire CPA population of which the sample is assumed to be representative. Namely, survey respondents (or self-selected volunteers) may not be representative of the entire CPA population. Second, as are common to all internet-based surveys, the following issues (Fricker and Schonlau, 2002; Bryman and Bell, 2011) also apply to the survey data in this paper. There is an issue of data quality measured by the number of respondents with missing items. However, this problem is considered to be minimal in this paper because our survey data have only 11 male responses that have missing values. There is an issue of honesty in the responses, particularly when survey questions are sensitive in nature. Again, this problem is considered to be minimal in this paper because survey questions are not considered to be sensitive in nature. Nevertheless,

the survey had to rely on the integrity of respondents, or CPAs, whereby presumably survey responses were accurately entered and the questionnaire was not mischievously completed. Third, our sample data (462 males and 120 females, or approximately 80 and 20 percent, respectively) may appear unbalanced for the paper's investigation into disproportionately more women (60 percent) than men (40 percent). This issue of unbalanced data are discussed below (in the last two paragraphs in the Estimation resultssection).

Table I shows the detail of the questionnaire used in this study, together with variable definitions, sample frequencies, and sample averages. First, a respondent was asked to choose one of five choices for each statement: 1 (totally disagree), 2 (slightly disagree), …, 5 (totally agree). There were three statements, (a) through (c), which read, "I chose an accounting career because of (a) locational freedom, (b) stable income, and (c) social status." The statements, (a) through (c), are compactly rephrased statements of the following original questionnaire statements: "To what extent do you agree that the following factors influenced your decision to become an accountant? (a) I study accounting in order to pursue job opportunity in a desired geographic location. (b) I chose accounting due to its stable income base. (c) Accounting has social status." Next, the respondent indicated his or her gender and cumulative GPA.

There were nine personal trait questions ((3) through (11) in Table I) to which the respondent answered either yes or no. (One personal trait question in the original questionnaire was dropped from this study due to its relative unimportance.) In our investigation, some of these personal trait questions (x_4, x_5, x_6, and x_7 variables) serve as control variables. As discussed in the review of background literature, the predominant personality type of accountants/accounting students is STJ. In particular, ISTJ appears to be the most common type (Jacoby, 1981; Kreiser *et al.*, 1990; Schloemer and Schloemer, 1997; Wolk and Nikolai, 1997; Briggs *et al.*, 2007). According to Myers *et al.* (2003, p. 64), characteristics frequently associated with ISTJ are described as: "Quiet, serious, earn success by thoroughness and dependability. Practical, matter-of-fact, realistic, and responsible. Decide logically what should be done and work toward it steadily, regardless of distractions. Take pleasure in making everything orderly and organized – their work, their home, their life. Value traditions and loyalty." Our survey results are indeed consistent with the ISTJ type. For example, 64.9 percent of surveyed CPAs said "Yes" to "I am organized" (x_4 variable); 68.0 percent, "Yes" to "I am practical" (x_6 variable); and 80.4 percent, "Yes" to "I am logical" (x_7 variable). Not consistent with the ISTJ type is the low 27.8 percent who said "Yes" to "I like a detailed workplace." This result is contrary to work environment preferences of ISJ types who "like an established order of doing things" and "are patient with routine details" (Myers *et al.*, 2003, p. 287). In our estimation (below), we consider these ISTJ characteristics jointly with the gender difference in each specific-reason accounting career choice, that is, we control for the ISTJ personality characteristics.

Table II shows survey respondents' year of age, years in the accounting profession, and positions. Approximately 70 percent of survey respondents are older than 50; 80 percent of them have spent more than 20 years in the accounting profession; and many of them (55 percent) are partners.

Estimation method

The ordered discrete-choice model: the ordered probit model

We employ an ordered discrete-choice model, which is commonly used for the type of data in this study. The model is explained as follows (for details, see Greene, 2008).

Table I.
Variable definitions, sample frequencies, and sample averages

Survey statement		*Response*			
Definition: dependent variable					
I chose an accounting career because of:	Totally disagree	Slightly disagree	Neutral	Slightly agree	Totally agree
(a) Locational freedom	$y_a = 1$	2	3	4	5
(b) Stable income	$y_b = 1$	2	3	4	5
(c) Social status	$y_c = 1$	2	3	4	5
Definition: predictors or individual characteristics (gender, GPA, personality traits)					
(1) Gender	(Gender)	$x_1 = 1$ (male)		2 (female)	
(2) Cumulative accounting GPA	(GPA)	$x_2 = 1$ (2.50-2.75)		2 (2.75-3.00)	
		3 (3.00-3.25)		4 (3.25-3.50)	
		5 (3.50-3.75)		6 (3.75-4.00)	
(3) I like to work with numbers	(Number)	$x_3 = 0$ (if no)		1 (if yes)	
(4) I am organized (ISTJ[b])	(Organized)	$x_4 = 0$ (if no)		1 (if yes)	
(5) I like a detailed workplace (ISTJ[b])	(Detail)	$x_5 = 0$ (if no)		1 (if yes)	
(6) I am practical (ISTJ[b])	(Practical)	$x_6 = 0$ (if no)		1 (if yes)	
(7) I am logical (ISTJ[b])	(Logical)	$x_7 = 0$ (if no)		1 (if yes)	
(8) I am skilled in finance & math	(Math)	$x_8 = 0$ (if no)		1 (if yes)	
(9) I have computer skills	(Computer)	$x_9 = 0$ (if no)		1 (if yes)	
(10) I like to reconcile financial statements	(Statement)	$x_{10} = 0$ (if no)		1 (if yes)	
(11) I like to make financial decisions	(Decision)	$x_{11} = 0$ (if no)		1 (if yes)	

(*continued*)

Table I.

Variable (sample frequency)		*Sample average*[a]
(a) $y_a = 1$ (54), 2 (42), 3 (132), 4 (168), 5 (175)		3.6444
(b) $y_b = 1$ (36), 2 (18), 3 (78), 4 (228), 5 (211)		3.9807
(c) $y_c = 1$ (36), 2 (24), 3 (84), 4 (192), 5 (235)		3.9912
(1) Gender	$x_1 = 1$ (462), 2 (120)	1.2061
(2) GPA	$x_2 = 1$ (6), 2 (54), 3 (82), 4 (116), 5 (138), 6 (186)	4.5189
(3) Number	$x_3 = 0$ (192), 1 (390)	0.6701
(4) Organized	$x_4 = 0$ (204), 1 (378)	0.6494
(5) Detail	$x_5 = 0$ (420), 1 (162)	0.2783
(6) Practical	$x_6 = 0$ (186), 1 (396)	0.6804
(7) Logical	$x_7 = 0$ (114), 1 (468)	0.8041
(8) Math	$x_8 = 0$ (192), 1 (390)	0.6701
(9) Computer	$x_9 = 0$ (228), 1 (354)	0.6082
(10) Statement	$x_{10} = 0$ (414), 1 (168)	0.2886
(11) Decision	$x_{11} = 0$ (222), 1 (360)	0.6185

Notes: [a]The number of observations for the y and x variables is 571 and 582, respectively. There are 11 missing values in the case of the y variables ((a), (b), and (c)); [b]these characteristics are frequently associated with the ISTJ type (introverted sensing-thinking-judging)
Source: (see Myers *et al.*, 2003, pp. 65-67)

	Frequency	%
Age		
21-30	18	3.1
31-40	36	6.2
41-50	113	19.4
>50	415	71.3
Years in the accounting profession		
2-4 years	25	4.3
5-7 years	6	1.0
8-10 years	24	4.1
10-15 years	25	4.3
15-20 years	37	6.4
More than 20 years	465	79.9
Positions		
Chief accountant	6	1.0
CFO (Chief Financial officer)	19	3.3
Tax sector	57	9.8
Staff accountant	13	2.2
Assistant controller	3	0.5
Assistant treasurer	1	0.2
Partner	322	55.3
Risk/insurance manager	11	1.9
Proprietor	56	9.6
Financial planning consultant	1	0.2
Solo practice	11	1.9
Others	64	11.0
No response	18	3.1

Table II. Survey respondents' years of age, years in the accounting profession, and positions

We assume that a respondent's strength of his/her feeling to a statement, for example, "I chose an accounting career because of locational freedom" is represented by a point on the entire continuous real line ($-\infty$ to $+\infty$). This feeling (denoted by y^*) is not observable by the analyst (us). Instead, we observe the response in the form of a discrete choice ($y = 1$ or 2 or 3 or 4 or 5). Each choice represents a range of the real line that is partitioned by "thresholds":

$$\begin{aligned} y = 1 &= \text{totally disagree}, && \text{if } y^* \leqslant \mu_1 \\ = 2 &= \text{slightly disagree}, && \text{if } \mu_1 < y^* \leqslant \mu_2 \\ = 3 &= \text{neutral}, && \text{if } \mu_2 < y^* \leqslant \mu_3 \\ = 4 &= \text{slightly agree}, && \text{if } \mu_3 < y^* \leqslant \mu_4 \\ = 5 &= \text{totally agree}, && \text{if } \mu_4 < y^*. \end{aligned}$$

where μ_i's are thresholds. The latent (unobserved) variable y^* is expressed as a linear combination of individual characteristics (gender, GPA, personality traits):

$$y^* = x'\beta + \varepsilon$$

where x is a vector of individual characteristics ($x_1, x_2, \ldots, x_{11}$), β is a vector of coefficients that are estimated, and ε is the iid standard normal variate. It is noted that a constant term is suppressed in order to achieve parameter identification. Then the probability of observing each value of y is given by:

$$P(y = 1|x) = \Phi(\mu_1 - x'\beta)$$

$$P(y=2|x) = \Phi(\mu_2 - x'\beta) - \Phi(\mu_1 - x'\beta)$$

$$P(y=3|x) = \Phi(\mu_3 - x'\beta) - \Phi(\mu_2 - x'\beta)$$

$$P(y=4|x) = \Phi(\mu_4 - x'\beta) - \Phi(\mu_3 - x'\beta)$$

$$P(y=5|x) = 1 - \Phi(\mu_4 - x'\beta)$$

where Φ denotes the cumulative distribution function of ε. The coefficients β and unknown parameters μ_i (the thresholds) are estimated by the maximum likelihood method.

Estimation of $P(Y|F)$ and $P(Y|M)$

Two clarifications are warranted. First, note the following. In the case of males, simply replace "F" by "M" and "$x_1 = 2$" by "$x_1 = 1$" below.

$P(Y|F)$ denotes the probability that a person says "Yes" (to a question, e.g. "Did you choose an accounting career because of locational freedom?"), given that the person is a female.

$P(y=5|x_1=2) =$ (all other x's are held constant) denotes the probability that a person "totally agrees ($y=5$)" (with a statement, e.g. "I chose an accounting career because of locational freedom."), given that the person is a female ($x_1 = 2$).

We assume $P(Y|F) = P(y=5|x_1=2,$ all other x's are held constant).

The assumption above may be justified because respondents were already CPAs when the survey was conducted, and they strongly agreed with a statement. Because the paper's hypothesis is $P(Y|F) > P(Y|M)$ (explained above), we exclusively focus only on $P(y=5|x)$ in the remainder of this paper.

Second, note that the ordered probit model gives $P(y=5|x_1=2,$ all other x's are held constant$) = P(Y|F)$, whereas sample relative frequencies give $P(y=5|x_1=2,$ other x's are not held constant$) \neq P(Y|F)$. In testing the paper's hypothesis, it is critical that the difference between $P(Y|F)$ and $P(Y|M)$ comes from the gender difference only ($x_1 = 1$ or 2). Therefore, sample relative frequencies, though informative, are not appropriate for the paper's objective because other factors (other x's) may be affecting $P(y=5)$ in addition to the gender difference ($x_1 = 1$ or 2).

Estimation results

Table III shows the estimation results. There are four personal characteristics that are significantly related to the choice of an accounting career regardless of underlying reasons (locational freedom, income stability, social status): x_1, x_2, x_3, and x_{11}. In addition, some of the ISTJ-type variables (x_5, x_6, x_7, and x_{10} variables) are significantly related to the choice of an accounting career but not across all underlying reasons. Table IV shows marginal effects, or partial effects, which are calculated by changing the value of a particular x_i variable ($i = 1$, 2, 3, or 11) while keeping the values of the rest of x variables unchanged. For example, we can find a gender difference in the probability of choosing an accounting career for a specific reason (e.g. "I chose an accounting career because of locational freedom") by calculating $P(y=5)$ when $x_1 = 1$ (male) and $x_1 = 2$ (female), separately, while keeping the values of all other x variables (ten variables) unchanged. Hence, the probability difference between $P(y=5|x_1=1)$ and $P(y=5|x_1=2)$ is due solely to the gender

Statement		*Response*	
"I chose an accounting career because of locational freedom"		$y_a = 1, 2, 3, 4,$ or 5	
"I chose an accounting career because of income stability"		$y_b = 1, 2, 3, 4,$ or 5	
"I chose an accounting career because of social status"		$y_c = 1, 2, 3, 4,$ or 5	
Variable	*y_a equation Coefficient (SE)*	*y_b equation Coefficient (SE)*	*y_c equation Coefficient (SE)*
Gender			
x_1	1.0479**	0.4877**	0.9925**
	(0.1413)	(0.1372)	(0.1428)
GPA			
x_2	−0.0854*	−0.1265**	−0.1167**
	(0.0380)	(0.0396)	(0.0400)
Number			
x_3	0.5510**	0.6281**	0.6575**
	(0.1226)	(0.1254)	(0.1265)
Organized			
x_4	−0.0163	−0.0306	0.0059
	(0.1151)	(0.1143)	(0.1143)
Detail			
x_5	−0.8185**	−0.1780	0.2169
	(0.1213)	(0.1202)	(0.1236)
Practical			
x_6	0.4483**	−0.0860	0.2933*
	(0.1141)	(0.1160)	(0.1145)
Logical			
x_7	−0.2531	−0.2962*	−0.5295**
	(0.1369)	(0.1438)	(0.1421)
Math			
x_8	0.0005	−0.1320	−0.0801
	(0.1101)	(0.1100)	(0.1123)
Computer			
x_9	−0.0769	0.0455	−0.0240
	(0.1047)	(0.1060)	(0.1071)
Statement			
x_{10}	0.0356	0.0387	−0.4724**
	(0.1258)	(0.1273)	(0.1276)
Decision			
x_{11}	−0.6209**	−0.5146**	−0.2342*
	(0.1086)	(0.1085)	(0.1083)
Log likelihood	−774.5420	−691.9948	−703.2134
Restricted log likelihood	−842.7786	−736.3697	−754.4489
LR statistic ($\chi^2_{(11)}$ statistic)	136.4733**	88.7497**	102.4711**
Convergence[a]	4	5	4

Table III.
Ordered probit estimation results

Notes: [a]Number of observations = 571. [a]Number of iterations. All starting values are set to zero. **,*Statistical significance at the 1 and 5 percent levels, respectively (z-tests)

difference. Table V shows marginal effects that are broken down into two age groups: survey respondents whose years of age are below, or equal to, 50 (call this group "the younger generation") and those whose years of age are above 50 (call this group "the older generation"). Approximately 70 percent of survey respondents belong to the older generation (see Table II).

Statement			*Response*
"I chose an accounting career because of locational freedom"			$y_a = 5$ (totally agree)
"I chose an accounting career because of income stability"			$y_b = 5$ (totally agree)
"I chose an accounting career because of social status"			$y_c = 5$ (totally agree)
Variable[a]	*y_a equation* $P(y_a = 5 \mid x)$[b]	*y_b equation* $P(y_b = 5 \mid x)$[b]	*y_c equation* $P(y_c = 5 \mid x)$[b]
$x_1 = 1$	$21.8\% = P(Y \mid M)$	$32.1\% = P(Y \mid M)$	$32.4\% = P(Y \mid M)$
$x_1 = 2$	$60.7\% = P(Y \mid F)$	$50.9\% = P(Y \mid F)$	$70.4\% = P(Y \mid F)$
Change	+38.9%	+18.8%	+38.0%
$x_2 = 1$	39.7%	53.2%	56.3%
$x_2 = 6$	24.6%	29.0%	33.6%
Change	−15.1%	−24.2%	−22.7%
$x_3 = 0$	17.6%	21.6%	24.5%
$x_3 = 1$	35.2%	43.7%	48.6%
Change	+17.6%	+22.1%	+24.1%
$x_{11} = 0$	43.0%	48.1%	45.8%
$x_{11} = 1$	21.2%	28.7%	36.7%
Change	−21.8%	−19.4%	−9.1%

Notes: [a]$x_1 = 1$ (male), 2 (female); $x_2 = 1$ (GPA = 2.50-2.75), 6 (GPA = 3.75-4.00); $x_3 = 0$ if no, 1 if yes ("I like to work with numbers"); $x_{11} = 0$ if no, 1 if yes ("I like to make financial decisions"); [b]all other variables are held at their sample means

Table IV.
Marginal effects

Statement		*Response*	
"I chose an accounting career because of locational freedom"		$y_a = 5$ (totally agree)	
"I chose an accounting career because of income stability"		$y_b = 5$ (totally agree)	
"I chose an accounting career because of social status"		$y_c = 5$ (totally agree)	
Variable[a]	*y_a equation* $P(y_a = 5 \mid x)$[b]	*y_b equation* $P(y_b = 5 \mid x)$[b]	*y_c equation* $P(y_c = 5 \mid x)$[b]
		All ages[c]	
Coefficient of x_1 variable[d]	1.0479**	0.4877**	0.9925**
$x_1 = 1$	$21.8\% = P(Y \mid M)$	$32.1\% = P(Y \mid M)$	$32.4\% = P(Y \mid M)$
$x_1 = 2$	$60.7\% = P(Y \mid F)$	$50.9\% = P(Y \mid F)$	$70.4\% = P(Y \mid F)$
Change	+38.9%	+18.8%	+38.0%
		Ages ⩽ 50	
Coefficient of x_1 variable[e]	0.9833**	−0.0500	−0.7784*
$x_1 = 1$	$12.3\% = P(Y \mid M)$	$29.5\% = P(Y \mid M)$	$57.6\% = P(Y \mid M)$
$x_1 = 2$	$42.9\% = P(Y \mid F)$	$27.8\% = P(Y \mid F)$	$27.9\% = P(Y \mid F)$
Change	+30.6%	−1.7%	−29.7%
		Ages > 50	
Coefficient of x_1 variable[e]	1.0612**	0.4456*	1.5226**
$x_1 = 1$	$22.5\% = P(Y \mid M)$	$35.0\% = P(Y \mid M)$	$30.2\% = P(Y \mid M)$
$x_1 = 2$	$62.0\% = P(Y \mid F)$	$52.4\% = P(Y \mid F)$	$84.2\% = P(Y \mid F)$
Change	+39.5%	+17.4%	+54.0%

Notes: [a]$x_1 = 1$ (male), 2 (female). [b]all other variables are held at their sample means. [c]from Table IV; [d]from Table III. [e]only the coefficient of the x_1 variable (from the estimation results of each equation) is shown in this table. The complete estimation results are available from the corresponding author upon request. **,*Statistical significance at the 1 and 5 percent levels, respectively (*z*-tests)

Table V.
Marginal effects by age groups

The results shown in Table IV provide clear support for the paper's hypothesis.

Locational freedom: $P(Y|F) = 0.607 > P(Y|M) = 0.218 \Rightarrow$ Support for the hypothesis.
Income stability: $P(Y|F) = 0.509 > P(Y|M) = 0.321 \Rightarrow$ Support for the hypothesis.
Social status: $P(Y|F) = 0.704 > P(Y|M) = 0.324 \Rightarrow$ Support for the hypothesis.

First, the probability that a person chooses an accounting career because of locational freedom rises by approximately 40 percent (38.9 percent in Table IV) if the person is a female, that is, $P(Y|F) - P(Y|M) \approx 0.40$. If locational freedom is interpreted as the availability of jobs in conjunction with the importance of the family, this finding is consistent with Trapp *et al.* (1989), Pasewark and Viator (2006), and Nelson *et al.* (2008). It is well documented that work-family conflict is more acutely felt by women than men, i.e. women have more responsibilities than men for housework and childcare (Williams and Alliger, 1994; Duxbury and Higgins, 1994; Higgins *et al.*, 1994; Pasewark and Viator, 2006; Haynes, 2008). Hence, presumably women prefer a shorter commute and a work location near their families. Then, locational freedom appears to be one of the motivating factors that brings more women into the accounting profession, thereby contributing to the disproportionately greater share of women (60 percent). This finding remains unchanged when survey respondents are divided into the younger generation ($P(Y|F) - P(Y|M) \approx 0.30$) and the older generation ($P(Y|F) - P(Y|M) \approx 0.40$), as shown in Table V.

Second, the probability that a person chooses an accounting career because of social status rises by approximately 40 percent (38.0 percent in Table IV) if the person is a female, that is, $P(Y|F) - P(Y|M) \approx 0.40$. This finding is new and quite interesting. Note that survey respondents were already CPAs when our survey was conducted. That is, the respondents had experienced (prior to our survey) how society viewed their profession. Based on their experiences, the respondents "totally agreed" with the social status of the accounting profession. This finding implies that society indeed categorizes accounting as a prestigious profession and that women appreciate this aspect much more than men do. Hence, social status appears to be another important motivating factor that brings more women into the accounting profession, thereby contributing to the disproportionately greater share of women (60 percent). Surprisingly, however, this finding applies to only the older generation, as shown in Table V. For the younger generation, the probability that a person chooses an accounting career because of social status is higher if the person is a male ($P(Y|M) = 57.6$ percent $> P(Y|F) = 27.9$ percent).

Third, the probability that a person chooses an accounting career due to income stability rises by approximately 20 percent (18.8 percent in Table IV) if the person is a female. This finding, that women consider income stability more important in their decisions to pursue an accounting career than men do, runs counter to the traditional view. Traditionally, men have been the breadwinners in American families, and therefore income stability has been considered primarily men's concern (Leppel *et al.*, 2001). However, our results appear to suggest that times are changing with the rising importance of women's earnings in the family, which is relevant both to dual-earner couples and, clearly more so, to single mothers. However, this finding applies to only those accountants whose years of age are above 50, i.e. the older generation. Table V shows that $P(Y|F) \approx P(Y|M)$ in the case of the younger generation, that is, the probability that a person chooses an accounting career because of income stability is approximately the same between younger male and female accountants.

Fourth, the probability that a person totally agrees with a statement, "I chose accounting because of locational freedom or income stability or social status," declines if the person is academically a top achiever (GPA = 3.75-4.00) rather than an underachiever (GPA = 2.50-2.75), noting that no gender distinction is made here. For example, the probability that a person chooses an accounting career (because of income stability or social status) is approximately 30 percent (29.0 or 33.6 percent in Table IV) if the person is a top academic achiever, but it is approximately 55 percent (53.2 or 56.3 percent in Table IV) if the person is an underachiever.

Fifth and not surprisingly, the personality trait of loving numbers is significantly related to the choice of an accounting career. A person's liking for numbers increases the probability of choosing an accounting career (because of income stability or social status) by approximately 20-25 percent (22.1 and 24.1 percent in Table IV). Perhaps a little surprisingly the personality trait for liking to make financial decisions decreases the probability of the person's choosing an accounting career (across all reasons). Interpreting differently, there is a greater probability that a person chooses an accounting career (across all reasons) if the person is a decision averter and/or likes to be subordinate to a decision maker.

Sixth, some of the control variables that represent the ISTJ personality type are statistically significant, but their effects on the probability of choosing an accounting career are mixed. Being organized (x_4 variable) is statistically insignificant. The personality trait of orientation to detail (x_5 variable) lowers the probability of choosing an accounting career (because of locational freedom). Similarly, being logical (x_7 variable) also lowers the probability of choosing an accounting career (because of income stability or social status). These two results run counter to the common characterization of accountants, i.e., the ISTJ type (explained above, and also see table 12.9: occupational trends of the 16 Types in Myers *et al.*, 2003). Being practical (x_6 variable) raises the probability of choosing an accounting career (because of locational freedom or social status). This result is consistent with the common characterization of accountants. In sum, no definite conclusion can be drawn regarding the relationships between the ISTJ type and accounting career decisions. The relationships appear to be influenced by underlying reasons because statistical significance varies among different underlying reasons for the same personality characteristic (e.g. being organized).

Seventh, a cautionary interpretation is warranted for the first three findings above. The sample correlation coefficients are: $\text{corr}(y_a,y_b) = 0.25$, $\text{corr}(y_a,y_c) = 0.14$, and $\text{corr}(y_b,y_c) = 0.79$ where corr denotes the correlation coefficient. Hence, at a practical level, survey participants' responses to "I chose an accounting career because of locational freedom" (i.e. y_a) are likely not related to considerations for other career motives (i.e. y_b and y_c). However, a high correlation between y_b and y_c suggests that "income stability" and "social status" may be joint motives for the choice of an accounting career and, hence, equally valued by many survey respondents. Indeed, the estimation results of both equations (y_b equation and y_c equation) in Table III are very similar (except for the x_{10} variable), and the log likelihood values of the two equations are almost the same. Under the interpretation of joint motives, one of the two equations may possibly be redundant, while the remaining equation may represent both motives. However, the interpretations discussed above remain unchanged.

Finally, the issue of unbalanced data are mentioned in the "Survey data" section above. In general, more male observations (than female observations) cause the

parameter estimates to be biased toward male observations. However, the main interest in this paper is to calculate $P(Y|M) = P(y = 5|x_1 = 1$, all other x's are held constant), $P(Y|F) = P(y = 5|x_1 = 2$, all other x's are held constant), and most importantly the difference $P(Y|F) - P(Y|M)$ in which all other x's are held at same sample means for both $P(Y|M)$ and $P(Y|F)$. Therefore, our conclusions above based on $P(Y|M)$, $P(Y|F)$, and $P(Y|F) - P(Y|M)$ are unaffected as long as the coefficient of the key x_1 variable is accurately estimated. When the accuracy of a statistic (the coefficient estimate of the x_1 variable in this paper) is uncertain, and another sample from the population is impossible or impractical, researchers often use bootstrapping. The issue in this paper is whether the coefficient estimate of the x_1 variable would differ significantly (from the one in Table III, which is used to calculate $P(Y|M)$ and $P(Y|F)$) if our survey data (582 responses) were to consist of, for example, 350 female responses (approximately 60 percent) and 232 male responses (approximately 40 percent), i.e. more balanced with respect to the population, instead of our actual unbalanced survey data of 120 female responses (approximately 20 percent) and 462 male responses (approximately 80 percent). In other words, the issue is whether or not the coefficient estimate of the x_1 variable is sensitive to the composition of female and male responses. If the estimate is robust, i.e. insensitive, then the paper's conclusions are unaffected by our unbalanced data.

The procedure of bootstrapping is to resample individual responses randomly with replacement from the original survey data of 582 responses. The size of each resample (or each bootstrap sample) is equal to the size of original survey data (i.e. 582 responses). The procedure of resampling is repeated many times, or 1,000 times in our paper, resulting in 1,000 bootstrap samples. Each bootstrap sample provides data to re-estimate the ordered probit model, thereby resulting in 1,000 coefficient estimates of the x_1 variable. Because bootstrapping uses sampling with replacement, each bootstrap sample can consist of more than 120 female responses (or more than 462 male responses) while the total number of male and female responses is fixed at 582. For example, one bootstrap sample may consist of 400 female responses and 182 male responses, and next bootstrap sample may consist of 400 male responses and 182 female responses. Therefore, the bootstrap method is particularly well suited for investigating the issue of the estimate's sensitivity to balanced/unbalanced data. The mean and the standard deviation (in the parentheses) of 1,000 coefficient estimates of the x_1 variable from bootstrapping are 1.0603 (0.1466), 0.4919 (0.1374), and 1.0075 (0.1528) for y_a equation, y_b equation, and y_c equation, respectively. Table III shows that the coefficient estimate and the standard error (in the parentheses) of the x_1 variable from our original survey data are 1.0479 (0.1413), 0.4877 (0.1372), and 0.9925 (0.1428) for y_a equation, y_b equation, and y_c equation, respectively. Obviously, the bootstrapping results and the Table III results are almost identical. Therefore, our conclusions based on Table III are most likely unaffected by the issue of unbalanced/balanced data, but with one qualification. Bootstrapping assumes that the original data set comes from a random sample, whereas our survey data set is a convenience survey (that is, the same issue, which is already explained in the "survey data" section, applies to this case).

Limitations

The paper's findings may be limited to some extent because we did not investigate other possible reasons such as interest in subject (i.e. accounting). Also, as discussed above, our online survey data may not be generalized to the entire CPA population.

Conclusion

This study finds three reasons why more women (than men) enter the accounting profession: locational freedom, social status, and income stability. Women who choose accounting as a career value these three offered by accounting more than do men who choose accounting as a career. First, we find that there is an approximately 40 percent higher probability that women choose an accounting career (than men do) because of locational freedom. This finding is consistent with the well-documented fact that women have more responsibilities (than men) for housework and childcare, and hence they likely prefer a shorter commute and a work location near their families. The finding reinforces Almer and Kaplan (2002), who find that CPAs under flexible work arrangements experience higher job satisfaction and lower turnover. Second, social status (of the accounting profession) is much more important for women than for men in their choice of an accounting career. We find that there is an approximately 40 percent higher probability that women choose an accounting career (than men do) because of social status. To the best of our knowledge, this finding is new and very interesting because previous studies, though not distinguishing between men and women, typically find that social status/prestige is not an important factor (e.g. Giacomino and Akers, 1998; Nelson *et al.*, 2008). An exception is Law (2010) who attributes an emphasis on prestige (among accounting students in Hong Kong) to a "cultural" factor, but offering no further elaboration. Third, to a lesser extent, income stability is more important for women than for men in their choice of an accounting career. Because men have traditionally been the breadwinners in American families and therefore have been more concerned with income stability, this finding is a little surprising. It suggests that times are changing with the rising importance of women's earnings in the family.

Additionally, this study finds generational differences when survey respondents are divided into the younger generation (respondents who are younger than, or whose ages are equal to, 50) and the older generation (respondents who are older than 50). The first finding (related to locational freedom) remains the same for both generations. The second and third findings (related to social status and income stability, respectively) apply to the older generation only. For the younger generation, the probability that a person chooses an accounting career because of social status is higher if the person is a male. The probability that a person chooses an accounting career because of income stability is approximately the same between younger male and female accountants. This study also investigates the relationships between accountants' personality types (predominantly described as the ISTJ type) and the probability of entering the accounting profession. The relationships appear dependent on specific underlying reasons that motivate a person to choose an accounting career; thus, having the ISTJ type does not necessarily increase the probability that one will enter the accounting profession.

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About the authors

Yasuo Nishiyama is an Associate Professor of Economics. He holds a PhD from the University of California, Berkeley. Associate Professor Yasuo Nishiyama is the corresponding author and can be contacted at: yasuo.nishiyama@woodbury.edu

Angelo A. Camillo is an Associate Professor of Strategic Management. He has over 35 years of international hospitality management experience. He holds a PhD from the Oklahoma State University.

Robert C. Jinkens is an Assistant Professor of Accounting. He holds a PhD from the University of Hawai'i at Mānoa. He has active CPA licenses in California and Hawaii and is a California Real Estate Broker.