

The Integration of Women and Minorities into the Auditing Profession since the Civil Rights Period

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ABSTRACT: Following the Civil Rights Movement and the “quiet revolution” in women’s work over the years from 1950 to 1970, women and minorities increasingly joined the auditing profession while the profession ramped up efforts to encourage integration. The purpose of this study is to rigorously examine how the integration of auditors has evolved since the civil rights and quiet revolution period. The primary distinctive feature of this study is that it evaluates the auditing profession’s integration by comparing it to samples of occupations similar to auditing for the purpose of isolating auditing-specific forces influencing integration. I find that the pay structure in auditing is unusually equal, consistent with “equal pay for equal work.” The results for women, Hispanics, and miscellaneous minorities are consistent with members of these groups responding as one might expect to equal pay in auditing: groups that are poorly paid in other occupations select into auditing at higher rates, and groups that are well paid in other occupations select out of auditing at higher rates. The results for blacks are anomalous in that their pay in auditing has been good relative to many comparable occupations, but they have nevertheless been poorly represented in auditing. There are a number of theories that could potentially explain why blacks may be anomalously underrepresented in auditing. To begin to test them, I perform an exploratory analysis of the representation of women and minorities among college freshmen, college graduates, and young auditors. The results suggest that accounting is a popular degree among black college freshmen and that a relatively high percentage of accounting graduates are black. However, although they are well represented in the pool of potential new auditors, black accounting graduates enter the auditing profession at very low rates relative to other occupations requiring levels of education similar to auditing. The results suggest that black underrepresentation in auditing is not due to a lack of awareness among, or role models for, young blacks.

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Data Availability: *Data used in this study are available in the IPUMS-CPS database, which is compiled and distributed by the Minnesota Population Center at the University of Minnesota; the National Survey of College Graduates, which is available from the National Science Foundation; and the Freshmen Survey of the Higher Education Research Institute, which is available to registered users of its website.*

I. INTRODUCTION

Women and minorities have become increasingly integrated into U.S. occupations since the Civil Rights Movement succeeded in winning legal bans on many types of discrimination in the 1950s and 1960s (Branch 1988, 1998, 2006), and women's work underwent a "quiet revolution" characterized by expanding labor market opportunities in the 1960s and 1970s (Goldin 2006). This study is an investigation of the process of integration in the auditing profession during this transformative period, which contextualizes it by comparing it to the integration of other occupations. By "integration," I mean incorporation of individuals of different groups as equals into an occupation.¹ Existing histories of integration in the auditing profession during the post-civil rights period are deep but not broad. While existing literature details the evolution of the integration of the auditing profession (see particularly Wescott and Seiler [1986] and Hammond [2002]), it does a poor job of distinguishing which of the details of the integration of auditing are typical of auditing-like occupations and which are unusual. Separating the typical from the unusual requires comparing the auditing profession against relevant benchmarks. Absent such comparisons, the interpretation of auditing-specific statistical evidence on integration is ambiguous. This is because there have been both broad social forces and occupation-specific forces limiting the extent of integration in all high-status, high-education occupations, including auditing. The auditing profession has significant control over auditing-specific forces limiting its integration, such as racial prejudice in hiring, but has significantly less control over the broad social forces that also influence it, such as differences in the quality of the elementary school education available to minorities and non-minorities. Comparative analysis of the auditing profession enables me to isolate anomalies in auditing-specific integration that, because the analysis controls for general social limits to integration affecting all auditing-like occupations, are likely attributable to auditing-specific causes.

This study is a comparative, quantitative history of the integration of women, blacks, Hispanics, and miscellaneous minorities (historically underrepresented groups or HURGs) into the auditing profession in the United States from 1968 to 2010. I examine women, blacks, Hispanics, and miscellaneous minorities (primarily Asians, Native Americans, and Pacific Islanders)² because these groups were excluded from many high-status American institutions through much of the nation's history and because data describing them are available over the sample period. I use the term "auditing profession" to refer to certified public accountants employed in the accounting and auditing industry to be consistent with related historical research, which has focused on CPAs

¹ This definition is adapted from the merriam-webster.com definition of the word "integration."

² Data breaking the miscellaneous minority category into 19 finer subcategories are available in the CPS for the years 2003–2010. During this period, the largest subcategories in the miscellaneous minority category were "Asian only" (59 percent), "American Indian/Aleut/Eskimo" (14 percent), "White-American Indian" (11 percent), "Hawaiian/Pacific Islander only" (5 percent), "White-Asian" (3 percent), and "White-Black" (3 percent). All remaining racial subcategories made up 1 percent or less of the miscellaneous minority category.

working in “public accounting” (Wescott and Seiler 1986, 19; Hammond 2002, 1–3), and archival research, which has examined primarily the market for public company audits (Hay et al. 2006, Table 1, Panel C).

The data used in my main tests come from a large sample of worker surveys collected by the U.S. Census Bureau and available in a database called the IPUMS-Current Population Survey (CPS). I quantify occupational integration using measures of HURG pay and representation in occupations. I choose income and representation to quantify integration because they are readily measurable and are widely viewed as meaningful labor force integration indicators (Becker 1971; Altonji and Blank 1999; Card 1999; Cawley et al. 2001; Black et al. 2008). My main analyses involve modeling HURG pay and representation in cross-sections of U.S. occupations as a means of estimating the levels that one would expect to find in the auditing profession given its characteristics. The result is a comparison of the extent of integration existing in the auditing profession relative to the extent achieved in other comparable occupations.

The occupations against which I compare auditing are a sample of historically male-dominated professions, which I select because they share a high social status and history of male domination with auditing (Wescott and Seiler 1986). Further, I compare auditing to a sample of occupations with education levels that are similar to auditing, which I select because members of HURGs have historically had differential access to quality education in the United States, and working as an auditor has generally required higher education (U.S. Supreme Court 1954; Karen 1991; Darling-Hammond 1998). I also compare auditing against all occupations. I examine two sets of workers within occupations, workers at all earnings levels, and workers whose earnings are in the top third for their occupation, as a means of understanding integration among all auditors and at the high end of the income distribution. Finally, I study two time periods, 1968–1989 (which I label “1970s & 80s”) and 2000–2010 (which I label “2000s”), to examine how the integration of HURGs has changed over the years following the Civil Rights Movement and the “silent revolution” in women’s work. I aggregate data from the 1970s and 1980s in the early period because, when I divide the sample into fine partitions such as black auditors in the top third of earners, limiting the sample period to just the 1970s yields too few HURG observations in many occupations to make reliable statistical inferences.

Achieving changes in integration is likely to be slow because of the stickiness of cultural norms and social values (Inglehart 1985; Rokeach and Ball-Rokeach 1989; Arrow 1998; Kahan 2000; Jones 2008). The strength of my comparative approach is that it estimates benchmark levels of occupational integration that were likely possible for the auditing profession given social constraints limiting the speed at which occupations like auditing could integrate, and then identifies where the actual integration of auditing has differed from the benchmarks. Isolating auditing-specific integration anomalies is useful both for evaluating the performance of the integration efforts of the auditing profession and also for directing policymakers involved with auditing integration efforts toward projects that are likely to have the greatest impact. A cost of the comparative approach is that it deemphasizes the broad social forces that impact HURG integration across the economy, which are certainly important social issues and are likely important drivers of the labor market participation of HURGs. It also deemphasizes the role that professions can play in facilitating broad social change. While broad social forces influence integration in high-status/high-education occupations and the role professions could have in changing them are socially important issues, I deemphasize them in the context of this study. I do so because this study’s purpose is not to comment on the broad social forces limiting occupational integration generally, nor to offer critical commentary on the role the auditing profession could play in promoting changes in social and cultural norms. Rather, this study’s purpose is to use large-sample statistical evidence to identify auditing-specific anomalies in integration as a means of better understanding the auditing-specific forces contributing to them.

My main empirical tests examine disparities between HURG and non-HURG pay, called “pay gaps,” and deviations in HURG representation in occupations from the levels that one would expect given the occupations’ characteristics. To estimate HURG pay gaps, I model the percentile rank of individual workers’ hourly incomes as a function of their HURG status after controlling for their level of education, age, marital status, number of children, and several interactions of the female dummy with lifestyle variables that likely impact pay differently for women than men. I estimate HURG pay gaps in the auditing profession, other professions, other occupations with auditing-like education levels, and all occupations, and compare the HURG pay gaps in auditing to those in other occupations. I estimate relative HURG representation in auditing by modeling HURG representation in occupations using education levels, average hourly pay, average work hours, and concentration in metropolitan areas as defined by the census bureau. I then examine how HURG representation in auditing differs from the levels predicted by the models for occupations with the auditing profession’s characteristics.

I find that the pay of auditors is exceptionally insensitive to gender and race variables. This contrasts with pay in the labor market generally, in which pay is often unequal for HURGs, especially in the 1970s and 1980s. Specifically, among professions and occupations with auditing-like education, women, blacks, and Hispanics tend to be paid less while non-black minorities tend to be paid more. Because pay tends to be equal in auditing but is not in comparable occupations, I find that pay gaps for HURGs in auditing are, relative to comparison groups (I refer to these as “relative pay gaps”), mixed but mostly positive for women, positive for blacks and Hispanics, and negative for miscellaneous minorities. I find that women were generally well represented in auditing in the 1970s and 1980s, with the results becoming stronger by the 2000s. Hispanics were represented in auditing at, or slightly above, the expected levels. Miscellaneous minorities tend to be underrepresented in auditing relative to similar occupations, consistent with these workers preferentially selecting non-auditing occupations to take advantage of better pay available outside of auditing. Blacks are generally underrepresented in auditing relative to comparison groups. The underrepresentation of blacks in auditing is anomalous given the pay results, which suggest that blacks are relatively well paid in auditing. Because my tests are designed to control for broad social explanations for such anomalies, I conclude that the cause of black underrepresentation in auditing is likely a consequence of auditing-specific forces.

Prior research has suggested that auditing-specific forces limiting black representation among auditors could be on the demand side, with audit firms discriminating against blacks in their hiring and promotion decisions (Mitchell and Flintall 1990; Hammond 2002, 2004). Alternatively, on the supply-side young blacks may choose careers outside of auditing because there is a lack of black role models in auditing, because historical discrimination by the auditing profession has damaged its reputation among blacks, or because blacks have particularly negative misconceptions about the nature of accounting education and work (CPA Journal Panel 1999; Sanders 2007). To provide some insight into the predictive power of these theories, I perform an exploratory analysis of HURG representation across three different critical periods at which workers move in or out of the pool of potential future auditors: when they enter college, when they graduate from college, and when they begin work as a new auditor.

I find that the accounting major is relatively popular among blacks entering college, with high proportions of blacks planning to earn a degree in accounting relative to other degrees throughout the sample period. The representation of blacks among accounting degree recipients is also high relative to other degrees. However, young blacks holding college degrees enter the auditing profession at much lower rates than they enter other occupations. Together, the results of this supplemental analysis suggest that low levels of black representation in auditing are not a consequence of low participation by blacks in accounting education. In fact, blacks pursue and earn accounting degrees at higher rates than they do most other bachelor’s degrees. Rather, my evidence

suggests that low representation of blacks in the auditing profession can be traced to the time when new accounting graduates enter the profession. These findings are insufficient to settle the debate about whether low black representation in auditing is due to supply-side or demand-side effects, but they are consistent with demand-side theories, including the theory that auditing firms have discriminatory hiring practices. They are inconsistent with many of the supply-side theories, including (1) the theories that blacks do not pursue accounting education because of a lack of black role models in auditing, (2) misconceptions about the nature of accounting education, or (3) awareness of historical discrimination against blacks in auditing discouraging blacks from pursuing accounting education.

This study has several limitations. My sample selection process likely does not result in a sample of auditors that is precisely consistent with samples described in prior research, which typically examines the whole “accountants and auditors” census category, CPAs, or employees of the Big N auditing firms. However, two tests comparing my data against publicly available data from the AICPA suggest that my sample is very similar to the sample of AICPA members. Many of the variables I use are self-reported and, similar to other studies using survey datasets, likely contain some biases. Although I attempt to include all available relevant explanatory variables, my models may nevertheless omit important variables. When I examine HURG participation in accounting education and entry into the auditing profession, I use data from three datasets administered by differing agencies using differing data collection methods and HURG definitions. Because these differences complicate comparison of raw representation values, I instead compare the percentile rank of HURG participation rates in accounting education and rates of entry into the auditing profession. This approach requires only that HURG definitions are consistent across degrees or occupations in a given dataset, not across all three datasets. Finally, the results of this study cannot be used to make claims about discrimination in the auditing profession. Rather than discrimination, I study the related concept of integration, which I describe in more detail in the next section.

Section II discusses related literature and theory, while Section III describes the data. Section IV presents the models and results. Section V presents the supplemental analysis, and Section VI discusses conclusions.

II. LITERATURE REVIEW AND THEORY

The Civil Rights Movement, which ultimately resulted in legal bans on many types of discrimination, and the “quiet revolution” in women’s work, which brought women increased access to high-status and high-education occupations, are among the most important American social movements of the 20th century (Branch 1988, 1998, 2006; Goldin 2006). Following these social movements, many major American institutions began efforts to integrate HURGs. Given evidence suggesting that social norms and cultural values relating to racial and gender equality tend to be very stable over time, it is not surprising that these integration efforts are still ongoing (Inglehart 1985; Kahan 2000). The auditing profession runs a number of programs aimed at facilitating integration. The AICPA’s formal efforts to recruit women and minorities date to 1969 when the AICPA’s Minority Recruitment and Equal Opportunity Committee was formed (Wescott and Seiler 1986, 193).³ Such efforts can be justified on the grounds of fairness (Crosby et al. 2003), as a means of reducing litigation risk (Kelly and Dobbin 1998), and as a means of increasing audit

³ Hobson (2005) and McCann (2008) describe the diversity programs of the large audit firms. See <http://www.pwc.com/gx/en/women-at-pwc/index.jhtml> for an example of an audit firm-specific initiative to recruit and retain women (called “Women at PwC”). The PhD Project, sponsored by KPMG, is an example of a program designed to increase the representation of racial minorities among business school faculty (see <http://www.phdproject.org>). In addition, the major audit firms have recently appointed chief diversity officers to head up their integration efforts.

quality. Integration efforts may improve audit quality given evidence that team diversity has some positive effects on team performance (Hambrick et al. 1996; Kilduff et al. 2000) and that female accounting students are more ethically sensitive than male accounting students (Cohen et al. 1998).

Existing literature on the integration of racial minorities in the auditing profession has focused largely on blacks. These studies emphasize black representation much more than black pay in auditing, and have found strong and consistent evidence of low black representation in the auditing profession during the post-civil rights period (Mitchell 1969, 1976; Mitchell and Flintall 1990; Hammond and Paige 1999; Hammond 2002). But these studies offer only very limited evidence on the comparative representation of blacks in auditing, and as a consequence they are not informative about whether low black representation in auditing is anomalous given the social context in which auditing labor markets exist. They are also largely uninformative about pay for black workers.⁴

Existing literature on the integration of women in auditing shows that the representation of women in auditing in the early post-civil rights period was low, but that their representation has drastically increased in the years since (Wescott and Seiler 1986; Hooks 1992, 1996; French and Meredith 1994; Walker 2008). Nevertheless, concern remains that they are treated differently than male auditors (Lehman 1992; Collins 1993; Maupin and Lehman 1994; Anderson-Gough et al. 2005; Komberger et al. 2010) and that they are poorly represented among highly paid auditors (Hooks and Cheramy 1994; Pillsbury et al. 1989; Doucet and Hooks 1999; AICPA 2011). Evidence from the U.K. suggests that female auditors were paid less than comparable males in the 1990s (Pierce-Brown 1998), but the existing literature again contains very little comparative evidence about female integration in the auditing profession. Therefore, it remains unclear whether the increases in representation broadly, or the failure to fully integrate at the top, are anomalous.⁵

Much prior social science research has examined discrimination. A clear economic definition of discrimination is that an individual is discriminatory (has a “taste for discrimination”) if he/she behaves as if he/she is willing to pay something to associate with individuals having certain personal characteristics instead of others (Becker 1971, 14; Arrow 1971). If a “taste for discrimination” against HURGs is prevalent among those with decision making authority in a given occupation, then one would expect that many of the experiences of HURGs working in these occupations could differ significantly from the experiences of non-HURGs. Consistent with this, prior accounting research has found evidence of gender differences in, for example, socialization and evaluation processes (Anderson-Gough et al. 2005) and experiences of work-related stress (Collins 1993) among employees of auditing firms in the U.S. and U.K. In the present study, my empirical focus is on HURG pay and HURG representation because they are relatively objectively measurable, are available for large samples of workers in many occupations and across long time frames, and will vary with any potential discriminatory practice that has an impact on firms’ hiring, firing, and promotion decisions or workers’ decisions to join or leave a given occupation.

⁴ Mitchell (1969) compares black representation among “CPAs” to their representation among architects; lawyers and judges; and dentists, physicians, and surgeons. Mitchell (1976) compares black representation among “accountants and auditors” to their representation among physicians and attorneys. Hammond (2002) compares black representation among “CPAs” to their representation among lawyers and doctors. None of them compares auditing to these other occupations after controlling for occupational characteristics that likely influence integration, and none of them closely examines relative pay for black workers.

⁵ French and Meredith (1994) compare female representation among “accountants” to female representation among engineers, lawyers/judges, physicians, and college professors. They apparently use the “accountants and auditors” census category in their comparisons. Relative to external auditors or CPAs, examining the whole “accountants and auditors” census occupation has the effect of significantly increasing the representation of both women and minorities, because women and racial minorities are better represented among corporate accountants and internal auditors than they are in public audit firms (from untabulated analysis of the CPS). And, similar to the studies on black representation, French and Meredith (1994) do not control for the influence of potentially important drivers of integration like education levels and location of jobs.

While much prior social science research has examined discrimination, this study focuses on the related concept of integration. Statistical analyses of representation and pay like those in this study cannot demonstrate discrimination by an occupation against HURGs because the data do not enable the researcher to distinguish the claim that occupations discriminate against HURGs from the claim that qualified HURG job candidates are less available than non-HURGs for some jobs.⁶ As a result, in this study, I break somewhat with the related economics literature and study integration rather than discrimination, because “integration” does not imply a causal explanation for any evidence I might find of unequal pay or representation of HURGs.

The integration of the full-time workforce is one meaningful benchmark for the auditing profession because integration among full-time workers is informative about social conditions affecting HURGs in the workforce generally. For example, consider the finding that women in 1977 made up less than 12 percent of the staff of Big 8 firms (Wescott and Seiler 1986), and through the 1970s made up 16 percent of the auditing profession as I measure it in the CPS. When compared against female representation of about 50 percent in the population, their 16 percent representation in auditing appears extremely low. However, during the 1970s many women did not work outside the home, with the consequence that the full-time workforce in the 1970s was only 27 percent female. When their 16 percent representation in auditing is compared against their 27 percent share of the workforce, women still appear to have been underrepresented in auditing. However, the disparity is now less extreme and, arguably, more meaningful for evaluating the auditing profession.

While the full-time workforce is one meaningful benchmark against which to evaluate the auditing profession, it is also flawed. To become an auditor, a worker must pass through a number of filters, some of which are controlled by the auditing profession, others of which are a consequence of broad social forces largely beyond the control of the auditing profession. A new auditor typically must follow a path that includes receiving a quality elementary, middle school, and high school education; attending a college offering high-quality accounting training; choosing to major and gaining acceptance into the university’s accounting degree program; succeeding in the program; being recruited by an auditing firm; receiving and accepting a job offer; passing the CPA exam; and graduating from the degree program. Each step along this path operates as a filter, shrinking the pool of people eligible to become auditors. HURGs may be disproportionately removed from the pool of potential auditors by the earlier steps in this process, which are not controlled by the auditing profession, or at the later steps in the process, which are largely controlled by the auditing profession.

Workers in every occupation gain entry to the occupation and earn promotions by passing through a filtering process of some type. But for many occupations, the filtering process differs

⁶ To illustrate this point, consider the example of pilots. The representation of women among commercial airplane pilots is extremely low relative to their prevalence in the population of full-time workers. During the 2000s, fewer than 4 percent of commercial pilots were women. This could be interpreted either as evidence of demand-side discrimination in the hiring of pilots by commercial airlines, or as evidence that the supply of women available to be hired as commercial pilots is limited. Nearly 40 percent of commercial pilots are ex-military (Lacey 2001), and women today remain underrepresented among military pilots (9 percent of military pilots were women in 2006) (Tyson 2006). Therefore, the limited supply of female pilots qualified to fly commercial airliners can be attributed in part to U.S. military policy, which is not controlled by firms hiring commercial pilots. In addition, there is evidence from psychology that women tend to be significantly more risk averse than men, although the gap has been shrinking over time (Byrnes et al. 1999). Given that airplane piloting is the third deadliest occupation in the United States, behind only fishers and loggers (BLS 2010), it is likely that at least some of the underrepresentation of women is due to self-selection by women away from piloting. Consistent with this, since 1980 only 11 percent of non-military FAA student pilots have been female (Goyer 2012). Further, pilots disproportionately live in the state of Alaska, which has a population in which males are overrepresented (see <http://www.census.gov/prod/cen2010/briefs/c2010br-03.pdf>). As a consequence of these characteristics of the labor market for pilots, statistical evidence of low female representation among pilots cannot alone establish whether it is due to supply-side or demand-side forces.

substantially from the process for auditors. When evaluating the integration of the auditing profession, it is critical to distinguish between factors affecting integration that are controlled by the profession, like recruiting accounting program graduates, and factors that are out of the control of the profession, like the quality of elementary school education. One approach is to study the integration of auditing relative to the integration of other occupations that feature social processes filtering worker entry into the occupation that are similar to the filters operating in auditing. Another way is to examine HURG participation at milestones throughout the filtering process as a means of discovering when they leave the auditing profession.

This study's main tests compare auditing against a set of historically male-dominated professions and similarly educated occupations. I use historically male-dominated professions as a comparison group because they are occupations that share the auditing profession's historical exclusion of women (Wescott and Seiler 1986) and share its high social status, which professions have historically maintained by such means as limiting the entry of new workers into the profession (Larson 1977). There is no well-accepted definition of a profession, but there is consensus that professions are distinguished from other occupations because their work is considered particularly socially important, requires the use of judgment and the application of a valuable body of distinctive knowledge, generally requires a license, and typically involves a significant amount of discretion on the job (Abbott 1988; Freidson 2001). Professional barriers to entry are justified by the professions as essential to maintaining the quality of the professional labor force, but critics often see them as attempts to limit the number of new workers in an effort to drive up the price of professional labor and to promote the social status of the profession by excluding workers with personal characteristics judged by incumbents to be socially undesirable (Macdonald 1995; Annisette 2003; Kleiner 2006). Because auditing is frequently classified among professions, I compare it against other professions that are likely to feature similar mechanisms that could preferentially exclude HURGs. Using subjective assessment of their similarity to auditing, I include accountants,⁷ auditors, physicians, dentists, lawyers, clergy, financial managers, architects, chemical engineers, civil engineers, electrical engineers, mechanical engineers, pharmacists, chemists, veterinarians, and pilots.⁸

I compare auditing against a sample of similarly educated occupations because HURGs have historically had differential access to quality education in the United States (U.S. Supreme Court 1954; Karen 1991; Darling-Hammond 1998). By comparing auditing against similarly educated occupations, I focus the analysis on auditing-specific forces rather than the broad social forces associated with differential HURG access to high-quality education.⁹

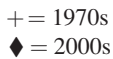
Figure 1, which I construct from the CPS, which is described in the next section, shows a rough comparison of the representation of women and aggregated racial minorities in my sample of professions during the 1970s and the 2000s. It is a scatterplot with female representation on the y-axis and minority representation on the x-axis. Points showing data from the 1970s are labeled with plus signs and points showing data from the 2000s are labeled with diamonds. In addition to

⁷ By "accountants," I mean the entire "accountants and auditors" CPS category, which includes corporate accountants, internal auditors, and corporate controllers, which are screened out of my sample of auditors.

⁸ To check the quality of my subjectively identified list of professions, I examine occupation data from the General Social Survey (GSS) of the National Opinion Research Center (Smith et al. 2011). These are survey data collected from random samples of Americans. I use GSS variables measuring occupational prestige, respondent education levels, occupations, and gender. I identify 49 occupations that, during 1972–1985, were predominantly male and prestigious (prestige greater than 50 where the mean for all occupations is 42, the minimum is 12, and the maximum is 82). All of the 16 professions I subjectively selected were also on this list of 49 GSS occupations. This is evidence that these occupations are indeed historically male dominated and prestigious professions.

⁹ There are many other potentially interesting comparison groups that I do not examine here because of space constraints.

FIGURE 1



professions, the figure also shows HURG representation in the “Full-Time Workforce.” The figure shows considerable variation in HURG representation among the professions, with some being almost exclusively white males (pilots) and some exceeding the diversity of the full-time workforce in terms of female or minority representation, but none across both dimensions. The figure also shows that the representation of HURGs in professions has been increasing with time, as most of the points representing the 1970s are to the left and below the points representing the 2000s.

While Figure 1 is informative, it fails to control for differences in the measurable characteristics across the professions, like education levels. Section IV provides an analysis of the variation in diversity among the professions as a function of the characteristics of the profession.

III. DATA

The data used in the main tests were originally collected by the U.S. Department of Labor and the U.S. Census Bureau in annual surveys of random samples of workers in the U.S. called the March Current Population Survey or CPS. I use a version of the CPS compiled by the Minnesota Population Center at the University of Minnesota called IPUMS-CPS. These data are a random sample of the original CPS files and are “harmonized” (King et al. 2010). The process of data harmonization involves identifying variables whose definitions change over time and recoding them in a time-consistent measure. The variables of interest for this study are available in this sample from 1968 to 2010.

I classify workers using CPS occupation and industry data. No government occupation classification system separately identifies members of the public auditing profession. IPUMS-CPS uses a modified version of the 1990 census occupation classification scheme in which the “accountants and auditors” occupation (Code 023) identifies workers who “examine, analyze, and interpret accounting records for the purpose of giving advice or preparing statements. Install or advise on systems of recording costs or other financial and budgetary data.”¹⁰ This category likely contains a significant number of external auditors—the focus of this study and most prior historical and archival work in auditing—but it also likely includes internal auditors and corporate accountants. To eliminate corporate accountants and internal auditors from my “auditing profession” sample, I screen workers in the “accountants and auditors” occupation by requiring that they work in the “accounting, auditing, and bookkeeping services” industry.¹¹ What remains is a sample of primarily external auditors.¹²

I classify workers as women, blacks, Hispanics, and miscellaneous racial minorities using the CPS “sex,” “race,” and “ethnicity” variables. While highly specific race and ethnicity descriptions have become available in recent versions of the CPS, the only classifications that have been consistent over the sample period are “white,” “black,” and “other” for racial groups and

¹⁰ The IPUMS-CPS occupation classification system contains separate codes for a number of occupations that perform some tasks related to accounting. The presence of these related occupations in the classification scheme helps me to screen them out of my sample and identify external auditors with greater precision. The occupations that are most closely related to “accounting and auditing” are: other financial specialists defined as “all financial specialists not listed separately”; bookkeeping, accounting, and auditing clerks defined as workers who “compute, classify, and record numerical data to keep financial records complete. Perform any combination of routine calculating, posting, and verifying duties to obtain primary financial data for use in maintaining accounting records. May also check the accuracy of figures, calculations, and postings pertaining to business transactions recorded by other workers”; and financial managers defined as workers who “plan, direct, and coordinate accounting, investing, banking, insurance, securities, and other financial activities of a branch, office, or department of an establishment.”

¹¹ Census Bureau CPS and IPUMS-CPS documentation provide limited information on industry definitions. The census bureau’s industry classification and the harmonized IPUMS-CPS industrial classification schemes are closely related to the Standard Industrial Classification (SIC) system. An examination of the modern version of the SIC system (available here: http://www.osha.gov/pls/imis/sic_manual.html) shows that the “accounting, auditing, and bookkeeping services” industry (SIC Code 872 and IPUMS-CPS Code 807) is defined as “establishments primarily engaged in furnishing accounting, bookkeeping, and related auditing services” and is distinct from “data processing and tabulating services,” which is classified among business services (SIC Code 737 and likely IPUMS-CPS Code 808) and is also distinct from tax preparation services, which is classified among “miscellaneous personal services” (SIC Code 729 and IPUMS-CPS Code 849). My conclusion is that screening members of the “accounting and auditing occupation” using the “accounting, auditing, and bookkeeping services” industry in IPUMS-CPS likely leaves a sample composed primarily of external auditors.

¹² To get a sense of the effectiveness with which I identify external auditors, I estimate the size of the “auditing profession” using CPS data to identify external auditors and compare it to published estimates of the membership of the AICPA. While I do not expect that they will differ drastically, I do not expect the estimates to be equal because not all CPAs are members of the AICPA, not all CPAs work in the accounting industry in the United States, and not all workers in the accounting industry are CPAs. On its website in July 2011, the AICPA reported membership of 370,000, which is roughly comparable to the 2010 CPS estimate of 339,291 external auditors. I then compare HURG representation during the period 1990–1999 of young members of my sample of public auditors that I expect are recent hires (workers 28 years old or younger) against the demographics of new hires of public auditing firms reported by the AICPA during 1996 (AICPA 2003). While I expect HURG representation values from these two sources to be similar, they will likely differ somewhat because the CPS data cover all of the 1990s while the AICPA data are for only one year, and because the AICPA identifies new hires with precision while my age-based identification of new hires is likely noisy. I find that HURG representation values from these two sources are quite similar. The AICPA report (AICPA 2003) shows HURG representation as follows: women—51 percent, blacks—3 percent, Hispanics—4 percent, and miscellaneous minorities—9 percent. My sample of young auditors is 55 percent female, 2 percent black, 4 percent Hispanic, and 8 percent miscellaneous minority. Together, the results suggest that my CPS sample likely contains a high concentration of external auditors.

“Hispanic” for ethnic groups. It is for this reason that my analysis of HURGs examines groups no more specific than these.

The sample of professions against which I compare the auditing profession is identified by subjectively comparing those professions with auditing. The sample of “similarly educated” occupations is identified by calculating the percentage of workers in each occupation that has received some amount of bachelor’s (which I label “bachelor’s work”) or post-baccalaureate (which I label “graduate work”) degree training. I first narrow the sample to occupations whose *Bachelor’s Work* is within 10 percentage points of the value for auditors in a given year and then further narrow the sample to include only occupations whose *Graduate Work* is also within 10 percentage points of the value for auditors.

In a number of my analyses, I produce occupation-level estimates for some variables. To produce these estimates, I aggregate individual-level data. When doing so, I weight the values for each observation using survey weighting variables available in the database. I exclude occupation/years whose estimates are based on fewer than 10 individual-level observations.

The CPS contains 7,484,125 observations covering the years 1968–2010. All occupation and industry classification systems include miscellaneous categories that consist of workers in idiosyncratic or poorly defined occupations and industries. In the CPS, these occupations and industries include in their labels “not elsewhere classified.” Because occupation and industry classification is important to this study, I exclude workers with missing occupation values and those in “not elsewhere classified” occupations and industries. These exclusions reduce the number of observations to 2,935,407. I then exclude unemployed and part-time workers and observations with negative survey weights, missing income, or missing typical weekly work hours, leaving 1,965,624 observations. When I exclude the 1990s, 1,551,714 observations remain. In my tests, I often subdivide this large sample into fine partitions, which creates a risk that there will be too few HURGs remaining in the sample to make statistical inferences. The partition I make with the smallest number of HURGs is black auditors among the top third of earners during the 1970s and 1980s of which there are 11 observations in the CPS. When I aggregate the individual-level data into occupation-level data and drop occupation-level observations calculated from fewer than 10 individual-level observations, I have 8,926 occupation/years. Samples become smaller when I restrict them to include only professions (512 occupation/years) or occupations whose education level is similar to auditors’ (1,116 occupation/years).

IV. MODELS AND RESULTS

Pay Gap Data and Models

To analyze the pay received by HURGs in auditing, I estimate “pay gaps” for members of HURGs, which equal the difference between the pay of a given HURG and the pay of workers who are not members of that HURG in a given occupation after controlling for differences in worker characteristics. I compare the pay gaps calculated for auditors against pay gaps estimated for other occupations (see [Altonji and Blank \[1999\]](#), [Card \[1999\]](#), [Cawley et al. \[2001\]](#), and [Black et al. \[2008\]](#) for reviews of the pay gap literature).

Hourly pay is highly skewed and changes over time because of changes in the price level. I define my dependent variable as the percentile rank of workers’ hourly incomes among all workers in the sample in a given year. After this transformation, the dependent variable is stable over time with a uniform distribution. I estimate pay gaps by modeling the percentile rank of workers’ hourly income as a function of gender and race dummy variables, as well as human capital measures (education and age) and lifestyle measures (married, children, and interactions of married, children, and age with the female dummy). I include interactions of the lifestyle variables with the female

dummy because prior research suggests that these variables impact the pay of female workers differently than male workers (Farrell 2005). My model is as follows:

$$\begin{aligned} \text{Hourly Income}_{it} = & \alpha + \beta_1 * \text{Female}_{it} + \beta_2 * \text{Black}_{it} + \beta_3 * \text{Hispanic}_{it} + \beta_4 * \text{Misc. Minority}_{it} \\ & + \beta_5 * \text{Bachelor's Work}_{it} + \beta_6 * \text{Graduate Work}_{it} + \beta_7 * \text{Hours}_{it} + \beta_8 * \text{Age}_{it} \\ & + \beta_9 * \text{Metro Residence}_{it} + \beta_{10} * \text{Married}_{it} + \beta_{11} * \text{WSD}_{it} + \beta_{12} * \text{Children}_{it} \\ & + \beta_{13} * \text{Female} * \text{Married}_{it} + \beta_{14} * \text{Female} * \text{WSD}_{it} + \beta_{15} * \text{Female} * \text{Children}_{it} \\ & + \beta_{16} * \text{Female} * \text{Age}_{it} + \varepsilon, \end{aligned} \quad (1)$$

where:

Hourly Income_{it} = percentile rank of the hourly income of worker *i* in year *t* among the incomes of workers in all occupations (higher incomes are near the 100th percentile and lower incomes are near the 0th percentile);

Female_{it} = a dummy variable equal to 1 if worker *i* in year *t* is female, and 0 otherwise;

Black_{it} = a dummy variable equal to 1 if worker *i* in year *t* is black, and 0 otherwise;

Hispanic_{it} = a dummy variable equal to 1 if worker *i* in year *t* is Hispanic, and 0 otherwise;

Misc. Minority_{it} = a dummy variable equal to 1 if worker *i* in year *t* is a miscellaneous minority, and 0 otherwise;

Bachelor's Work_{it} = a dummy variable equal to 1 if worker *i* in year *t* has some undergraduate education and has completed at most a bachelor's degree, and 0 otherwise;

Graduate Work_{it} = a dummy variable equal to 1 if worker *i* in year *t* has attended some amount of graduate school, and 0 otherwise;

Hours_{it} = hours in an average work week for worker *i* in year *t*;

Age_{it} = age in years of worker *i* in year *t*;

Metro Residence_{it} = a dummy variable equal to 1 if worker *i* in year *t* lives in a metropolitan area as defined by the census bureau;

Married_{it} = a dummy variable equal to 1 if worker *i* in year *t* is now or has ever been married, and 0 otherwise;

WSD_{it} = a dummy variable equal to 1 if worker *i* in year *t* is widowed, separated, or divorced, and 0 otherwise; and

Children_{it} = a count of the number of worker *i*'s own children living with worker *i* in year *t*.

The numbers displayed in Table 1 are descriptive statistics representing a mixture of individual-level and occupation-level values. Specifically, in the columns labeled "sample," all values are calculated from individual-level observations except for the *Occ. Size* row, which shows values calculated from occupation-level observations because occupation size is an occupation-level construct. In the columns labeled "Occupation-Level Values for Auditors," the numbers displayed are all occupation-level means and percentiles.¹³ Panel A shows descriptive statistics for the sample of 16 professions, Panel B for occupations with auditing-like education, and Panel C for

¹³ In some cases, the reported percentiles for auditors appear inconsistent with the sample means and medians. For example, in Table 1, Panel A, the mean value for *Metro Residence* in the "sample" columns for 1970s & 80s is 0.83. The value reported for auditors, 0.82, is lower than the sample mean but is reported to be in the 54th percentile of the sample. Such apparent discrepancies occur because the sample mean is calculated at the individual level while the percentile location of the auditor value is calculated at the occupation level. Individual-level observations receive different weights when calculating individual-level statistics, one observation per person represented, than when calculating occupation-level statistics, one observation per occupation. Because workers living in metropolitan locations tend to work in larger occupations, the individual-level estimate of "metro residence," 0.83, is higher than the untabulated occupation level estimate, which is equal to 0.76.

all occupations. Each panel shows statistics for two time periods: the years 1968–1989 (“1970s & 80s”) and 2000–2010 (“2000s”). For each of these time periods, each panel of Table 1 shows the mean and median values for each variable across the sample, as well as the values for auditing and the percentile location of auditors among the occupations in the sample.

Table 1 shows that women have been well represented in auditing when compared to all subsamples (between the 47th and 78th percentiles). The representation of blacks in auditing when compared to professions was low in the 1970s and 1980s (39th percentile) and average in the 2000s (49th percentile), and was low compared to occupations with auditing-like education (33rd and 30th percentiles) and all occupations (20th and 28th percentiles). Compared to other professions, the representation of miscellaneous minorities in auditing has been below average (33rd and 45th percentiles), but it has been high when compared against all occupations (between the 58th and 76th percentiles) and occupations with auditing-like education (between the 52nd and 72nd percentiles).

Table 1 also shows that auditors were poorly paid relative to other professions in the 1970s and 1980s (with income per hour in the 14th percentile), as well as the 2000s (28th percentile). Hourly income for auditors was average when compared against similarly educated occupations in the 1970s and 1980s (47th percentile) and was relatively high in the 2000s (75th percentile). Hourly income in auditing has been consistently high when compared to all occupations (76th and 88th percentiles). Auditors are well educated, with 96 percent reporting college education, 76 percent at the undergraduate level, and 20 percent at the graduate level. Auditors tend to be extremely young, relative to workers in other professions (0th percentile in the 1970s and 1980s and 10th percentile in the 2000s). The average age of auditors increased by 16 percent over the sample period, which is large compared to the 8 percent increase experienced by an average occupation. Table 1 shows that in terms of size, income, and education, auditing is more comparable to professions and similarly educated occupations than to all occupations in the sample. However, auditors tend to be younger and are less likely to be married or have children than members of similarly educated occupations or especially other professionals.

The univariate correlations in Table 2 show that *Bachelor's Work*, *Graduate Work*, *Age*, *Metro Residence*, *Married*, and *Children* are all positively correlated with *Hourly Income*, while *Female*, *Black*, and *Hispanic* are all negatively correlated with income. Reflecting the large sample size, most of the correlations in Table 2 are statistically significant in expected directions.

Table 3 shows the results from three OLS pay gap regression estimations, for all workers in the first two columns and for auditors in the second two, during the 1970s and 1980s and the 2000s.¹⁴ In all models for the all workers sample, HURGs receive negative pay gaps as indicated by the negative and significant coefficients on *Female*, *Black*, *Hispanic*, and *Misc. Minority*. Including lifestyle controls in Panel D drastically reduces the size of the estimated female pay gap. The magnitudes of the pay gaps have generally been declining over time. Because the dependent variable is hourly income percentile, coefficients cannot be interpreted directly in terms of dollars. To get a sense of the economic significance of the pay gaps, I compare the median hourly income for all workers in 2010 against the hourly income 11 percentiles below the median, where –11

¹⁴ The CPS, like many survey datasets, includes a “sampling weight” variable for each observation that can be thought of as an estimate of the number of individuals in the population that are represented by each observation in the survey dataset. In a random sample of a given population, the survey weight for each observation is the number of individuals in the population over the number of individuals sampled. When observations have different probabilities of being selected from the population by the survey data collectors, survey weights can differ across observations. When estimating a regression on survey data to make inferences about the population, ignoring survey weights can produce biased coefficient estimates and can slightly change estimated standard-errors (Lee and Forthofer 2006). My estimations account for survey weights.

TABLE 1

Descriptive Statistics for, and the Relative Ranking of, Auditors among Professions, Similarly Educated Occupations, and All Occupations

Panel A: Professions

	Sample				Occupation-Level Values for Auditors [†]			
	1970s & 80s		2000s		1970s & 80s		2000s	
	Mean	Median	Mean	Median	Value	%tile	Value	%tile
<i>Female</i>	0.19	0.00	0.37	0.00	0.24	77%	0.48	78%
<i>Black</i>	0.03	0.00	0.07	0.00	0.02	39%	0.06	49%
<i>Hispanic</i>	0.02	0.00	0.05	0.00	0.01	50%	0.04	44%
<i>Misc. Minority</i>	0.04	0.00	0.10	0.00	0.02	33%	0.09	45%
<i>Hourly Income</i>	10.60	8.65	35.88	26.44	8.32	14%	29.46	28%
<i>Bachelor's Work</i>	0.49	0.00	0.53	1.00	0.69	82%	0.76	85%
<i>Graduate Work</i>	0.37	0.00	0.41	0.00	0.21	23%	0.20	20%
<i>Hours</i>	45.43	40.00	45.91	40.00	46.57	62%	44.37	39%
<i>Age</i>	39.32	37.00	42.75	42.00	34.82	0%	40.56	10%
<i>Metro Residence</i>	0.83	1.00	0.91	1.00	0.82	54%	0.91	48%
<i>Married</i>	0.76	1.00	0.71	1.00	0.70	10%	0.65	10%
<i>WSD</i>	0.07	0.00	0.11	0.00	0.07	60%	0.12	66%
<i>Children</i>	1.05	1.00	0.94	0.00	0.90	18%	0.75	11%
<i>Occ. Size (in 100,000s)[†]</i>	2.29	1.60	4.10	2.78	1.52	42%	3.15	52%

Panel B: Occupations with Education Levels Similar to that of Auditors

	Sample				Occupation-Level Values for Auditors [†]			
	1970s & 80s		2000s		1970s & 80s		2000s	
	Mean	Median	Mean	Median	Value	%tile	Value	%tile
<i>Female</i>	0.44	0.00	0.50	0.00	0.24	47%	0.48	53%
<i>Black</i>	0.06	0.00	0.10	0.00	0.02	33%	0.06	30%
<i>Hispanic</i>	0.02	0.00	0.07	0.00	0.01	46%	0.04	27%
<i>Misc. Minority</i>	0.03	0.00	0.08	0.00	0.02	52%	0.09	72%
<i>Hourly Income</i>	8.52	7.21	25.21	20.83	8.32	47%	29.46	75%
<i>Bachelor's Work</i>	0.65	1.00	0.73	1.00	0.69	69%	0.76	71%
<i>Graduate Work</i>	0.17	0.00	0.12	0.00	0.21	68%	0.20	82%
<i>Hours</i>	42.40	40.00	43.22	40.00	46.57	80%	44.37	71%
<i>Age</i>	37.66	35.00	41.19	41.00	34.82	17%	40.56	42%
<i>Metro Residence</i>	0.81	1.00	0.89	1.00	0.82	53%	0.91	60%
<i>Married</i>	0.70	1.00	0.64	1.00	0.70	39%	0.65	54%
<i>WSD</i>	0.11	0.00	0.15	0.00	0.07	33%	0.12	38%
<i>Children</i>	0.93	0.00	0.85	0.00	0.90	41%	0.75	32%
<i>Occ. Size (in 100,000s)[†]</i>	2.00	1.02	3.40	1.81	1.52	59%	3.15	67%

(continued on next page)

TABLE 1 (continued)

Panel C: All Occupations

	Sample				Occupation-Level Values for Auditors [†]			
	1970s & 80s		2000s		1970s & 80s		2000s	
	Mean	Median	Mean	Median	Value	%tile	Value	%tile
<i>Female</i>	0.40	0.00	0.45	0.00	0.24	55%	0.48	64%
<i>Black</i>	0.11	0.00	0.12	0.00	0.02	20%	0.06	28%
<i>Hispanic</i>	0.05	0.00	0.14	0.00	0.01	33%	0.04	17%
<i>Misc. Minority</i>	0.02	0.00	0.07	0.00	0.02	58%	0.09	76%
<i>Hourly Income</i>	6.39	5.05	19.30	14.96	8.32	76%	29.46	88%
<i>Bachelor's Work</i>	0.28	0.00	0.48	0.00	0.69	96%	0.76	92%
<i>Graduate Work</i>	0.09	0.00	0.11	0.00	0.21	83%	0.20	83%
<i>Hours</i>	42.18	40.00	43.09	40.00	46.57	85%	44.37	76%
<i>Age</i>	37.95	36.00	40.91	41.00	34.82	19%	40.56	46%
<i>Metro Residence</i>	0.73	1.00	0.84	1.00	0.82	77%	0.91	77%
<i>Married</i>	0.69	1.00	0.62	1.00	0.70	43%	0.65	57%
<i>WSD</i>	0.13	0.00	0.16	0.00	0.07	29%	0.12	34%
<i>Children</i>	0.97	0.00	0.86	0.00	0.90	39%	0.75	30%
<i>Occ. Size (in 100,000s)[†]</i>	2.18	1.00	3.14	1.21	1.52	59%	3.15	71%

[†] The row labeled “Occ. Size” and columns labeled “Occupation-Level Values for Auditors” describe occupation-level constructs; the values in this row and these columns are calculated from CPS data that have been aggregated at the occupation level. The value in the table’s other rows and columns describe individual-level constructs and are calculated from data describing individuals.

Data summarized in this table come from the IPUMS-CPS database. The columns labeled “Sample” show the mean and median for each variable estimated for a given sample. The columns labeled “Occupation-Level Values for Auditors” show the average value of the variable across the auditing profession and the percentile location among similarly calculated values for other occupations in a given sample. The columns labeled “1970s & 80s” show values estimated for the years 1968–1989, and the columns labeled “2000s” show values estimated for the years 2000–2010. Panel A shows estimates for all occupations, Panel B for a subsample of 16 high-status professions, and Panel C for a sample of occupations with education levels similar to those in auditing.

Variable Definitions:

Female, *Black*, *Hispanic*, and *Misc. Minority* = dummy variables equal to 1 for individuals who are members of the named HURG, and 0 otherwise;

Hourly Income = percentile rank of each worker’s hourly income in the sample of all CPS workers in a given year;

Bachelor's Work and *Graduate Work* = dummy variables equal to 1 for workers who have attended at least some college at the undergraduate level and some college at the graduate level, respectively, and 0 otherwise;

Hours = number of hours a worker spends at work during an average week;

Age = a worker’s age;

Metro Residence = dummy variable equal to 1 for workers living in an area defined by the census bureau as a metropolitan area;

Married = dummy variable equal to 1 if the respondent is now or has ever been married, and 0 otherwise;

WSD = dummy variable equal to 1 for workers who are widowed, separated, or divorced, and 0 otherwise;

Children = number of the worker’s own children living in the worker’s household; and

Occ. Size = number of workers in each CPS occupation in 100,000s.

percentiles reflects the -0.11 coefficient on *Hispanic* in the Panel D regression for the 2000s. The median hourly income in 2010 was \$17.31, while the hourly income 11 percentiles below the median was \$14.42, a difference equivalent to a 17 percent pay cut. This suggests that many of the statistically significant pay gaps in Table 3 are also economically significant.

When the sample is restricted to include only auditors, in Panels B and C of Table 3 the female pay gap estimates remain reliably statistically significant and negative while many of the other HURG pay gaps are not statistically significant. In the Table 3, Panel D regressions for the 2000s,

TABLE 2

Univariate Correlations among Individual-Level Variables (1970s, 1980s, and 2000s Pooled)

Panel A: Correlation of Variables *Hourly Income* through *Bachelor's Work*

	1	2	3	4	5	6
1 <i>Hourly Income</i>						
2 <i>Female</i>	−0.25***					
3 <i>Black</i>	−0.09***	0.06***				
4 <i>Hispanic</i>	−0.14***	−0.03***	−0.09***			
5 <i>Misc. Minority</i>	−0.00***	0.02***	−0.08***	−0.03***		
6 <i>Bachelor's Work</i>	0.14***	0.06***	−0.01***	−0.08***	0.05***	
7 <i>Graduate Work</i>	0.25***	−0.02***	−0.05***	−0.07***	0.04***	−0.25***
8 <i>Hours</i>	−0.01***	−0.18***	−0.06***	−0.04***	0.00	0.03***
9 <i>Age</i>	0.22***	−0.01***	0.00***	−0.08***	0.01***	−0.04***
10 <i>Metro Residence</i>	0.14***	0.02***	0.07***	0.11***	0.04***	0.07***
11 <i>Married</i>	0.22***	−0.14***	−0.08***	−0.02***	−0.01***	−0.03***
12 <i>WSD</i>	−0.06***	0.17***	0.07***	−0.01***	−0.01***	−0.01***
13 <i>Children</i>	0.11***	−0.07***	0.01***	0.05***	0.00***	−0.03***

Panel B: Correlation of Variables *Graduate Work* through *Children*, continued from Panel A

	7	8	9	10	11	12
8 <i>Hours</i>	0.12***					
9 <i>Age</i>	0.09***	0.05***				
10 <i>Metro Residence</i>	0.05***	−0.03***	0.00***			
11 <i>Married</i>	0.05***	0.06***	0.23***	−0.07***		
12 <i>WSD</i>	−0.03***	−0.02***	0.16***	0.02***	−0.43***	
13 <i>Children</i>	0.01***	0.05***	0.01***	−0.04***	0.38***	−0.10***

*** Indicates statistical significance at the 0.01 level.

Data summarized in this table come from the IPUMS-CPS database. Coefficients are Pearson correlations. Spearman correlations (untabulated) are nearly identical to the reported coefficients.

Variable Definitions:

Hourly Income = percentile rank of each worker's hourly income in the sample of all CPS workers in a given year;
Female, *Black*, *Hispanic*, and *Misc. Minority* = dummy variables equal to 1 for individuals who are members of the named HURG, and 0 otherwise;

Bachelor's Work and *Graduate Work* = dummy variables equal to 1 for workers who have attended at least some college at the undergraduate level and some college at the graduate level, respectively, and 0 otherwise;

Hours = number of hours a worker spends at work during an average week;

Age = a worker's age;

Metro Residence = dummy variable equal to 1 for workers living in an area defined by the census bureau as a metropolitan area;

Married = dummy variable equal to 1 if the respondent is now or has ever been married, and 0 otherwise;

WSD = dummy variable equal to 1 for workers who are widowed, separated, or divorced, and 0 otherwise; and

Children = number of the worker's own children living in the worker's household.

TABLE 3

Pay Gap Regressions: Modeling HURG Pay Gaps among All Workers and Auditors in the 1970s & 80s and the 2000s**Panel A: Sample Sizes**

	Predicted Sign	All Workers		Auditors	
		1970s & 80s	2000s	1970s & 80s	2000s
Observations	(unweighted)	845,284	688,732	2,203	2,184
n Females	(unweighted)	336,960	310,290	581	1,041
n Blacks	(unweighted)	78,686	76,422	32	124
n Hispanics	(unweighted)	60,479	106,226	55	117
n Misc. Minorities	(unweighted)	20,149	54,033	48	212

Panel B: No Controls

	Predicted Sign	All Workers		Auditors	
		1970s & 80s	2000s	1970s & 80s	2000s
<i>Female</i>	—	−0.18***	−0.09***	−0.19***	−0.11***
<i>Black</i>	—	−0.10***	−0.09***	−0.01	−0.04*
<i>Hispanic</i>	—	−0.12***	−0.18***	−0.04	0.01
<i>Misc. Minority</i>	—	−0.01***	−0.01***	−0.04	−0.03*
Constant		0.60***	0.58***	0.71***	0.75***
R ²		0.117	0.071	0.0925	0.056

Panel C: Human Capital Controls

	Predicted Sign	All Workers		Auditors	
		1970s & 80s	2000s	1970s & 80s	2000s
<i>Female</i>	—	−0.20***	−0.11***	−0.16***	−0.10***
<i>Black</i>	—	−0.09***	−0.07***	−0.02	−0.03
<i>Hispanic</i>	—	−0.10***	−0.11***	−0.08**	0.01
<i>Misc. Minority</i>	—	−0.05***	−0.03***	−0.04	−0.03**
<i>Bachelor's Work</i>	+	0.12***	0.16***	0.12***	0.23***
<i>Graduate Work</i>	+	0.24***	0.32***	0.22***	0.28***
<i>Hours</i>	+	−0.01†††	0.00***	0.00***	0.00**
<i>Age</i>	+	0.01***	0.00***	0.00***	0.00***
<i>Metro Residence</i>	+	0.09***	0.09***	0.12***	0.06***
Constant		0.52***	0.27***	0.43***	0.45***
R ²		0.280	0.260	0.194	0.109

(continued on next page)

TABLE 3 (continued)

Panel D: Human Capital and Lifestyle Choices Controls

	Predicted Sign	All Workers		Auditors	
		1970s & 80s	2000s	1970s & 80s	2000s
<i>Female</i>	—	−0.03***	−0.04***	0.01	0.08††
<i>Black</i>	—	−0.09***	−0.06***	−0.01	−0.02
<i>Hispanic</i>	—	−0.11***	−0.11***	−0.07**	0.02
<i>Misc. Minority</i>	—	−0.05***	−0.03***	−0.04	−0.01
<i>Bachelor's Work</i>	+	0.12***	0.16***	0.11***	0.22***
<i>Graduate Work</i>	+	0.24***	0.31***	0.19***	0.27***
<i>Hours</i>	+	−0.01***	0.00***	0.00***	0.00***
<i>Age</i>	+	0.00***	0.00***	0.00***	0.00***
<i>Metro Residence</i>	+	0.10***	0.09***	0.12***	0.07***
<i>Married</i>	+	0.15***	0.10***	0.15***	0.10***
<i>WSD</i>	—	0.06†††	0.03†††	0.13†††	−0.04
<i>Children</i>	+	0.03***	0.02***	0.03***	0.04***
<i>Female * Married</i>	—	−0.13***	−0.06***	−0.14***	−0.07**
<i>Female * WSD</i>	—	−0.04***	−0.03***	−0.10**	0.09††
<i>Female * Children</i>	—	−0.03***	−0.02***	−0.04***	−0.04***
<i>Female * Age</i>	—	0.00†††	0.00†††	0.00	0.00†††
Constant		0.42***	0.24***	0.42***	0.36***
R ²		0.327	0.284	0.262	0.168

*, **, *** Indicate statistical significance at the 0.10, 0.05, and 0.01 levels, respectively.

††, ††† Indicate statistical significance with a sign opposite predictions at the 0.05 and 0.01 levels, respectively.

Significance levels are one-tailed. Models are estimated using survey weighted OLS. Data in this table come from analysis of the IPUMS-CPS database.

Variable Definitions:

Hourly Income = dependent variable, percentile rank of each worker's hourly income in the sample of all CPS workers in a given year;

Female, *Black*, *Hispanic*, and *Misc. Minority* = dummy variables equal to 1 for individuals who are members of the named HURG, and 0 otherwise;

Bachelor's Work and *Graduate Work* = dummy variables equal to 1 for workers who have attended at least some college at the undergraduate level and some college at the graduate level, respectively, and 0 otherwise;

Hours = number of hours a worker spends at work during an average week;

Age = a worker's age;

Metro Residence = dummy variable equal to 1 for workers living in an area defined by the census bureau as a metropolitan area;

Married = dummy variable equal to 1 if the respondent is now or has ever been married, and 0 otherwise;

WSD = dummy variable equal to 1 for workers who are widowed, separated, or divorced, and 0 otherwise; and

Children = number of the worker's own children living in the worker's household.

which include human capital and lifestyle controls, the only statistically significant pay gap for auditors is a positive pay gap for women. These results suggest that the auditing profession has a pay structure that is unusually insensitive to HURG status.

Relative Pay Gap Model

Model 1 can be modified slightly to estimate how HURG pay gaps in auditing differ from HURG pay gaps in samples of other occupations. The modification involves adding a dummy variable for auditing, as well as interactions of this auditing dummy with the HURG dummies. This

model is as follows:

$$\begin{aligned} \text{Hourly Income}_{it} = & \alpha + \beta_1 * \text{AuditProf}_{it} + \beta_2 * \text{AuditProf}_{it} * \text{Female}_{it} + \beta_3 * \text{AuditProf}_{it} * \text{Black}_{it} \\ & + \beta_4 * \text{AuditProf}_{it} * \text{Hispanic}_{it} + \beta_5 * \text{AuditProf}_{it} * \text{Misc. Minorities}_{it} \\ & + \text{variables from Model 1} + \varepsilon, \end{aligned} \quad (2)$$

where:

AuditProf_{it} = a dummy variable equal to 1 for observations representing auditors, and 0 otherwise.

All other variables are as defined in Model 1.

Estimates of β_2 , β_3 , β_4 , and β_5 in Model 2 are interpretable as the difference between the pay gap for HURGs working in auditing and the pay gaps of these workers in other occupations. In other words, positive β_2 , β_3 , β_4 , and β_5 coefficients are evidence that HURGs are well paid in auditing relative to a given comparison group, while negative coefficients are evidence that HURGs are poorly paid in auditing relative to a given comparison group. I call these estimates “relative pay gaps” and discuss them together with the results for representation, which are produced by the tests described next.

Representation Data and Models

This study’s multivariate analyses of the representation of HURGs in occupations differ from the pay gap analyses because they use occupation-level variables rather than individual-level variables because the dependent variables of interest are HURG representation at the occupation level. They are based on the following model:

$$\begin{aligned} \text{HURGRepresentation}_{it} = & \alpha + \beta_1 * \text{Occ. Hourly Income}_{it} + \beta_2 * \text{Occ. Size}_{it} \\ & + \beta_3 * \text{Occ. Bachelor's Work}_{it} + \beta_4 * \text{Occ. Graduate Work}_{it} \\ & + \beta_5 * \text{Occ. Hours}_{it} + \beta_6 * \text{Occ. Metro Residence}_{it} + \varepsilon, \end{aligned} \quad (3)$$

where:

$\text{HURGRepresentation}_{it}$ = the proportional representation of a given HURG (women, blacks, Hispanics, or miscellaneous minorities) in occupation i in time t ;

$\text{Occ. Hourly Income}_{it}$ = the hourly income of an average worker in occupation i in time t ;

Occ. Size_{it} = the number of full-time workers in occupation i in time t ;

$\text{Occ. Bachelor's Work}_{it}$ = the proportion of workers who have some undergraduate education and have completed at most a bachelor’s degree in occupation i in time t ;

$\text{Occ. Graduate Work}_{it}$ = the proportion of workers in occupation i in time t who have attended graduate school;

Occ. Hours_{it} = the hours in an average work week for workers in occupation i in time t ; and

$\text{Occ. Metro Residence}_{it}$ = the proportion of workers living in a major metropolitan area as defined by the census bureau in occupation i in time t .

Average income and size are proxies for fundamental labor market characteristics of the occupation including the demand for and the price of the occupation’s services and the supply of workers. I include education variables because, if the accessibility of higher education to HURGs has been different than the accessibility to non-HURGs, then the proportion of HURGs employed in occupations requiring higher education is likely to differ from the population average. I include a measure of hours worked because, although their share of home production work has been declining with time, women today and historically have performed the bulk of the home production

work in the United States and less of the work outside of the home, on average, than men (Aguilar and Hurst 2007). One possible consequence is that jobs that require long hours may have been less attractive to women, given their other obligations. Finally, I include a measure of the proportion of workers living in metropolitan areas because the black and Hispanic populations have traditionally been more concentrated in cities and so may be more represented in urban occupations. The descriptive statistics for occupations are very similar to the descriptive statistics for individuals in Table 1.

Table 4 shows univariate correlations among the occupation-level variables that appear in the analysis of HURG representation in occupations, with observations from the 1970s, 1980s, and 2000s pooled. The representation of a given HURG in an occupation is generally positively associated with the representation of other HURGs, suggesting that occupations tend to exclude or include members of many HURGs concurrently. *Occ. Hourly Income* has negative Pearson and Spearman correlations with *Proportion Female*, *Proportion Black*, and *Proportion Hispanic*. The Pearson correlation of *Occ. Hourly Income* with *Misc. Minority* is insignificant, while the Spearman correlation is significantly negative. These results suggest that occupations with high concentrations of most HURGs are paid less than other occupations when no controls are included. *Proportion Female* and *Proportion Misc. Minority* are positively correlated with the education variables, indicating that occupations employing these HURGs employ more highly educated workers than average occupations, while *Proportion Black* and *Proportion Hispanic* are negatively correlated with the education variables. Finally, *Proportion Female*, *Proportion Black*, and *Proportion Hispanic* are negatively correlated with *Occ. Hours*, suggesting that occupations employing high concentrations of these HURGs have relatively short work weeks. *Proportion Misc. Minority* is positively correlated with *Occ. Hours*.

Table 5 shows estimations of Model 3 for women in Panel A, blacks in Panel B, Hispanics in Panel C, and miscellaneous minorities in Panel D in the 1970s and 1980s, as well as the 2000s, among workers in professions, occupations with auditing-like education, and all occupations. The models are estimated using OLS with errors clustered by occupation. Panel A shows that the representation of women is generally negatively related to hours worked, consistent with women preferring shorter work weeks on average. In Panel B, the representation of blacks is consistently negatively related to hourly incomes, suggesting that black workers are concentrated in occupations with relatively low pay. In Panel C, Hispanic representation is positively associated with *Occ. Metro Residence*, consistent with a concentration of Hispanic workers in cities. Panel D shows a generally positive association between the concentration of miscellaneous minorities and the education variables, suggesting that these workers are concentrated in occupations requiring educated workers.

By adding a dummy variable to Model 3, I test in Model 4 for deviations in the representation of HURGs in auditing from the levels that would be expected given its characteristics:

$$\begin{aligned} \text{HURGRepresentation}_{it} = & \alpha + \beta_1 * \text{AuditProf}_{it} + \text{Occ. Hourly Income}_{it} + \beta_2 * \text{Occ. Size}_{it} \\ & + \beta_3 * \text{Occ. Bachelor's Work}_{it} + \beta_4 * \text{Occ. Graduate Work}_{it} \\ & + \beta_5 * \text{Occ. Hours}_{it} + \beta_6 * \text{Occ. Metro Residence}_{it} + \varepsilon, \end{aligned} \quad (4)$$

where:

AuditProf_{it} = dummy variable equal to 1 for occupation/years representing the auditing profession, and 0 otherwise.

All other variables are as defined in Model 3.

The β_1 estimates from Model 4 are deviations in HURG representation in the auditing profession from the level of HURG representation that would be expected, given the profession's characteristics. I call these estimates "relative representation." Negative and significant β_1

TABLE 4
Univariate Correlations among Occupation-Level Variables (1970s, 1980s, and 2000s Pooled)

	1	2	3	4	5	6	7	8	9	10
1 <i>Female</i>										
2 <i>Black</i>	0.23***									
3 <i>Hispanic</i>	0.01	0.18***								
4 <i>Misc. Minority</i>	0.14***	0.01	0.19***							
5 <i>Occ. Hourly Income</i>	-0.37***	-0.42***	-0.43***	0.02						
6 <i>Occ. Size</i>	0.18***	0.06***	0.04***	0.05***	0.06***					
7 <i>Occ. Bachelor's Work</i>	0.20***	-0.15***	-0.15***	0.21***	0.43***	0.07***				
8 <i>Occ. Graduate Work</i>	0.01	-0.25***	-0.26***	0.13***	0.33***	-0.04***	0.01			
9 <i>Occ. Hours</i>	-0.34***	-0.25***	-0.11***	0.03***	0.25***	-0.01	0.08***	0.29***		
10 <i>Occ. Metro Residence</i>	0.16***	0.03**	0.11***	0.27***	0.37***	0.07***	0.39***	0.14***	-0.10***	

*, **, *** Indicate statistical significance at the 0.10, 0.05, and 0.01 levels, respectively.

Data in this table come from the IPUMS-CPS database. Individual-level observations of workers in the United States are aggregated to make occupation-level observations. Coefficients below the diagonal are Pearson correlations, and coefficients above the diagonal are Spearman correlations.

Variable Definitions:

Female, *Black*, *Hispanic*, and *Misc. Minority* = estimates of the proportion of workers in occupations that are female, black, Hispanic, and miscellaneous racial minorities;

Occ. Hourly Income = percentile rank of the mean hourly income of workers in an occupation compared against similarly calculated values for all occupations in the sample in a given year;

Occ. Size = number of workers in an occupation in 100,000s;

Occ. Bachelor's Work and *Occ. Graduate Work* = estimates of the proportion of workers who have attended at least some college at the undergraduate level and some college at the graduate level, respectively;

Occ. Hours = number of hours worked per week; and

Occ. Metro Residence = proportion of workers living in a census-classified metropolitan area.

TABLE 5

Representation Regressions: Modeling HURG Representation in Occupations

Panel A: Representation of Women

	Similarly Educated					
	Professions		Occupations		All Occupations	
	1970s & 80s	2000s	1970s & 80s	2000s	1970s & 80s	2000s
Observations	338	176	493	607	5,636	3,214
<i>Occ. Hourly Income</i>	-0.093	0.130	-0.937***	-0.663***	-0.774***	-0.634***
<i>Occ. Size</i>	0.033***	0.029***	0.028**	0.014**	0.010***	0.007***
<i>Occ. Bachelor's Work</i>	0.176	0.066	0.716***	0.458*	0.556***	0.776***
<i>Occ. Graduate Work</i>	0.200	0.255	0.261*	0.570**	0.488***	0.835***
<i>Occ. Hours</i>	-0.002	-0.019***	-0.030***	-0.041***	-0.027***	-0.029***
<i>Occ. Metro Residence</i>	0.032	-0.996***	0.270**	0.190	0.157**	0.000
Constant	0.012	1.677*	1.519***	2.080***	1.509***	1.485***
R ²	0.389	0.439	0.641	0.439	0.503	0.453

Panel B: Representation of Blacks

	Similarly Educated					
	Professions		Occupations		All Occupations	
	1970s & 80s	2000s	1970s & 80s	2000s	1970s & 80s	2000s
Observations	338	176	493	607	5,636	3,214
<i>Occ. Hourly Income</i>	-0.048***	-0.120***	-0.126***	-0.083***	-0.119***	-0.101***
<i>Occ. Size</i>	0.003***	0.003**	0.002	0.001*	0.000	0.001
<i>Occ. Bachelor's Work</i>	0.023	-0.071	0.043	-0.098	-0.080***	0.026
<i>Occ. Graduate Work</i>	0.041**	-0.052	-0.011	-0.121***	-0.020	-0.014
<i>Occ. Hours</i>	0.000	-0.002	-0.002	-0.003*	-0.003***	-0.004***
<i>Occ. Metro Residence</i>	0.029	0.079	0.017	-0.017	0.070***	0.059**
Constant	0.029	0.244	0.191**	0.370***	0.280***	0.255***
R ²	0.260	0.391	0.232	0.210	0.257	0.166

Panel C: Representation of Hispanics

	Similarly Educated					
	Professions		Occupations		All Occupations	
	1970s & 80s	2000s	1970s & 80s	2000s	1970s & 80s	2000s
Observations	338	176	493	607	5,636	3,214
<i>Occ. Hourly Income</i>	0.003	-0.017	-0.046***	-0.061***	-0.066***	-0.126***
<i>Occ. Size</i>	0.002***	0.001	0.000	0.000	-0.001**	0.000
<i>Occ. Bachelor's Work</i>	0.050***	-0.125	0.062***	-0.204***	-0.049***	-0.257***
<i>Occ. Graduate Work</i>	0.042***	-0.119	-0.006	-0.159***	-0.029***	-0.175***
<i>Occ. Hours</i>	0.000	0.000	-0.001*	-0.001	0.000	-0.001
<i>Occ. Metro Residence</i>	0.030**	0.059	0.027***	0.062**	0.052***	0.185***
Constant	-0.073***	0.120	0.039	0.269***	0.069***	0.230***
R ²	0.153	0.104	0.190	0.288	0.205	0.501

(continued on next page)

TABLE 5 (continued)

Panel D: Representation of Misc. Minorities

	Similarly Educated					
	Professions		Occupations		All Occupations	
	1970s & 80s	2000s	1970s & 80s	2000s	1970s & 80s	2000s
Observations	338	176	493	607	5,636	3,214
<i>Occ. Hourly Income</i>	0.040	0.016	-0.007	-0.015	-0.020***	-0.023**
<i>Occ. Size</i>	0.002	0.001	0.002*	0.002*	0.000	0.000
<i>Occ. Bachelor's Work</i>	0.152***	0.373**	0.038**	-0.025	0.015***	0.015
<i>Occ. Graduate Work</i>	0.134***	0.369*	0.029	0.166***	0.029***	0.057***
<i>Occ. Hours</i>	0.001	-0.002	-0.001***	-0.003***	0.000	-0.001
<i>Occ. Metro Residence</i>	0.055*	0.253*	0.016	0.073***	0.020***	0.085***
Constant	-0.224*	-0.419	0.031	0.163**	0.009	0.018
R ²	0.165	0.191	0.074	0.137	0.051	0.080

*, **, *** Indicate statistical significance at the 0.10, 0.05, and 0.01 levels, respectively. Significance levels are two tailed.

Data in this table come from the IPUMS-CPS database. Individual-level observations of workers in the United States are aggregated to make occupation-level observations.

The columns labeled "Professions" are estimated using 16 occupations that are high-status professions, those labeled "Similarly Educated Occupations" are occupations whose workers have education levels similar to auditing (plus or minus 10 percent), and those labeled "All Occupations" are estimated using the whole sample of census occupations. Coefficients are estimated using OLS with errors clustered by occupation.

Variable Definitions:

Occ. Hourly Income = percentile rank of the mean hourly income of workers in an occupation compared against similarly calculated values for all occupations in the sample in a given year;

Occ. Size = number of workers in 100,000s;

Occ. Bachelor's Work and *Occ. Graduate Work* = estimates of the proportion of workers who have attended at least some college at the undergraduate level and some college at the graduate level, respectively;

Occ. Hours = number of hours worked per week; and

Occ. Metro Residence = the proportion of workers living in a census-classified metropolitan area.

coefficients indicate relative underrepresentation of the HURG in auditing, while positive and significant coefficients represent relative overrepresentation.

Relative Pay Gap and Relative Representation Results

Table 6 shows relative pay gaps for HURG auditors in the first two columns and relative representation of HURGs in the auditing profession in the third and fourth columns. Relative pay gap estimates come from the β_2 , β_3 , β_4 , and β_5 coefficients estimated using Model 2. Relative representation estimates come from β_1 coefficients estimated using Model 4. The panels show relative pay gaps and relative representation in auditing relative to professions, similarly educated occupations, and all occupations in the 1970s and 1980s, and the 2000s. The first three lines of each panel show results for workers at all earnings levels, and the last three lines show results for workers with earnings in the top third for the occupation.

The results for women in Panel A show mostly positive relative pay gaps. Two of four coefficients comparing auditors to professions are significantly negative, while five of the remaining eight coefficients are significantly positive. Turning to the relative representation of women, relative to professions and similarly educated occupations, women are well represented in auditing, with

TABLE 6

Relative Pay Gaps and Relative Representation in the Auditing Profession

Panel A: Women

	Relative Pay Gaps		Relative Representation	
	1970s & 80s	2000s	1970s & 80s	2000s
Relative to workers at all earnings levels in:				
Professions	-0.027*	-0.016	0.184***	0.307***
Similarly Educated	-0.015	0.027**	0.034	0.134***
All Occupations	0.017	0.018	-0.035	0.074***
Relative to workers in the top third of occupational earners in:				
Professions	-0.012	-0.012**	0.024	0.193***
Similarly Educated	0.058***	0.051***	-0.040	0.039
All Occupations	0.133***	0.071***	-0.119***	-0.049**

Panel B: Blacks

	Relative Pay Gaps		Relative Representation	
	1970s & 80s	2000s	1970s & 80s	2000s
Relative to workers at all earnings levels in:				
Professions	0.062	0.030	-0.009**	0.005
Similarly Educated	0.054	0.036	-0.025***	-0.006
All Occupations	0.100*	0.055**	-0.008	-0.024***
Relative to workers in the top 10 percent of occupational earners in:				
Professions	0.039***	0.016	-0.008**	-0.007
Similarly Educated	0.033**	0.026***	-0.001	-0.015***
All Occupations	0.065*	0.076***	-0.003	-0.030***

Panel C: Hispanics

	Relative Pay Gaps		Relative Representation	
	1970s & 80s	2000s	1970s & 80s	2000s
Relative to workers at all earnings levels in:				
Professions	-0.029	0.059**	-0.008**	0.001
Similarly Educated	-0.023	0.084***	-0.008**	-0.003
All Occupations	0.035	0.133***	-0.004	0.031***
Relative to workers in the top 10 percent of occupational earners in:				
Professions	-0.014	-0.001	-0.004	0.015***
Similarly Educated	-0.007	0.035***	-0.002	0.014***
All Occupations	0.051***	0.088***	-0.002	0.037***

(continued on next page)

TABLE 6 (continued)

Panel D: Misc. Minorities

	Relative Pay Gaps		Relative Representation	
	1970s & 80s	2000s	1970s & 80s	2000s
Relative to workers at all earnings levels in:				
Professions	-0.051	-0.018	-0.031**	-0.025
Similarly Educated	-0.041	-0.030*	-0.002	0.010
All Occupations	0.012	0.016	-0.008***	0.019***
Relative to workers in the top 10 percent of occupational earners in:				
Professions	-0.036*	-0.023***	-0.050***	-0.069***
Similarly Educated	-0.023	-0.023***	-0.008	-0.029***
All Occupations	0.035	0.009	-0.019***	-0.018***

*, **, *** Indicate statistical significance at the 0.10, 0.05, and 0.01 levels, respectively. Significance levels are two tailed.

Data in this table come from the IPUMS-CPS database. Values listed in the "Relative Pay Gaps" columns are coefficients from the *AuditProf* * HURG interaction terms in pay gap regressions (Model 2) for females, blacks, Hispanics, and miscellaneous minorities. The "Relative Pay Gap" coefficients are interpretable as deviations of HURG pay in the auditing profession from the pay that would be expected for HURGs given the auditing profession's characteristics. Values in the "Relative Representation" columns are coefficients from the *AuditProf* term in the HURG representation regressions (Model 4) estimated for dependent variables measuring the proportional representation of females, blacks, Hispanics, and miscellaneous minorities. The coefficients in the "Relative Representation" columns are interpretable as deviations of HURG representation in the auditing profession from the level of HURG representation that would be expected given the auditing profession's characteristics. Because they concern representation, an occupation-level construct, in the "Relative Representation" columns, individual-level observations of workers in the United States are aggregated to make occupation-level observations. The models are estimated using data from three samples of occupations (professions, similarly educated occupations, and all occupations) and two samples of workers (workers at all earnings levels and workers in the top third of earners). Relative pay gap models are estimated using survey-weighted OLS. Relative representation models are estimated using OLS with errors clustered by occupation.

five out of eight coefficients significantly positive in the first, second, third, and fourth rows of the two columns under "Relative Representation." Relative to All Occupations, women were poorly represented among the top third of earners in the 1970s and 1980s and in the 2000s, although the coefficient became smaller over time. The general pattern of results for women reflects positive relative pay and positive relative representation, suggesting that women are well integrated in auditing relative to comparison groups.

The results for blacks (Panel B) show that all relative pay gaps are positive, with seven of 12 coefficients being statistically significant. This is consistent with Table 3 and suggests that blacks are paid relatively well in auditing. Blacks have generally been poorly represented in the auditing profession. Six of 12 comparisons yield statistically significant negative relative representation for blacks, while none are significantly positive. This pattern of positive relative pay gaps with negative relative representation is noteworthy. While relatively better pay in auditing could be expected to attract a relatively greater number of blacks into auditing careers, the representation results suggest that it does not. This is an anomaly and suggests that there are auditing-specific forces screening blacks out of the auditing profession at higher rates than in all occupations or similarly educated occupations.

The anomaly is not apparent when auditing is compared to professions in the 2000s, suggesting that black underrepresentation in auditing may be a manifestation of forces in auditing that also exist in other professions. But the anomaly relative to all occupations and occupations with audit-like education deserves careful consideration, given historical discrimination against blacks by the

auditing profession (Hammond 2002); I examine it more closely in Section V. Potential supply-side explanations for anomalous black underrepresentation in auditing include a lack of black role models in auditing that could inspire young black students to pursue auditing careers (Hammond 2002), or misunderstanding of the nature of auditing work and education that is particularly negative among blacks (CPA Journal Panel 1999; Sanders 2007). A potential demand-side explanation is discrimination, particularly for black auditors in medium and small firms (Mitchell and Flintall 1990; CPA Journal Panel 1999).

The results for Hispanics (Panel C) show only one out of six relative pay gaps was statistically significant in the 1970s and 1980s, but in the 2000s, five of the six relative pay gaps were significantly positive. In the 1970s and 1980s, there is some weak evidence of negative relative representation of Hispanics in auditing, but by the 2000s, four of six relative representation coefficients are significantly positive. These results are consistent with Hispanics selecting into auditing at higher rates when doing so offers abnormally good pay.

The results for miscellaneous minorities in Panel D show some relatively weak evidence that they have received negative relative pay in auditing, with four of 12 comparisons yielding statistically significant negative coefficients. There is stronger evidence of poor relative representation of miscellaneous minorities in the auditing profession, with eight of 12 comparisons yielding statistically significantly negative coefficients. This pattern of results, low relative pay gaps and low relative representation, is consistent with some miscellaneous minorities taking advantage of higher pay available outside of auditing.

The relative pay gap results are driven mostly by unequal pay in non-auditing occupations. Table 3 shows that in auditing, HURGs are paid much like non-HURGs but that this is not the case in the labor market generally, where women, blacks, and Hispanics tend to be paid less than non-HURGs. Miscellaneous minorities tend to be paid more than other workers in professions and occupations with auditor-like education and paid less across all occupations. In untabulated robustness checks, I run the Table 3 regressions for the top third of earners in auditing and find that pay is generally insensitive to HURG status among highly paid auditors as well. This flat pay structure in auditing could be regarded as a success because it is consistent with the common normative ideal “equal pay for equal work.” There is some evidence in the management literature that pay disparities among team members can negatively influence team performance when collaboration is important (Siegel and Hambrick 2005). Because audit work is collaborative,¹⁵ this suggests that audit firms have economic incentives to pay their employees equally.¹⁶

V. EXPLORATORY ANALYSIS: HURG REPRESENTATION AMONG COLLEGE FRESHMEN, COLLEGE GRADUATES, AND YOUNG AUDITORS

The results for blacks in Section IV are anomalous when compared with all occupations or occupations with auditing-like education, with relatively good pay in auditing combined with relatively poor black representation. This section examines HURG representation among college freshmen who say that they would like to earn a bachelor’s degree in accounting, among college graduates earning a bachelor’s degree in accounting, and among young college-educated auditors

¹⁵ See <http://www.onetonline.org/link/details/13-2011.02> and search the term “team” for evidence on the importance of team work and collaboration in audit work.

¹⁶ In untabulated tests, I examine the robustness of these results to alternative research design choices. In the main tests I examine only full-time workers. When I include part-time workers, the sample sizes increase by 10 percent to 20 percent, but the results are very similar to those presented. I also compare the auditing profession against similarly paid occupations (occupations with average hourly pay within 10 percent of hourly pay for auditors). When auditing is compared against similarly paid occupations, I find fewer significant pay gaps. The representation results are similar to the results presented.

joining the auditing profession. The analysis is intended to shed light on when in the process of educating and hiring new auditors, HURGs, especially blacks, move away from auditing.

I use two datasets in addition to the CPS in this section. The first contains survey responses collected each year from incoming college freshmen called the Higher Education Research Institute (HERI) Freshman Survey. This dataset is available from 1971 to 1999, has 5,459,934 observations, and contains variables describing the HURG status of a large sample of incoming college freshmen in the United States and the degree they plan to earn.¹⁷ I compare HURG representation among students planning to major in accounting with HURG representation among students planning to pursue other majors. The second dataset is the National Survey of College Graduates (NSCG). It is a large follow-up survey to the decennial U.S. census that collects additional data from respondents who report holding a college degree. Data collected in 1993 and 2003 are available from the National Science Foundation.¹⁸ The database contains responses from individuals who earned their degrees as early as 1936 and as late as 2003. I retain observations for individuals earning their first bachelor's degrees between 1970 and 1999, leaving 134,428 observations. I compare HURG representation among students earning their first bachelor's degrees in accounting with HURG representation among students earning other bachelor's degrees. Finally, to characterize new hires by audit firms, I begin with the CPS sample of auditors used in Section IV and retain only auditors who are 30 years old or younger and who report attending at least four years of college. I compare HURG representation among young college-educated auditors with HURG representation among young college-educated members of other occupations.

Results in Table 7, Panel A show HURG representation for the "1970s & 80s" and "1990s" among all college freshmen in columns 1 and 2, among freshmen planning to earn bachelor's degrees in accounting in columns 4 and 5, and the location of the HURG values for accounting relative to the values for other degrees, reported as percentiles in columns 7 and 8. Panel B shows HURG representation among students graduating in the "1970s & 80s" and "1990s" with any degree in columns 1 and 2, with accounting degrees in columns 4 and 5, and the percentile location of the accounting degree values among all degrees in columns 7 and 8. Panel C shows HURG representation among college-educated workers under 31 years old in all occupations in the "1970s & 80s" in column 1, the "1990s" in column 2, and the "2000s" in column 3; among college-educated auditors under 31 years old in the respective decades in columns 4, 5, and 6; and the percentile rank of the auditing values relative to the values for all occupations in each respective time in columns 7, 8, and 9.

Table 7, Panel A shows that accounting has been a popular major among black freshmen, ranking in columns 7 and 8 in the 83rd and 88th percentiles, respectively. Accounting has also been a popular major among Hispanic freshmen, ranking in columns 7 and 8 in the 60th and 61st percentiles, respectively. Panel B shows that black and Hispanic students also graduate with accounting degrees at higher rates than they do with most other degrees, with their representation among accounting graduates ranking in columns 7 and 8 in the 58th and 69th percentiles for blacks and the 64th and 77th percentiles for Hispanics. These findings suggest that HURGs are well represented among new accounting graduates. If audit firms hire a representative sample of accounting graduates, then HURGs should be expected to be well represented among young college-educated auditors working for these firms. However, the results in Panel C suggest that black and Hispanic accounting graduates join the auditing profession at low rates. Specifically, Panel C shows that relative to young college-educated workers in other occupations in the "1970s & 80s," the "1990s," and the "2000s," the representation of blacks in the auditing profession in

¹⁷ Available here: <http://www.heri.ucla.edu/archives.php>

¹⁸ Available here: <http://www.nsf.gov/statistics/sestat/>

TABLE 7

Exploration of HURG Representation in the Supply Chain for Auditing Labor: HURG Representation among College Freshmen, College Graduates, and Young Auditors

Panel A: HURG Representation among College Freshmen from the HERI Database

	Sample Means			Accounting/ Auditing Means			Accounting/ Auditing Percentiles		
				Freshmen Planning to Earn Bachelor's Degrees in Accounting					
	1	2	3	4	5	6	7	8	9
	1970s & 80s	1990s	2000s	1970s & 80s	1990s	2000s	1970s & 80s	1990s	2000s
Accounting Degree	0.056	0.039	NA						
Female	0.505	0.539	NA	0.470	0.556	NA	51%	52%	NA
Black	0.095	0.100	NA	0.113	0.142	NA	83%	88%	NA
Hispanic	0.012	0.032	NA	0.010	0.032	NA	60%	61%	NA
Misc. Minority	0.041	0.100	NA	0.028	0.078	NA	23%	30%	NA

Panel B: HURG College Graduates from the NSCG Database

	Sample Means			Accounting/ Auditing Means			Accounting/ Auditing Percentiles		
				Students Graduating with					
	Whole Sample			Bachelor's Degrees in Accounting					
	1	2	3	4	5	6	7	8	9
	1970s & 80s	1990s	2000s	1970s & 80s	1990s	2000s	1970s & 80s	1990s	2000s
Accounting Degree	0.051	0.049	NA						
Female	0.506	0.555	NA	0.394	0.495	NA	51%	50%	NA
Black	0.052	0.054	NA	0.046	0.057	NA	58%	69%	NA
Hispanic	0.034	0.057	NA	0.037	0.079	NA	64%	77%	NA
Misc. Minority	0.064	0.103	NA	0.088	0.088	NA	64%	50%	NA

Panel C: HURGs among Young Workers in Occupations with Auditing-Like Education

	Sample Means			Accounting/ Auditing Means			Accounting/ Auditing Percentiles		
				Young Workers in Auditing (Less Than 31 Years Old)					
	Whole Sample								
	1	2	3	4	5	6	7	8	9
	1970s & 80s	1990s	2000s	1970s & 80s	1990s	2000s	1970s & 80s	1990s	2000s
Auditor	0.017	0.017	0.014						
Female	0.458	0.521	0.542	0.264	0.489	0.556	44%	55%	60%
Black	0.063	0.071	0.086	0.010	0.017	0.058	19%	26%	34%
Hispanic	0.024	0.043	0.068	0.011	0.041	0.041	27%	49%	25%
Misc. Minority	0.032	0.062	0.104	0.025	0.092	0.145	45%	76%	84%

(continued on next page)

TABLE 7 (continued)

Data in each column of this table are summary statistics for the 1970s & 80s, 1990s, or 2000s. The first three columns are HURG representation values calculated for the whole sample. In Panels A and B, the sample includes all observations available in the respective datasets. In Panel C, the sample includes college-educated workers in CPS occupations who are younger than 31 years old. The remaining six columns show summary statistics calculated for college freshmen who expect to major in accounting (Panel A), college graduates who earned a bachelor's degree in accounting (Panel B), and young college-educated workers in the auditing profession (Panel C). Columns 4–6 show HURG representation for the accounting/auditing subsample. Columns 7–9 show the percentile rank of the accounting/auditing value among all degrees for which I had at least ten observations (Panels A and B) and for all occupations for which I had at least ten observations (Panel C).

NA signifies that data for these cells are unavailable.

columns 7, 8, and 9 ranks in the 19th, 26th, and 34th percentiles, respectively, and the representation of Hispanics ranks in the 27th, 49th, and 25th percentiles, respectively. While the results suggest that the rate at which college-educated blacks enter the auditing profession increased over time and the rate for Hispanics increased dramatically in the 1990s, by the 2000s they were far below the rates for other occupations.¹⁹

While these results are informative about when HURGs move away from auditing, they cannot distinguish between supply-side and demand-side explanations for why they do. The results are consistent with demand-side theories, including discrimination in hiring by the auditing firms. They are inconsistent with some supply-side theories, such as a lack of interest in accounting among black or Hispanic students because of a lack of role models or a view of accounting education that is particularly negative.

VI. CONCLUSIONS

To counteract the effects of historical discrimination against women and racial minorities, the auditing profession has during the past four decades made significant efforts to encourage integration, while accounting organizations and academics have produced a stream of self-conscious and often very critical evaluations of these efforts (AICPA 2003, 2005, 2009, 2011). A major limitation of previous evaluations is that they overwhelmingly attempt to evaluate the integration of auditing in a vacuum; they do not compare auditing against appropriate benchmarks. As a consequence, there is a tendency in this literature to interpret any perceived deficiency in auditing integration as a failure of the auditing profession. This study emphasizes that the observed integration of the auditing profession is not solely a function of auditing-specific forces; it is also a function of social forces common to many occupations with characteristics similar to auditing. When evaluating social policy, all variation in occupational integration, whether it is caused by occupation-specific or social forces, is of interest. But, when evaluating the auditing profession

¹⁹ NSCG data enable me to examine the occupations of recent graduates from accounting bachelor's degree programs. I examine workers graduating with accounting degrees during the five years before 1993 and 2003, the years in which the NSCG data were collected. The NSCG does not describe the industry in which individuals work, which means I cannot identify workers in the auditing profession by requiring that they work in the accounting occupation and in the accounting industry as I do in the CPS analysis. In untabulated analyses, I find during the first five years after graduation, blacks, Hispanics, and miscellaneous minorities graduating with bachelor's degrees in accounting are significantly less likely than non-HURGs to work in the "accountants, auditors, and other financial specialists" occupation. If their occupation is not accounting, then these HURGs work in a wide variety of occupations. The most common are "top and mid-level managers"; "other management-related occupations"; "bookkeeping, insurance, securities, real estate, and business services"; or "other administrative" occupations.

specifically, an analysis that attempts to isolate variation in occupational integration that is attributable to the auditing profession is likely more informative.

This study evaluates the integration of women, blacks, Hispanics, and miscellaneous minorities into the auditing profession. I focus on the time since the Civil Rights Movement in the 1950s and 1960s, which achieved legal bans on many types of labor market discrimination, and since the “quiet revolution,” which expanded women’s labor market options in the 1960s and 1970s.

The results suggest that pay in the auditing profession is particularly insensitive to gender and race. Its equal pay structure makes auditing distinctive because many occupations tend to underpay women, blacks, and Hispanics. Miscellaneous minorities also tend to be paid differently than both blacks and whites, with miscellaneous minorities being relatively underpaid in the sample of all occupations, but relatively overpaid in the sample of professions and occupations with education levels similar to auditing. The equality of pay in auditing may be driven by concerns for fairness (“equal pay for equal work”), or for practical economic reasons related to team work and collaboration (Siegel and Hambrick 2005). Whatever the reason, auditing’s distinctively equal pay structure likely gives it a unique set of advantages and disadvantages in labor markets for HURGs.

For blacks, Hispanics, and women to a lesser extent, who tend to be underpaid elsewhere, a career in auditing should be relatively attractive because HURGs are likely to be paid as well as non-HURGs in auditing, while this is not necessarily the case in other occupations. Therefore, one would expect these HURGs to be relatively well represented in auditing. For miscellaneous minorities, the situation is reversed. Miscellaneous minorities should find a career in auditing unattractive relative to careers in other professions or other similarly educated occupations because, while they would receive pay that is similar to non-HURG pay in auditing, they could receive higher pay elsewhere. One would then expect them to be underrepresented in auditing.

For women, Hispanics, and miscellaneous minorities, the representation results are consistent with expectations based on the incentives provided by equal pay in auditing. But the results for blacks are anomalous when auditing is compared against all occupations and occupations with auditing-like education because blacks are paid relatively well in auditing, but their representation in auditing is relatively low. My tests appear to rule out broad social forces as explanations for such discrepancies, implying that the low representation of blacks in auditing is likely attributable to auditing-specific or profession-specific forces. In my supplemental tests, I find that blacks are not poorly represented among college freshmen interested in earning bachelor’s degrees in accounting or among accounting graduates. Rather, it seems that they move out of the auditing profession when they leave college. There is inadequate evidence to conclude that this is the result of supply-side or demand-side forces, but the evidence is inconsistent with several supply-side explanations for poor black representation in auditing. Future research clarifying the role of demand-side versus supply-side forces in explaining the peculiar underrepresentation of blacks in auditing would be valuable. In addition, future research could examine whether black underrepresentation in auditing can be explained by auditing firms focusing their hiring efforts at elite universities, in which HURGs may be poorly represented.

Whatever the interpretation of the results for blacks, the evidence in this study suggests that the auditing profession has been distinctively successful at achieving equal pay for equal work, a popular normative goal. While equal pay is likely a desirable outcome for those concerned with auditing integration, it has implications for HURG representation in auditing. Specifically, it may discourage non-black minorities from entering the audit profession. It also might be expected to encourage black workers to enter auditing, but this does not appear to be the case. Understanding the puzzle of black underrepresentation in auditing is a necessary first step in correcting it. To be complete, any proposed explanation will have to consider the social and labor market context within which black workers choose their careers and within which the auditing profession competes to hire qualified HURG workers.

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