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A New Look at Diversity in the Economics Profession

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Introduction

The economics profession includes disproportionately few women and members of historically underrepresented racial and ethnic minority groups, relative both to the overall population and to other academic disciplines. In the United States, among 535 doctorate degrees awarded in economics to U.S. citizens and permanent residents in 2013, only 58 were awarded to minorities and 168 to women.[1] The underrepresentation is present at the undergraduate level, continues into the ranks of the academy, and is not getting better over time. The persistence and severity of the imbalance culminates to a rather jarring reality: of the 75 recipients of the Sveriges Riksbank Prize in Economic Sciences in Memory of Alfred Nobel, an award established in 1969, only one Laureate was a woman, and there have been no recipients who identify as African American, Hispanic, or Native American.[2] This lack of diversity has undoubtedly negatively affected the discipline in a number of ways, such as constraining the range of issues addressed and a failure to understand familiar issues from new and innovative perspectives.

The *Journal of Economic Perspectives* last addressed underrepresentation by women and racial and ethnic minorities in the economics profession over ten years ago (Leeds 1992; Kahn 1995; Collins 2000; Ginther and Kahn 2004). Given the importance of diversity for the profession and our role in society, it is time to revisit the issue. In this paper, we first present data on the numbers of women and underrepresented minority groups in the profession and then summarize current research on the reasons for the underrepresentation, highlighting research that may be less familiar to economists. After briefly reviewing evidence on the productivity effects of diversity, we discuss remedial interventions as well as any evidence on effectiveness. We identify several promising practices, programs, and areas for future research and conclude that it is time for a renewed focus on increasing the diversity of our profession particularly given the growing the evidence that diversity matters.

The Composition of the Economics Profession

In this article, we focus on groups that have been historically underrepresented in our profession and in the U.S.—women, African Americans, Hispanics/Latinos, and Native Americans. While other dimensions of diversity are critical, underrepresentation by these groups is longstanding and there is a growing literature addressing its scope and possible remedies. We hope that as we learn about barriers faced by members of these groups and interventions to address them, we develop general knowledge that is transferrable to facilitating the inclusion of the best people and the best ideas from all groups.[3]

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[1] These figures double count the 21 minority women who earned economics doctorates in 2013. Note also that 2013 was a particularly strong year; there were only 32 PhDs awarded to minorities, male and female, in 2012.

[2] Sir Arthur Lewis, a 1979 Nobel laureate, was born in St. Lucia, educated at LSE, worked in the UK, Ghana, and the West Indies for many years, and eventually taught at Princeton University as the James S. McDonnell Distinguished Professor of Economics and International Affairs.

[3] This one paper examines disparities by race and ethnicity and by gender but independently. We find it productive to identify the common threads behind disparities, but it is important to note that the problems facing members of a racial and ethnic minority group might be very different from those facing women. We also acknowledge, but do not examine, the complicated intersectionality of race, ethnicity, and gender (Brewer, Conrad, and King 2002).

According to the most recent survey conducted by the American Economic Association, 22 percent of tenured and tenure-track faculty in economics are women.[4] As such, gender diversity in the academic economics profession is as poor as both the male-dominated tech industry and the Academy Awards nominating committee, where only 30 percent of the Silicon Valley workforce and 24 percent of Oscar voters are female. By rank, women represent 14 percent of full professors in economics departments and 31 percent of economics faculty at the assistant level. This result is not surprising as recent research finds that the gender gaps in tenure and promotion rates in economics are much greater than those in the social sciences overall (Ginther and Kahn 2014). More sobering, economics boasts the largest (or only) gender gaps in tenure rates, salaries, and job satisfaction compared to other math-intensive fields (Ceci, Ginther, Kahn, and Williams 2014).[5] In an analysis of published scholarly research across 21 academic disciplines, women accounted for 13.7 percent of authorships in economics in the last twenty years, barely above the 12 percent in philosophy and well below the overall average of 27.2 percent (West, Jacquet, King, Correll, and Bergstrom 2013).

Minority academic economists are even rarer. While about 30 percent of the U.S. population is minority, only 5.4 percent of tenured and tenure-track economics faculty is identified as minority (only 3.3 percent of full professors and 7.1 percent of assistants). Again, these figures do not compare favorably to either the tech industry or Academy Awards members. Price (2009) reports that in 2006, only 44 black economists were on the faculties of the 106 PhD granting economics departments ranked by the National Research Council, and 6 of those black economists were employed at Howard University, a historically black university.

The pool from which we pull new faculty members is not much different. Figures 1a and 1b, below, show the percentage of doctorate degrees awarded to women (Figure 1a) and minorities (Figure 1b) between 1995 and 2013.[6] Figure 1a shows that while there was some general

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[4] Statistics on economics faculty are authors' calculations from the *Universal Academic Questionnaire*, a survey conducted annually by the American Economic Association (Scott and Siegfried 2014). The data must be interpreted with caution due to a low response rate (about 40 percent) and missing data. Nevertheless the magnitudes are consistent with those produced in other years and in other surveys. We note that the survey likely mis-measures gender, race and ethnicity because it relies on a gender binary, in contrast to the American Sociological Association's six gender response options, and it does not use self-identification, rather department chairs assign the gender and race of department members.

[5] Specifically, Ginther and Kahn (2014) report a 20 percent gender gap in achieving tenure and a 50 percent gap in promotion to full among economists compared to 12 percent and 25 percent, respectively, in the social sciences overall. Ceci, Ginther, Kahn, and Williams (2014) show trends in economics that are not encouraging, finding that female full professor salaries as a proportion of male salaries dropped from 95 percent in 1995 to less than 75 percent in 2010.

[6] These data are authors' calculations from the *Integrated Postsecondary Education Data System* (IPEDS) at the National Center for Education Statistics. Economics degrees are classified as those with IPEDS Classification of Instructional Program (CIP) codes for "Economics, General," "Agricultural Economics," "Applied Economics," "Econometrics and Quantitative Economics," "Development Economics and International Development," "International Economics" and "Economics, Other." We use the NSF definition of STEM (science, technology, engineering, and math) subjects, excluding the social sciences to present that series separately. We also only include data on U.S. citizens and permanent residents. Non-residents make up a significant proportion of degrees awarded, especially at the doctoral level in which they make up 56 percent of degrees in economics. We exclude them from both the series for women and

progress in the representation of women between 1995 (when women represented 30.5 percent of new PhDs) and 2005 (when women represented 37.2 percent of new PhDs), some ground has been lost since then. As a result, just 31 percent of doctorates in economics were awarded to women in 2013, the most recent year for which data are available.[7] This trend is in contrast to that in other disciplines. Figure 1a also shows that the percentage of women earning doctorates has stagnated in economics, while it has increased in other social science fields, humanities, business and management, and even in STEM (science, technology, engineering, and math) fields.

Figure 1b shows that the story is mostly similar when we look at the trend in the percentage of doctorates awarded to minorities between 1995 and 2013. Specifically, between 1995 and 2007 there was a steady improvement in the percentage of new doctorates in economics awarded to minorities, from 6.3 percent in 1995 to 11.4 percent in 2007. However, since then the percentage of new doctorates awarded to minorities has dropped substantially (to only about 7 percent) although in 2013 10.8 percent of new doctorates were awarded to minorities. Further, as with women, the data in Figure 1b show that progress in increasing racial and ethnic diversity has been faster in other fields.

These disparities are evident at earlier stages in the pipeline, as well. Figures 2a and 2b show the percentage of bachelor's degrees awarded to women (Figure 2a) and minorities (Figure 2b) between 1995 and 2013. Again, there is little progress in increasing the percentage of female students graduating with bachelor's degrees in economics over the past two decades. While there has been progress in other fields – including STEM – business and management displays the same lack of progress seen in economics.

Finally, we highlight that while there has been some improvement in the percentage of minority students graduating with a major in economics, from 12 percent in 1995 to 14.6 percent in 2013, this rate is still far below their prevalence in the student population (21 percent of bachelor's degrees were awarded to minorities in 2013) and even below the nearly 20 percent of bachelor's degrees awarded in STEM fields.

Overall, these data indicate that we have made little progress in the last two decades in diversifying the profession along gender, race, and ethnicity lines and that, given the disparities that exist throughout the pipeline, change is unlikely to occur – or at least be sustained – without intentional action on our part.

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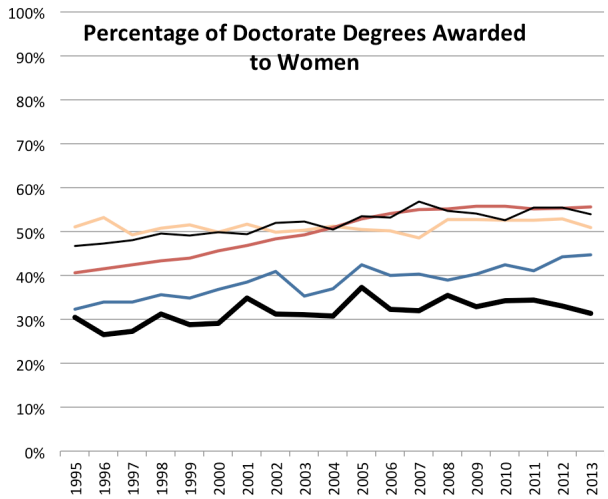
that by race and ethnicity for consistency even though we recognize that it is more conventional to exclude them when considering race and ethnicity only.

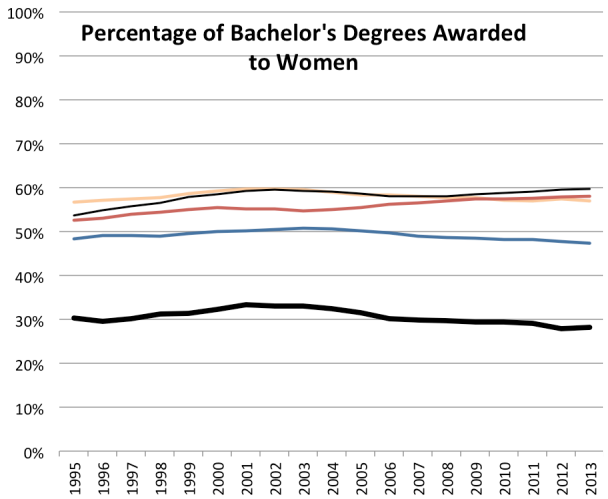
[7] This average rate masks considerable variation across institutions. For example, within the top ten programs, Columbia and Berkeley awarded doctorates in economics to roughly equal numbers of men and women in 2013, while Northwestern awarded PhDs in economics only to men.

Figures 1 and 2
Degrees Awarded to Women and Minorities

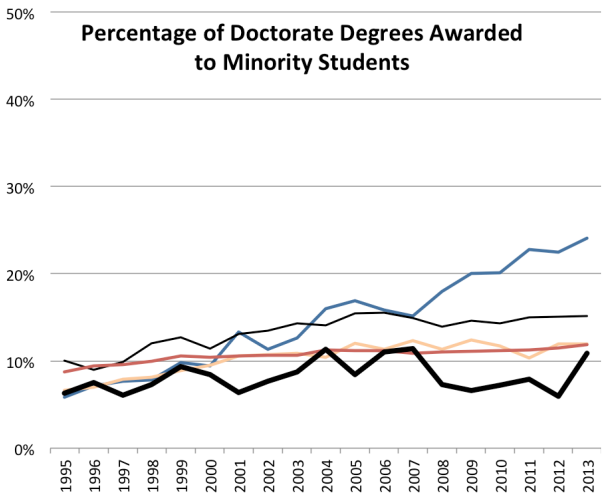
1a.



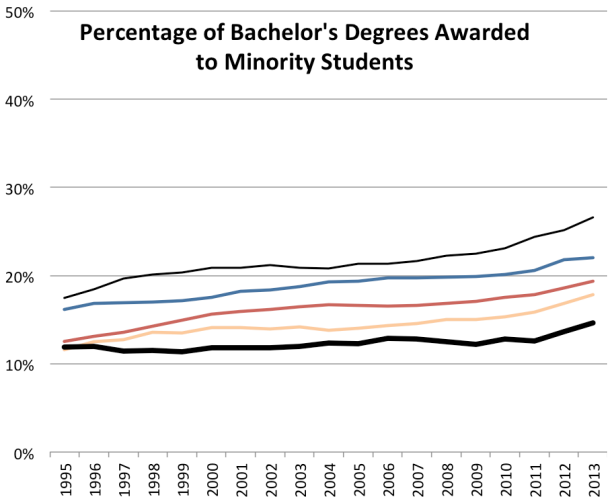
2a.

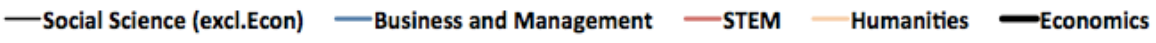


1b.



2b.





Barriers to Diversity

Why are there relatively few women and racial and ethnic minorities in the economics profession? One way to organize explanations is by grouping those factors that affect supply and those that affect demand. We start by summarizing the literature on factors that affect the supply of individuals choosing economics as a field of study or profession, such as mathematics preparation and prior exposure to the field. We then turn to a review of new and less familiar evidence on the role of the demand side.

Supply side factors

A small, but growing, number of articles attempt to understand the factors that affect the decision to study economics, particularly at the undergraduate level. Hypotheses focus on math preparation or aptitude, prior exposure to economics, performance in economics relative to other courses, and instructor race or gender. Most of this literature is based on surveys or administrative data from an individual college or a set of colleges. These papers generally find that prior math preparation (as proxied by SAT/ACT scores or by questions that ask about comfort level with math), while affecting the decision to take a class or major in economics, explains – at best – a small part of the underrepresentation in economics by women and minority students (see, e.g., Emerson, McGoldrick, and Mumford 2012). This conclusion is consistent with IPEDS data showing that in 2013 women earned 42.8 percent of bachelor's degrees in mathematics and statistics, far beyond their 28.2 percent share in economics.

A factor considered in several studies is the role of prior exposure to the subject in the decision to pursue further study. Dynan and Rouse (1997) find that upperclass women were over twice as likely as men to report that they did not take economics in their first year because they "did not think that economics was interesting." This result is consistent with the findings of Calkins and Welki (2006) who report that perceived interest in the subject is a key factor in determining the choice of undergraduate major. Performance in prior economics courses – such as introductory courses – and especially relative to performance in other courses also affects the decision to persist in economics, a result consistent with Rask and Tiefenthaler's (2008) finding that women are more responsive to their relative grades in economics than are men.

Many have pointed to the lack of role models in the profession as deterring both women and minorities from further consideration of economics. The evidence supporting this hypothesis has been mixed, although more recent evidence finds that instructor identity makes a difference. For example, while Dynan and Rouse (1997) report that having a female teacher had only a small impact on the decision to subsequently major in economics, more recently Carrell, Page, and West (2010) find female students perform significantly better in introductory math and science courses if taught by female faculty, and they are more likely to pursue majors in science, technology, engineering or math. Fairlie, Hoffmann, and Oreopoulos (2014) find similar effects for underrepresented minority college students, whose short and longer-term outcomes improve from taking courses with underrepresented minority instructors. And, Hale and Regev (2014) conclude that a larger share of women on the economics faculty of top universities leads to more female students entering economics PhD programs. Instructor identity could affect student performance through a variety of possible mechanisms. Perhaps students are inspired by the role model or less subject to stereotype threat (Steele and Aronson 1995) in the presence of a

stereotype-defying economist.[8] Alternatively, professors with different life experiences may talk about different economic issues and in ways that resonate with different students.

Researchers have also explored the role of non-cognitive attributes, such as competitiveness and confidence. Buser, Niederle and Oosterbeek (2014) find that gender differences in competitiveness account for some of the gender gap in students' academic decisions, with boys choosing more math- and science- intensive academic tracks. At the same time, research suggests that when controlling for factors such as social preferences, confidence, and stereotype bias, women are equally likely to choose competition as men (e.g., Kamas and Preston 2010). This suggests that gender-based stereotypes and corresponding differentials in confidence and encouragement may help explain the low representation of women in economics as well as the grade responsiveness found by Rask and Tiefenthaler (2008).

Demand side factors

A complete understanding of the barriers to diversity requires recognition that the individuals whose traits and choices we discuss in the preceding section operate within a particular environment, an environment created and sustained by existing economists. As such, we turn next to a closer examination of what might be considered the "demand" side of the equation. While much of the evidence derives from fields outside of economics, we believe the results have implications for economics and at a minimum provide suggestions for future research.

Economists' investigations of demand side causes of disparities typically center on models of taste-based discrimination and statistical discrimination; in both models, the discriminator makes an explicit decision.[9] Over the last thirty years, researchers in other fields have been investigating implicit bias, a form of discrimination based on unconscious attitudes or associations, which can produce behavior that diverges from the individual's own endorsed beliefs or principles.[10] A large body of evidence documents the pervasiveness of implicit biases reflecting social stereotypes (Greenwald and Banaji 1995, Greenwald and Krieger 2006) and is consistent with work by economists (Bertrand and Mullainathan 2004, Bertrand, Chugh and Mullainathan 2005). For example, evaluators recommend white candidates with moderate or mixed qualifications significantly more often than black candidates with identical credentials and assign otherwise

[8] A considerable body of research shows that "performance in academic contexts can be harmed by the awareness that one's behavior might be viewed through the lens of racial stereotypes" (Steele and Aronson 1995). Stereotype threat has been documented to contribute to low performance among African Americans, Latinos, women, and, in athletics, whites (see Gonzales, Blanton, and Williams 2002 and Inzlicht and Schmader 2011). As such, it is a robust phenomenon that has been widely replicated. It is interesting that even groups that are not traditionally underrepresented, such as white men, are not immune to stereotype threat as Aronson et al. (1999) documented that their performance on a math test suffered when the men were led to believe the test was being used to examine Asian superiority at math.

[9] See Darity and Mason (1998) and Lang and Lehmann (2012) for reviews.

[10] Implicit associations can be understood as Kahneman's (2011) System 1 fast thinking. Researchers hypothesize that the human brain uses implicit association to deal with bottlenecks in information processing; in the visual system, for instance, the retina receives information at an estimated rate of 10^9 bits per second (Kelly 1962), far beyond the 30 to 50 bits per second processing capacity of deep layers of the visual pathway (Sziklai 1956). Response latency tests, priming studies, and direct measurement of physiological and neurological reactions indicate that race, gender, and other perceived group affiliations operate as heuristics, with powerful, unconscious effects on judgments and actions.

identical male and female candidates to gender-stereotypical jobs, redefining evaluation criteria to fit the specific credentials of recommended candidates (Dovidio and Gaertner 2000, Uhlmann and Cohen 2005). Rooth (2010) finds that the probability an employer offers an interview to a job applicant with an Arab-Muslim sounding name in a correspondence test is strongly correlated with the employer's score on a subsequent Implicit Association Test (Greenwald, McGhee, and Schwartz 1998) but not with measures of explicit bias.

Implicit biases have been shown to affect professional judgment across a range of professions, including physicians (Schulman, et al. 1999; Green, et al. 2007), police officers (Correll, et al. 2007), and academics (Moss-Racusin, et al. 2012; Steinpreis, Anders, and Ritzke 1999).[11] While we know of no comparable experiments directly testing for bias in economics, a recent working paper by Sarsons (2015) provides evidence suggesting implicit bias in economics. Using data on academic economists, she documents that, while an additional coauthored paper for a man has the same effect on the likelihood of tenure as a solo-authored paper, women suffer a significant penalty for coauthoring; further analyses support the hypothesis that gender bias in recognition for group work may help explain the large tenure and promotion gaps between observationally equivalent male and female economists reported by Ceci et al. (2014) and others.

Studies suggest that implicit bias affects routine interactions at all stages of the academic pipeline, not only formal decisions such as promotion and admission. In a study by Milkman, Akinola, and Chugh (2014), 6500 professors in 89 disciplines across 259 US universities received an email with a request from a fictional prospective student, asking for a 10-minute meeting to discuss research opportunities prior to applying to a doctoral program. The student's name was randomly assigned to signal gender and race (Caucasian, Black, Hispanic, Indian, Chinese), but messages were otherwise identical. Across almost all disciplines, faculty ignored requests from women and minorities at higher rates than requests from Caucasian males, with large and statistically significant regression-estimated discriminatory gaps. In business, the discipline with the largest gap, 87 percent of Caucasian males received a response, compared to only 62 percent of women and minorities; in the social sciences, which pools economics with 18 other disciplines including sociology, communication, and gender and area studies, 75 percent of Caucasian males received a response, compared with only 68 percent of women and minorities. Follow up analyses revealed that discriminatory gaps were particularly acute in higher-paying disciplines and in private institutions and showed no evidence of benefits to women contacting female faculty nor to black or Hispanic students contacting same-race faculty.[12]

Research documents some of the everyday challenges facing women and minority faculty members. Students rate "male" instructors of online classes significantly higher than "female" instructors regardless of the instructor's actual gender (MacNell, Driscoll, and Hunt 2014) and

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[11] Specifically, science faculty in research universities rated a male applicant for a lab manager position as significantly more competent and hirable than an identical female applicant; they also selected a higher starting salary and offered more career mentoring to male applicants (Moss-Racusin, et al. 2012). Male and female faculty members were equally likely to exhibit bias. Similarly, after evaluating a CV randomly assigned a male or a female name, both male and female academic psychologists were more likely to hire the male applicant for a tenure-track job and had more positive evaluations of the male applicant's teaching, research, and service records (Steinpreis, Anders, and Ritzke 1999).

[12] Implicit bias also affects the experience of enrolled students. Dee, John, Baker, and Evans (2015) find that instructors of MOOCs are more likely to respond to forum posts by ostensibly white male students.

write gendered online reviews, using the word "brilliant" more often to describe male faculty and the word "annoying" to describe females, even in economics (benschmidt.org/profGender). Other studies describe gender or race disparities in training opportunities (Sheltzer and Smith 2014), in requests to provide service at the department, university, or disciplinary levels (Turner and Myers 2000), and in letters of recommendation (Trix and Psenka 2003). If biases affect everyday interactions, then regression analyses attributing differences in academic outcomes to productivity-related factors, such as course selection for students or teaching performance or publication record for faculty, may underestimate the effects of gender and race biases to the extent that these controls themselves are affected by bias.

Furthermore, disparities in the economics profession can arise and reproduce even in the absence of intentional or unintentional choices by individuals. Institutional discrimination occurs when the rules, practices, or "nonconscious understandings of appropriate conduct" systematically advantage or disadvantage members of particular groups (Haney Lopez 2000). Just as recognized in the disparate impact prong of federal anti-discrimination law and in analyses of voter ID laws, a facially neutral practice may have an adverse impact on members of particular groups.[13] In this light, policies and practices of an academic department or instructor may have disparate impact as well. For example, a de facto practice to hire candidates only from elite PhD programs (or admit applicants from elite undergraduate institutions) may produce systematic disadvantage, especially in light of economists' high propensity to hire from top 10 programs as compared to other disciplines (Wu 2005). Alternatively, blind use of a decision rule eliminating all junior job candidates who took more than 6 years to complete their PhD, for example, would eliminate individuals who needed time to meet monetary need or family responsibilities or to acquire training that was not previously encouraged or available. There are different pathways to successful careers, and not surprisingly alternative paths are more likely to be pursued by members of racial and ethnic minority groups and to some extent women (Turner and Myers 2000; Husbands Fealing and Myers 2013). In the classroom, practices like using culturally narrow motivating examples or calling on the first student to raise his hand could similarly generate disparate impacts by gender or race (Bayer 2014).

We highlight these "demand-side" explanations as they may also explain why economics has been slower to diversify than other fields. Experimental evidence suggests that implicit bias is a particular problem for people who pride themselves on being objective (Uhlmann and Cohen 2007). Experiments also reveal that framing actions in terms of individual choice increases belief that society provides equal opportunities and that discrimination no longer exists (Stephens and Levine 2011).

Why Economists Should Care About Diversity

Why should economists care about the underrepresentation of women and members of minority groups in their profession? Broadening the pool from which we draw economists is not just about fairness in offering a rewarding occupation to deserving individuals and in representing

[13] In foundational work on institutional discrimination, Haney Lopez (2000) observed that, while Mexican Americans represented one of every seven persons in Los Angeles County during the 1960s, they accounted for only one of every fifty-eight grand jurors. In subsequent testimony, the judges charged with finding competent individuals to serve as grand jurors emphatically denied discriminatory intent. The judges simply selected nominees through their networks, and they knew few, if any, Mexican Americans.

certain groups in economic policy-making. Rather, two relatively new strands of research suggest that it is also necessary to ensure the profession produces robust and relevant knowledge.

The first strand of research finds that diversity brings a greater range of insights resulting in a greater range of thinking on important academic issues. In a survey of male and female AEA members with doctoral degrees from U.S. institutions, May, McGarvey, and Whaples (2013) find male and female economists have very different views on economic outcomes and policies, even after controlling for vintage of PhD and type of employment. For example, relative to male economists, women economists are 21 percentage points more likely to disagree that the U.S. has excessive government regulation of economic activity; 32 percentage points more likely to agree with making the distribution of income more equal; 30 percentage points more likely to agree that the U.S. should link import openness to labor standards; and, 42 percentage points more likely to disagree that labor market opportunities are equal for men and women. The relative lack of women, African American, Hispanic, and Native American economists likely leads to more narrow thinking on all economic issues including, but not limited to, issues that affect women and minorities directly.

Second, diversity changes group dynamics and decision-making, and the behavior of individual members changes with the mix of the group. Hong and Page (2004) model problem solving in teams of intelligent agents to show how teams of agents with diverse perspectives and heuristics outperform teams comprised of high ability but similar individuals. Experimental evidence also shows how diverse groups can be more innovative than homogeneous groups. Groups with racial diversity significantly outperform demographically similar groups in experiments requiring the groups to solve complex problems, as homogeneous groups perceive their information to be less unique and spend less time on the task than diverse groups do (Phillips, Northcraft, and Neale 2006). Similarly, participants on racially diverse mock juries exchange more information, make fewer errors, deliberate longer, and consider a wider range of perspectives (Sommers 2006), while traders in ethnically homogeneous markets apparently place undue confidence in the reasonableness of others' decisions, accepting prices that deviate from true values and creating price bubbles (Levine, Apfelbaum, Bernard, Bartelt, Zajac, and Stark 2014). Mixed-gender groups display more intense mutual monitoring and produce better business outcomes (Hoogendoorn, Oosterbeek, and van Praag 2013), have collective intelligence beyond the intelligence of individual members (Woolley, Chabris, Pentland, Hashmi, and Malone 2010), and exhibit more altruism than members do individually (Kamas, Preston and Baum 2008).

The creativity and productivity of mixed groups may also benefit academic research. In an examination of 2.5 million research papers in which all of the authors had U.S. addresses, Freeman and Huang (forthcoming) find that papers written by ethnically diverse research teams receive more citations and are higher impact than papers written by authors from the same ethnic group. Although there are non-causal explanations, greater diversity of authorship may lead to higher quality research. While some language and cultural barriers can create apparent ethnic complementarities (Borjas, Doran, and Shen 2015), exposure to multiple cultures can enhance creativity (Leung, Maddux, Galinsky, and Chiu 2008), and diversity can promote deliberation and disrupt conformity (Levine, Apfelbaum, Bernard, Bartelt, Zajac, and Stark 2014).

Combined this evidence suggests that the value and impact of the economics profession suffers directly from the lack of diversity in its ranks. The lack of diversity in dimensions of race, gender, and ethnicity may also indicate conditions that narrow the range of methods and viewpoints more generally.

Moving Forward

We believe there are several promising directions for future initiatives and research.

1. Support pipeline programs.

Current diversity interventions in the economics profession equip women and minorities to enter and navigate the profession. These programs help participants develop skills and networks critical to staying and moving forward in the pipeline. The AEA supports several programs, and there now exists some credible evidence of their effectiveness. For example, the AEA's Committee on the Status of Women in the Economics Profession (CSWEP) sponsors a mentoring program for young female economists (CeMENT Mentoring Workshops) during which participants are placed into small groups based on their teaching and research and matched with a senior mentor to address issues such as effective teaching, navigating the journal publication process, balancing work and "life," and the tenure process. Blau, Currie, Croson, and Ginther (2010) conducted a randomized study of its effectiveness and report that the mentoring program had a positive effect on a number of professional outcomes, such as the number of top-tier publications, the total number of publications, and the number of successful federal grants earned by individuals randomly assigned a mentor compared to those randomly assigned to the control group.

Further, since 1974 the AEA's Committee on the Status of Minority Groups in the Economics Profession (CSMGEP) has sponsored a Summer Training Program aimed at improving diversity in the economics profession. The program, which has been hosted at a number of universities over time, runs about 7-8 weeks during which undergraduates take classes in important subjects such as microeconomic theory, math, and econometrics, and more recently they have written research papers. The program has served, on average, about 25 students per year. Becker, Rouse, and Chen (2014) compared the outcomes of participants to those of unsuccessful applicants and find that Summer Program participants were significantly more likely to apply to and attend an economics PhD program, complete a PhD, and ever work in an economics-related academic job.

Both CSWEP and CSMGEP have other programs aimed at providing women and underrepresented minorities with greater mentorship (such as CSWEP's Mentoring Breakfast and CSMGEP's Mentoring Program) or opportunities to conduct important research (such as the CSWEP/CSMGEP Summer Fellows Program). Another mentoring program currently housed at Duke University is the Diversity Initiative for Tenure in Economics (DITE), which aims to help untenured professors, and economists outside of the academy, to strengthen their research in order to attain tenure. Finally, more recent efforts include one-year pre-doctoral and master's programs, which are designed to enrich students' skills in math, economic theory, and econometrics to increase their likelihood of graduate program acceptance and success; the University of Wisconsin, the University of Texas at Austin, Duke University, Tufts University, the University of California at Los Angeles, Washington University, and Vanderbilt University currently offer such programs, to name a few. While these efforts have not been evaluated, well-designed bridge programs are used successfully in physics and other disciplines to increase the number of underrepresented minority students earning doctoral degrees (e.g., Stassun et al. 2011).

2. Reexamine our own attitudes, practices, and policies.

Given the research on implicit bias and institutional discrimination, economists should attack these unintended barriers to diversity directly. An important first step is simply being aware of the impact of implicit bias and of the nature of one's own biases. Pope, Price, and Wolfers (2014) conclude awareness reduces bias, after finding that racial patterns in personal foul calls by professional basketball referees disappeared following media attention to findings reported by Price and Wolfers (2010). We can take Implicit Association Tests (implicit.harvard.edu) to explore our own implicit attitudes on race, gender, age, weight, skin tone, disability, etc.

Research shows that implicit associations can be modified to produce outcomes more aligned with our values and intentions. For example, laboratory experiments confirm that taking time to reflect on others' perspectives and experiences can reduce implicit biases and change behavior (Todd, Bodenhausen, Richeson, and Galinsky 2011), and interventions can produce long-term change (Devine, Forscher, Austin and Cox 2012). Research also suggests that improving decision-making procedures can limit the impact of implicit bias. We can create conditions for making less biased evaluations by: removing identifiers, minimizing time pressure and distractions, reducing ambiguity, discrediting feelings of connection or chemistry, committing to admissions or hiring criteria before learning applicants' race or gender, creating accountability, and strategically setting default options and other nudges (Goldin and Rouse 2000, Bertrand, Chugh, and Mullainathan 2005, Uhlmann and Cohen 2005, Soll, Milkman, and Payne 2014). Many of the learned cognitive strategies for debiasing carry economies of scope, in that they reduce the opportunity for bias to influence evaluations and behavior in numerous encounters.

As a sensible but untested strategy to counter the everyday effects of unconscious bias, crowd out micro-inequities with micro-affirmations, defined as small acts that occur, consciously or unconsciously, wherever people wish to help others to succeed (Rowe 2008); in interactions with colleagues and students, give credit to others, open doors to opportunity, listen, include, support, and encourage. Extrapolating from research on students of various ages (e.g., Cohen, Steele, and Ross 1999, Yeager et al. 2014), fair and specific feedback, delivered with both an invocation of high standards and an assurance of the person's capacity to reach those standards, can counter stereotype threat and close racial gaps in perceived bias, motivation, and achievement.

It is also critical to attend to institutional discrimination, which may be inadvertently created by habits and policies. Commonplace features of our institutional environment can be barriers to diversity, much as staircases and lack of parental leave policies were to wheelchair users and mothers before policymakers acted to remove these impediments. Reexamine existing policies and practices; hiring from elite PhD programs, getting referrals from traditional networks, using test score cutoffs, and other seemingly objective decision rules may disadvantage women and minorities since such norms often indicate past privilege more than future potential.[14] Create new procedures thoughtfully and monitor their effects; when developing criteria to evaluate candidates, colleagues, or students, set sufficiently broad and fundamental criteria to allow all types of candidates to reveal their strengths and potential.

[14] Using a minimum GRE score below which applicants are rejected without consideration of other information violates the test developer's guidelines (ETS 2015). Physicists are constructing alternative selection criteria more predictive of success in scientific research (e.g., Miller and Stassun 2014).

3. Revise how we present economics to undergraduates.

Clearly, the profession needs to attract a larger share of women and minorities into economics at the undergraduate level. To do so, one step we need to take is work harder to communicate the intellectual intrigue and practical power of our discipline more effectively, rather than passively assuming, for example, that women prefer to study other subjects.[15] Sharing the new AEA video on careers in economics (www.aeaweb.org/video/career_in_economics.php) is a step in the right direction.

More effective curricula and teaching would make economics more inclusive and meaningful for groups traditionally underrepresented in our profession. To the extent that economists are ineffective teachers, either due to competing priorities or to lack of training, we end up with a self-selected sample of student majors who come to our classes with prior interest, background, and encouragement in economics. This hypothesis is consistent with research on "supply side" factors cited above (e.g., Dynan and Rouse 1997, Calkins and Welki 2006) and supported by research on economic education. Watts and Schaur (2011), for instance, find that traditional lecturing, a practice that has been shown repeatedly to be inferior to other available methods, remains the dominant teaching method among economists; in addition, references to "gender, race, and ethnic issues" in economics courses are rare.

Substantial evidence on the effectiveness of alternative teaching techniques comes from randomized control trial studies, many in the STEM fields.[16] The AEA's CSMGEP sponsors an online resource digesting this evidence, *Diversifying Economic Quality* at DiversifyingEcon.org, to help economics instructors and departments adopt inclusive, innovative, and evidence-based teaching practices (Bayer 2011).[17] We highlight here three of the recommended approaches. First, active learning—when instructors ask rather than tell, including having students answer questions in discussions or with clickers, peer instruction with students clarifying concepts to each other, classroom experiments, and labs—increases exam scores and decreases failure rates relative to traditional lecturing, with particular benefit for students from disadvantaged backgrounds and for women in male-dominated fields (see Freeman et al. 2014). Second, understanding intelligence as malleable can raise student performance, academic enjoyment, and engagement (Aronson, Fried and Good 2002, Dweck 2008); we can promote a growth mindset by reminding students that intelligence is not a fixed trait and that economic ability can be developed through hard work, making mistakes, and perseverance. Third, instructors can reduce stereotype threat with an array of empirically validated strategies, including increasing the visibility and representation of women and minority individuals in economics and values-affirmation (e.g., Murphy, Steele, and Gross 2007; Purdie-Vaughns, Steele, Davies, Ditlmann, and Crosby 2008; Miyake, Kost-Smith, Finkelstein, Pollock, Cohen, and Ito 2010).

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[15] Using regression analysis of a large, multi-school sample, Jensen and Owen (2000) find that "teachers who allocate more time to discussion and more time to topics that are traditionally considered to be of interest to women will encourage students of both sexes."

[16] The Howard Hughes Medical Institute, among others, has provided substantial funding for improving undergraduate science teaching. See "Howard Hughes Medical Institute's Million-Dollar Professors." 2015. For a selection of studies specifically in economics, see Allgood, Walstad, and Siegfried (2015).

[17] STEM educators are using major faculty development initiatives to transform undergraduate science teaching. Since 2004, 1000 instructors have attended the National Academies Summer Institute on Undergraduate Education, five-day workshops to share ideas and develop inclusive, research-based instructional materials (http://www.academiessummerinstitute.org/).

The STEM disciplines also provide us examples of how departments can make comprehensive changes to impact participation rates significantly. For instance, the Grinnell Science Project, the computer science program at Harvey Mudd College, and Princeton's Diversity Programs in Molecular Biology and Quantitative and Computational Biology combine an array of interventions to produce significant changes at the undergraduate and doctoral levels. Components often involve curricular reform, community building, student-faculty research, recruitment, holistic candidate review, and pre-orientation. At Harvey Mudd, for instance, the number of women computer science graduates quadrupled in six years (Alvarado, Dodds, and Libeskind-Hadas 2012).

4. Make a collective effort to understand and address disparities in the economics profession.

We can effect change through a combination of bottom up and top down actions. Individuals and departments can explore, support, and implement the ideas and initiatives presented here. The strength of existing research supports taking immediate steps. And such bottom up efforts are essential to creating a more inclusive culture in the profession.

We can also produce more research on the diverse impediments to diversity in economics. This paper presents insights and results drawn from extensive bodies of research in multiple disciplines, but neither this summary nor the bodies of knowledge on which it relies is complete. We hope, however, they are suggestive of promising directions for future interventions and research by economists.

More centralized efforts are essential as well. Economists are behind the STEM fields and other sectors, such as the legal profession and the tech industry, in attention to and progress on diversity issues (e.g., http://www.hhmi.org/advance-science/fostering-diversity-in-science, http://www.americanbar.org/diversity.html, Huet 2015). A recent initiative to correct our inattention is "The Undergraduate Women in Economics Challenge," directed by Claudia Goldin and funded by the Alfred P. Sloan Foundation, which provides guidance and significant funds to twenty randomly selected economics departments to explore and implement interventions designed to increase the number of women majors.

The Board of Governors of the Federal Reserve System has taken a leadership position in the profession, hosting conferences, creating venues for discussion, and fostering diversity and inclusion within its own workplace. In October 2014, the Board produced a landmark event, the National Summit on Diversity in the Economics Profession, bringing together presidents and research directors of the Federal Reserve Banks and chairs of economics departments from around the country to open a profession-wide dialogue about diversity.

The American Economic Association, through CSWEP and CSMGEP, supports vibrant and effective pipeline programs. It might also support demand-side initiatives, disseminating knowledge of effective interventions and encouraging economics departments to adopt practices supporting racial and gender diversity.[18]

[18] The AEA should provide a clearinghouse for critical publishing and job market information, which is currently provided through EconJobRumors.com, an Internet forum rife with racism and sexism.

Conclusion

Individual economists, regardless of race, ethnicity, and gender, have made significant contributions to understanding and addressing discrimination and inequality. Our discipline would be stronger, however, if we were to work more actively to give a broader segment of the population the opportunity to build knowledge of these and other economic issues. At the National Summit on Diversity in the Economics Profession Chair Janet Yellen remarked, "when economics is tested by future challenges, I hope that our profession will be able to say that we have done all we could to attract the best people and the best ideas" (Yellen 2014).

Recent methodological advances, especially in work on cognitive biases and in the use of random assignment experiments, have significantly improved our understanding of the benefits of and barriers to racial, ethnic, and gender diversity within the economics profession, as well as of effective programs and practices that can help the profession diversify. The bad news is that the profession has been neglecting some important ideas and people. The good news is that there are some $20 bills lying around.

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