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## ARTICLES

### MARKETS AND DISCRIMINATION

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*Despite decades of scholarship in law and economics, disagreement persists over the extent of employment discrimination in the United States, the correct explanation for such discrimination, and the normative implications of the evidence for law and policy. In part, this is because employment discrimination is an enormously complex phenomenon, and both its history and continued existence are closely linked to politics and ideology. However, some portion of this dispute can also be traced to the incomplete use of empirical evidence. Most economic theories of employment discrimination imply empirical relationships between discrimination and the market structure of particular industries and characteristics of their workforces. Yet empirical work has most typically focused on either specific industries or the economy as a whole, and little systematic evidence about market structure and patterns of actual employment discrimination claims exists. This Article compiles and analyzes an original data set comprised of industry-specific measures of employment discrimination claims, market conditions, and labor force characteristics. In so doing, this Article contributes to an emerging literature that tests the core theoretical positions in the law and economics of discrimination literature, which in turn promises to advance understanding of both the causes of and remedies for employment discrimination.*

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INTRODUCTION

In 2004, the Equal Employment Opportunity Commission (EEOC) received 27,696 charges of racial employment discrimination and 24,249 charges of sex discrimination.<sup>1</sup> Whether these figures represent the nagging persistence of employment discrimination in the United States or a remarkable decline in such discrimination is the subject of significant debate.<sup>2</sup> Empirical evidence about the gap between the hiring, wages, and firing of workers of different races and

<sup>1</sup> U.S. EQUAL EMPLOYMENT OPPORTUNITY COMM'N (EEOC), CHARGE STATISTICS, <http://www.eeoc.gov/stats/charges.html> (last visited Mar. 31, 2007) [hereinafter EEOC CHARGE STATISTICS] (providing data on discrimination charges for 1997–2006).

<sup>2</sup> See Laura Beth Nielsen & Robert L. Nelson, *Rights Realized? An Empirical Analysis of Employment Discrimination Litigation as a Claiming System*, 2005 WIS. L. REV. 663, 666–69 (summarizing current debates about extent of employment discrimination). Compare William A. Darity Jr. & Patrick L. Mason, *Evidence on Discrimination in Employment: Codes of Color, Codes of Gender*, 12 J. ECON. PERSP. 63, 65, 68–81 (1998) (concluding race and sex employment discrimination have declined but are still prevalent), with RICHARD A. EPSTEIN, FORBIDDEN GROUNDS: THE CASE AGAINST EMPLOYMENT DISCRIMINATION LAWS 47–58 (1992) (questioning evidence of continuing employment discrimination), and James J. Heckman, *Detecting Discrimination*, 12 J. ECON. PERSP. 101, 102, 104 (1998) (arguing Darity and Mason overstate strength of evidence for widespread discrimination).

sexes abounds,<sup>3</sup> but the significance of that evidence is hotly contested.<sup>4</sup> Equally important, widespread conflict remains about the accuracy of different positive explanations for discrimination<sup>5</sup> and the implications for the efficiency and efficacy of employment antidiscrimination law.<sup>6</sup> Despite decades of scholarship in law and economics, then, significant disagreement remains about the extent of employment discrimination in the United States, the correct explanation for such discrimination, and the normative implications of the various pieces of the discrimination puzzle.

In part, this is because employment discrimination is an enormously complex phenomenon, and both its history and continued existence are closely linked to politics and ideology. However, some portion of this dispute can also be traced to the failure to exploit the full panoply of available empirical evidence to evaluate competing

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<sup>3</sup> See, e.g., Francine D. Blau & Lawrence M. Kahn, *Swimming Upstream: Trends in the Gender Wage Differential in the 1980s*, 15 J. LAB. ECON. 1, 12–13, 13 tbl.1 (1997) (providing empirical evidence of continuing wage differences between sexes); Ronald Oaxaca, *Sex Discrimination in Wages*, in DISCRIMINATION IN LABOR MARKETS 124, 147 (Orley Ashenfelter & Albert Rees eds., 1973) (estimating extent of gender discrimination in wages).

<sup>4</sup> For a discussion of the problems associated with detecting discrimination, see John J. Donohue III, *The Law and Economics of Antidiscrimination Law* 35–38 (Nat'l Bureau of Econ. Research, Working Paper No. 11631, 2006), available at <http://www.nber.org/papers/w11631>.

<sup>5</sup> For an overview of economic theories of employment discrimination, see generally Stewart J. Schwab, *Employment Discrimination*, in 3 ENCYCLOPEDIA OF LAW AND ECONOMICS: THE REGULATION OF CONTRACTS 572 (Boudewijn Bouckaert & Gerrit De Geest eds., 2000). For detailed presentations of the specific theories of employment discrimination tested in this Article, see generally GARY S. BECKER, *THE ECONOMICS OF DISCRIMINATION* (2d ed. 1971), for an introduction to the taste model; EPSTEIN, *supra* note 2, for his proposal of the sorting and search model; Dennis J. Aigner & Glen G. Cain, *Statistical Theories of Discrimination in Labor Markets*, 30 INDUS. & LAB. REL. REV. 175 (1977), for a comparison of several versions of the statistical discrimination model; Richard H. McAdams, *Cooperation and Conflict: The Economics of Group Status Production and Race Discrimination*, 108 HARV. L. REV. 1003 (1995), for an introduction to the status-production model; Edmund S. Phelps, *The Statistical Theory of Racism and Sexism*, 62 AM. ECON. REV. 656 (1972), for a presentation of the statistical discrimination model.

<sup>6</sup> Compare John J. Donohue III, *Is Title VII Efficient?*, 134 U. PA. L. REV. 1411, 1426–30 (1986) (specifying conditions under which Title VII will increase efficiency), with Richard A. Posner, *The Efficiency and the Efficacy of Title VII*, 136 U. PA. L. REV. 513, 516 (1987) (arguing Title VII is likely inefficient). See also Mayer G. Freed & Daniel D. Polsby, *Privacy, Efficiency, and the Equality of Men and Women: A Revisionist View of Sex Discrimination in Employment*, 1981 AM. B. FOUND. RES. J. 583, 602–12 (discussing relevance of efficiency considerations in characterizing bona fide occupational qualifications); Edward J. McCaffery, *Slouching Towards Equality: Gender Discrimination, Market Efficiency, and Social Change*, 103 YALE L.J. 595, 648–51 (1993) (arguing efficiency considerations alone do not justify either retaining or repealing Title VII); Thomas A. Cunniff, Note, *The Price of Equal Opportunity: The Efficiency of Title VII After Hicks*, 45 CASE W. RES. L. REV. 507, 523–41, 546–48 (1995) (arguing that efficiency of Title VII depends on allocation of burden of proof).

theories of discrimination. This Article contributes to an ongoing effort to fill in the empirical details of discrimination by assembling a novel data set with which to test the dominant law and economics models of discrimination.

Virtually every theoretical fixed point in the law and economics of discrimination literature implies empirical relationships between the level of discrimination and either the structure of economic markets or characteristics of the labor pool. For example, there has been a long and rather nasty debate about the claim, commonly ascribed to Gary Becker, that competitive markets will eliminate employment discrimination.<sup>7</sup> Critics of Becker point to ongoing discrimination as evidence that his model is incorrect and vigorously contest the plausibility of its assumptions.<sup>8</sup> Die-hard adherents of the model counter by pointing either to noncompetitive market conditions created by government intervention or to significant decreases in the levels of employment discrimination over time.<sup>9</sup>

This intellectual dynamic is fine as far as it goes, but it does not go nearly far enough. A more sensible approach is to bring to bear the full range of empirical evidence about discrimination in employment markets. Much of this research has already been conducted, and recently there has been a surge of innovative empirical research on discrimination,<sup>10</sup> sometimes with an explicit focus on product market

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<sup>7</sup> The probable basis for attributing this claim to Becker is his statement that if all firms in a competitive industry have the same production function, then the firms that discriminate the most will have the highest per-unit costs, which in turn allows those firms that discriminate less to undersell them. BECKER, *supra* note 5, at 44; *see also id.* at 159 (“Employer discrimination should, on average, be less in competitive industries than in monopolistic ones.”). Under special circumstances, e.g., when at least one firm is nondiscriminating, discrimination based on employer tastes will be eliminated at equilibrium. *Id.* at 45. Note that these claims are consistent with employer-based discrimination persisting in competitive markets even in equilibrium. Furthermore, Becker was quite clear that competitive markets would only minimize discrimination resulting from the tastes of employers, not necessarily that caused by the discriminatory tastes of employees or customers. *See id.* at 39–44, 55–63, 75–77 (explaining distinct dynamics and effects of employer, employee, and consumer discrimination).

<sup>8</sup> *See, e.g.,* Robert E. Suggs, *Poisoning the Well: Law & Economics and Racial Inequality*, 57 HASTINGS L.J. 255, 266–72 (2005) (arguing that accounting for effects of discrimination on blacks undermines Becker’s claim that less-discriminating firms will be more profitable than more-discriminating ones).

<sup>9</sup> *See* VICTOR R. FUCHS, *WOMEN’S QUEST FOR ECONOMIC EQUALITY* 54–55 (1988) (claiming wage gap is not result of discrimination since firms that hire women are not more profitable than those that do not); June Ellenoff O’Neil, *Discrimination in Income Differences*, in *RACE AND GENDER IN THE AMERICAN ECONOMY: VIEWS FROM ACROSS THE SPECTRUM* 13, 13 (Susan F. Feiner ed., 1994) (noting market-based incentives to reduce discrimination).

<sup>10</sup> For a particularly clever example, see generally Steven D. Levitt, *Testing Theories of Discrimination: Evidence from Weakest Link*, 47 J.L. & ECON. 431 (2004), which uses data from the TV game show *Weakest Link* to test competing theories of discrimination.

structure.<sup>11</sup> Though enormously useful, this most recent turn in scholarship has focused almost exclusively on the claim that competitive markets will drive out discrimination.<sup>12</sup> However, there is more theory to test and more data to use. Rather than asking solely whether competitive markets reduce wage differentials—a good and important question in its own right—we ought to be asking about the relative ability of different theories of discrimination to explain the observed variation in different measures of actual employment discrimination.

Methodological problems abound as well. Empirical work is generally pursued within a specific industry<sup>13</sup> or region,<sup>14</sup> or at the level of aggregate economy-wide analysis.<sup>15</sup> A handful of studies have focused on interindustry comparisons,<sup>16</sup> but typically on wage differentials, a useful but imperfect indicator of employment discrimina-

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<sup>11</sup> See generally, for example, the essays collected in *PRODUCT MARKET STRUCTURE AND LABOR MARKET DISCRIMINATION* (John S. Heywood & James H. Peoples eds., 2006) [hereinafter *PRODUCT MARKET STRUCTURE*], which consider various aspects of the relationship between product markets and discrimination. See also Major G. Coleman, *Racial Discrimination in the Workplace: Does Market Structure Make a Difference?*, 43 *INDUS. REL.* 660, 676–86 (2004) (reporting results of several analyses of industry competition's effect on race and sex discrimination).

<sup>12</sup> See, e.g., Coleman, *supra* note 11, at 665 (testing hypothesis that industry competition reduces racial discrimination).

<sup>13</sup> See, e.g., John S. Heywood & James H. Peoples, *Deregulation and the Prevalence of Black Truck Drivers*, 37 *J.L. & ECON.* 133, 134, 139–40 (1994) (examining impact of deregulation on prevalence of blacks in trucking industry); James Peoples & Rhoda Robinson, *Market Structure and Racial and Gender Discrimination: Evidence from the Telecommunication Industry*, 55 *AM. J. ECON. & SOC.* 309, 313 (1996) (analyzing employment and earnings by race and gender in telecommunications industry).

<sup>14</sup> See, e.g., James J. Heckman & Brook S. Payner, *Determining the Impact of Federal Antidiscrimination Policy on the Economic Status of Blacks: A Study of South Carolina*, 79 *AM. ECON. REV.* 138, 138, 167–70 (1989) (using statewide and county-specific data from South Carolina to test effect of 1964 Civil Rights Act on black employment and wages).

<sup>15</sup> See, e.g., John J. Donohue III & Peter Siegelman, *The Changing Nature of Employment Discrimination Litigation*, 43 *STAN. L. REV.* 983, 985–88 & nn.3–4 (1991) [hereinafter Donohue & Siegelman, *Changing Nature*] (modeling national number of employment discrimination lawsuits filed in terms of national unemployment rates); John J. Donohue III & Peter Siegelman, *Law and Macroeconomics: Employment Discrimination Litigation over the Business Cycle*, 66 *S. CAL. L. REV.* 709, 713–14, 741–42, 754–60 (1993) [hereinafter Donohue & Siegelman, *Law and Macroeconomics*] (using economy-wide data to estimate effect of business cycle on number of EEOC filings, plaintiff win rates in discrimination cases, and size of awards).

<sup>16</sup> For examples of early work on this issue, see Edwin T. Fujii & John M. Trapani, *On Estimating the Relationship Between Discrimination and Market Structure*, 44 *S. ECON. J.* 556, 560–62 (1978), and William R. Johnson, *Racial Wage Discrimination and Industry Structure*, 9 *BELL J. ECON.* 70, 71–72, 74 (1978). For a more recent effort, see Jacqueline Agesa & Kristen Monaco, *Market Power and Racial Earnings: A Quantile Regression Approach*, in *PRODUCT MARKET STRUCTURE*, *supra* note 11, at 15, 23–31 (examining effect of market structure on wage differentials in U.S. manufacturing industries).

tion.<sup>17</sup> Indeed, the bulk of formal employment discrimination claims today involve not wage discrimination, but termination disputes.<sup>18</sup> To date, there is virtually no systematic evidence about the relationship between market structure and patterns of actual employment discrimination claims.<sup>19</sup> Given the supposed centrality of the EEOC claim-filing procedure in the regulation of employment discrimination, this is a significant gap in our understanding.

This Article fills a portion of this gap by constructing and analyzing an original data set comprised of employment discrimination claims, market conditions, and labor force characteristics across different industries in the economy. Focusing on industries as the unit of analysis greatly facilitates the empirical testing of formal models of employment discrimination, while simultaneously providing a useful tool for regulators attempting to allocate scarce enforcement resources. These data are unlikely to resolve such decades-old disputes definitively, but this Article's aspiration is to move these debates forward by tacking back and forth between high theory and on-the-ground evidence.

This Article proceeds in four major parts. Part I offers an overview of the law and economics of employment discrimination literature.<sup>20</sup> Rather than providing an all-inclusive discussion and critique, the Part focuses on deriving testable empirical predictions. Part II turns to methodological issues of research design, data selection, and analysis. Part III presents the empirical evidence, focusing first on developing appropriate measures of employment discrimination and then presenting descriptive statistics on discrimination in different industries. Against this descriptive backdrop, Part IV turns to the positive analysis, modeling the volume of employment discrimination

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<sup>17</sup> For instance, each of the essays in John Heywood and James Peoples's recent collection treats labor market discrimination as the wage differentials between either whites and nonwhites or males and females. See John S. Heywood & James H. Peoples, *The Influence of Market Structure on Labor Market Discrimination*, in *PRODUCT MARKET STRUCTURE*, *supra* note 11, at 1, 3–11 (introducing and summarizing volume's chapters).

<sup>18</sup> See Anne Marie Knott, *Induced Discrimination and Firm Size: Information vs Incentive Effects*, 25 *SMALL BUS. ECON.* 393, 397 fig.2 (2005) (illustrating that discharges account for most EEOC charges); Nielsen & Nelson, *supra* note 2, at 666 (“[T]he current set of claims include large numbers of allegations of discriminatory firing . . .”). For numerical summaries of EEOC charges for 1997–2006 by category, see *EEOC CHARGE STATISTICS*, *supra* note 1.

<sup>19</sup> In now-classic studies, John Donohue and Peter Siegelman analyzed patterns of EEOC claims as a function of aggregate, rather than market-specific, economic conditions. Donohue & Siegelman, *Law and Macroeconomics*, *supra* note 15, at 741–44.

<sup>20</sup> For further details on developments in the law and economics literature regarding employment discrimination, see Donohue, *supra* note 4, at 7–28.

claims as a function of market structure, economic conditions, and labor demographics.

Before turning to the substantive discussion, a few preliminary caveats are in order. First, I am concerned mainly with economic approaches to employment discrimination. While I attempt to reference sociological theories whenever relevant, my theoretical starting point is clearly biased toward the economic perspective.

Second, the employment discrimination literature is really an aggregation of substantive pockets of scholarship focusing on discrimination based on race,<sup>21</sup> sex,<sup>22</sup> or disability.<sup>23</sup> While the empirical findings are generally presented according to specific types of discrimination, my theoretical treatment glosses over many of the distinctive characteristics that distinguish sex-based employment discrimination from that based on race. In so doing, I do not mean to suggest that the dynamics of race discrimination and sex discrimination in employment are the same—given their different historical geneses and practical effects, they clearly are not. That said, an interindustry study that focuses on labor market characteristics and claim filing is a potentially useful way to analyze discrimination dynamics of both sorts.<sup>24</sup> In fact, the data support rather than rebut the idea that these

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<sup>21</sup> See generally McAdams, *supra* note 5 (developing implications of group conflict and status-production theory for economics of racial discrimination); Jennifer Roback, *Racism as Rent Seeking*, 27 *ECON. INQUIRY* 661 (1989) (explaining racially discriminatory laws as means of extracting psychic or economic rents).

<sup>22</sup> See, e.g., John J. Donohue III, *Prohibiting Sex Discrimination in the Workplace: An Economic Perspective*, 56 *U. CHI. L. REV.* 1337, 1365–66 (1989) (assessing efficiency of Title VII as means of regulating sex discrimination); Gillian K. Hadfield, *Rational Women: A Test for Sex-Based Harassment*, 83 *CAL. L. REV.* 1151, 1175–76, 1180 (1995) (developing formal model for evaluating sexual harassment claims under Title VII); McCaffery, *supra* note 6, at 654–57 (discussing workplace sex discrimination and advocating changes in tax policies and Title VII); Richard A. Posner, *An Economic Analysis of Sex Discrimination Laws*, 56 *U. CHI. L. REV.* 1311, 1312, 1325–34 (1989) (hypothesizing that sex discrimination laws have not increased aggregate welfare of women); see also George J. Bentson, *The Economics of Gender Discrimination in Employee Fringe Benefits: Manhart Revisited*, 49 *U. CHI. L. REV.* 489, 492–93 (1982) (arguing that Equal Pay Act and Title VII should allow consideration of sex in determining pension and insurance payments); Freed & Polsby, *supra* note 6, at 590 (arguing that Title VII recognizes certain interests of employers in maintaining sex-based classifications).

<sup>23</sup> See, e.g., Marjorie L. Baldwin, *New Estimates of Discrimination Against Men with Disabilities: The Role of Customer Interaction in the Product Market*, in *PRODUCT MARKET STRUCTURE*, *supra* note 11, at 125, 138–47 (estimating wage differential due to discrimination against disabled men); Peter David Blanck & Mollie Weighner Marti, *Attitudes, Behavior and the Employment Provisions of the Americans with Disabilities Act*, 42 *VILL. L. REV.* 345, 349–69 (1997) (describing disability-based theories of employment discrimination and reporting extent of disability claims filed with EEOC).

<sup>24</sup> In addition, given that a single relatively general statutory scheme regulates different kinds of employment discrimination, 42 U.S.C. § 2000e-2(a)–(d), (l) (2000) (outlawing various employment practices based on individual’s “race, color, religion, sex, or national

dynamics differ: The factors that best explain variation across industries with respect to race discrimination are not those that best explain variation in sex discrimination.<sup>25</sup>

Lastly, this Article is explicitly concerned only with employment discrimination, not discrimination writ large. Although this Article often uses the term discrimination as shorthand, this is not meant to imply that the arguments presented herein can necessarily be extended to other discrimination contexts.<sup>26</sup>

## I

### CONCEPTUAL BACKGROUND

#### A. *Theories of Discrimination*

The law and economics literature contains no shortage of theories about employment discrimination, and if one expands the universe to housing discrimination or into other disciplines (e.g., sociology or psychology), the volume grows exponentially. However, this Article focuses on four approaches in the law and economics literature generally understood to be the dominant schools of thought: the taste, statistical discrimination, sorting and search, and status-production theories.<sup>27</sup>

The first general economic approach to employment discrimination was Gary Becker's *taste* model, presented in his 1955 doctoral dissertation.<sup>28</sup> According to this theory, discrimination is just another exogenously given taste or preference of employers, employees, or customers that they are willing to pay to indulge.<sup>29</sup> Becker's thinking dominated early work but soon came under attack in the 1970s by advocates of *statistical* models of discrimination, in which employers use group characteristics to make rational inferences about individual

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origin"), it is not altogether inappropriate to analyze these two types of discrimination together, even acknowledging the potential pitfalls.

<sup>25</sup> See *infra* Part IV.C.

<sup>26</sup> For analyses of the determinants of race and sex discrimination in the context of car purchases, see generally Ian Ayres, *Fair Driving: Gender and Race Discrimination in Retail Car Negotiations*, 104 HARV. L. REV. 817 (1991) [hereinafter Ayres, *Fair Driving*]; Ian Ayres, *Further Evidence of Discrimination in New Car Negotiations and Estimates of Its Causes*, 94 MICH. L. REV. 109 (1995); and Ian Ayres & Peter Siegelman, *Race and Gender Discrimination in Bargaining for a New Car*, 85 AM. ECON. REV. 304 (1995).

<sup>27</sup> A number of similar theoretical overviews exist. My discussion follows the typology used by Schwab, *supra* note 5, at 575–82. Donohue, *supra* note 4, uses a similar typology, but identifies the sorting and search and status-production models as subcategories of a cartel model. *Id.* at 21.

<sup>28</sup> Published in 1957 as BECKER, *supra* note 5.

<sup>29</sup> *Id.* at 16–17.

employee productivity.<sup>30</sup> More recently, Richard Epstein and other scholars have presented a mixed *sorting and search* model that incorporates aspects of both the taste and statistical models.<sup>31</sup> Finally, Richard McAdams has proposed a *status-production* model of employment discrimination. According to this theory, groups of workers discriminate against others to elevate their own status, a model that is part sociological and part economic.<sup>32</sup>

In practice, there is a good deal of overlap between the models. For instance, Epstein's ideas about sorting and search are built partially on the inferential problems emphasized by older statistical models.<sup>33</sup> Similarly, McAdams's idea of status production might plausibly be analyzed as an employee taste for discrimination, which Becker's early work itself explicitly suggested and analyzed.<sup>34</sup> But as rough proxies for major schools of thought, the distinctions are perfectly sensible.<sup>35</sup>

### 1. *Tastes*

The modern economic analysis of employment discrimination is generally traced to Becker's doctoral thesis, a microeconomic account rooted in individual tastes for discrimination either by employers, employees, or consumers.<sup>36</sup> The employer version of the theory posits that some employers have a taste for discrimination which they are willing to pay to indulge. If employers enjoy positive utility from discriminating, they may be willing to trade profits for discrimination.<sup>37</sup> In the context of race discrimination, the employer taste model sug-

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<sup>30</sup> See generally Aigner & Cain, *supra* note 5 (comparing versions of statistical theory of discrimination); Phelps, *supra* note 5 (developing formal statistical discrimination model).

<sup>31</sup> See EPSTEIN, *supra* note 2, at 59–78 (arguing that voluntary sorting by race and other characteristics is rational); Schwab, *supra* note 5, at 581 (describing Epstein's sorting and search model).

<sup>32</sup> See McAdams, *supra* note 5, at 1007 (summarizing group-status rationale for discrimination).

<sup>33</sup> See EPSTEIN, *supra* note 2, at 47–58 (identifying limitations of previous studies).

<sup>34</sup> See BECKER, *supra* note 5, at 55–74 (theorizing that employee tastes for discrimination, availability of substitute labor, and trade unionism work together to define market discrimination by employees).

<sup>35</sup> The basic typology and its variants are replicated throughout the field. See *supra* note 27. For many years, the taste and statistical models dominated the law and economics literature, and many studies still take them to be the major players. See, e.g., Levitt, *supra* note 10, at 445 tbl.4, 446–47 (finding evidence of statistical discrimination towards Hispanics and taste-based discrimination against older players in *Weakest Link* data).

<sup>36</sup> The portion of Becker's work most commonly discussed, BECKER, *supra* note 5, at 39–54, focuses on employers' tastes for discrimination. However, Becker's models of employees' and consumers' tastes for discrimination, *id.* at 55–81, are equally insightful.

<sup>37</sup> *Id.* at 14.

gests that although employers with such tastes will be willing to pay whites more than nonwhites, those discriminating firms will also earn lower profits than nondiscriminating firms because of their labor costs. Firms are, therefore, less profitable in the long run when they indulge their discriminatory tastes.<sup>38</sup> In the consumer and employee taste models, consumers or workers demand lower prices or higher wages, respectively, to associate with members of other racial groups. Over time, this produces occupational segregation.<sup>39</sup>

Because discriminating firms in Becker's model are less profitable than nondiscriminating ones, many scholars suggest that the taste model predicts that there will be no employment discrimination in equilibrium, because the discriminating, less-profitable firms will be driven from the marketplace by those with lower labor costs.<sup>40</sup> The dual critique consistently advanced against this model is that "[i]t predicts the absence of the phenomenon it was designed to explain"<sup>41</sup> and requires employers to behave irrationally rather than as profit-maximizers.<sup>42</sup> However, these critiques are only appropriately advanced against the employer taste model, rather than the employee or consumer model.<sup>43</sup>

## 2. *Statistical Discrimination*

Variants of Becker's taste model remain dominant in the law and economics literature.<sup>44</sup> But early on, economists developed a series of

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<sup>38</sup> *Id.* at 39–47.

<sup>39</sup> *Id.* at 56, 60. For a discussion of how differing perceptions by male and female customers can affect consumer taste discrimination, see generally Genie Black et al., *Consumer Preferences and Employment Discrimination*, 2 INT'L. ADVANCES ECON. RES. 137 (1996). For a test of an early employee taste model, see Barry R. Chiswick, *Racial Discrimination in the Labor Market: A Test of Alternative Hypotheses*, 81 J. POL. ECON. 1330, 1332–36, 1339–46 (1973).

<sup>40</sup> See, e.g., John J. Donohue III, *Discrimination in Employment*, in 1 THE NEW PALGRAVE DICTIONARY OF ECONOMICS AND THE LAW 615, 617 (Peter Newman ed., 1998) (claiming Becker's model implies market would "disciplin[e] discriminators"); Posner, *supra* note 6, at 514 (citing Becker's model to support finding that competition should ameliorate effects of discrimination in the long run by rewarding firms that are not constrained by an "aversion to associating with blacks").

<sup>41</sup> Kenneth J. Arrow, *Some Mathematical Models of Race Discrimination in the Labor Market*, in RACIAL DISCRIMINATION IN ECONOMIC LIFE 187, 192 (Anthony H. Pascal ed., 1972); see also Kenneth J. Arrow, *The Theory of Discrimination*, in DISCRIMINATION IN LABOR MARKETS, *supra* note 3, at 3, 10 (taking persistence of discrimination as indicating taste model's limits).

<sup>42</sup> See Schwab, *supra* note 5, at 577–78 (explaining that taste model can account for continuing discrimination only by assuming employers are not profit-maximizers).

<sup>43</sup> See *supra* note 7.

<sup>44</sup> See Jennifer Roback, *Southern Labor Law in the Jim Crow Era: Exploitative or Competitive?*, 51 U. CHI. L. REV. 1161, 1163 (1984) (noting wide acceptance of claim that competitive markets will drive out discrimination).

statistical (or informational) models to respond to the alleged weaknesses of the taste model.<sup>45</sup> These models suggest that with imperfect information about potential employees, employers rely on group characteristics to predict individual characteristics (e.g., productivity).<sup>46</sup> In contrast to taste models (which assume that employers have invidious preferences), statistical models assume that employers differentiate among individuals from different groups for “benign” profit-maximizing motives.<sup>47</sup> Employers make inferences about individual-level worker characteristics based on an employee’s membership in a group.<sup>48</sup>

The initial accuracy of such group-based inferences or stereotypes can vary widely. Over time, however, inaccurate inferences should be driven out of the market. That is, because employers who make accurate inferences about worker productivity have a competitive advantage over firms that consistently make errors, in equilibrium, only accurate inferences should remain.<sup>49</sup> Thus, statistical discrimination may persist in equilibrium if the stereotypes used by employers are accurate.<sup>50</sup>

Of course, from a policy perspective, the lack of animus need not justify government inaction. Average group characteristics may reflect prior invidious discrimination or be endogenously determined by different incentives for investment in human capital.<sup>51</sup> For

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<sup>45</sup> See, e.g., Phelps, *supra* note 5, at 659 (presenting statistical discrimination model).

<sup>46</sup> For an introduction to the statistical discrimination theory, see Schwab, *supra* note 5, at 579–81.

<sup>47</sup> Precise formulations of the statistical theory of discrimination vary. Compare Phelps, *supra* note 5, at 660 (explaining discrimination between apparently equally qualified individuals as result of employers’ assumption that race or sex signals lower average qualifications), with Aigner & Cain, *supra* note 5, at 180–83 (explaining wage differential between groups assumed to be on average equally qualified as result of risk-averse employers assessing ability with methods more reliable for one group than for other).

<sup>48</sup> Cf. Joleen Kirschenman & Kathryn M. Neckerman, “We’d Love to Hire Them, But . . .”: *The Meaning of Race for Employers*, in *THE URBAN UNDERCLASS* 203, 204 (Christopher Jencks & Paul E. Peterson eds., 1991) (reporting results of survey of effect of race on employers’ assessment of workers).

<sup>49</sup> For a dynamic version of the statistical theory that reflects employers’ ability to learn about the productivity of different groups, see Gerald S. Oettinger, *Statistical Discrimination and the Early Career Evolution of the Black-White Wage Gap*, 14 J. LAB. ECON. 52, 56–63 (1996).

<sup>50</sup> See Stewart Schwab, *Is Statistical Discrimination Efficient?*, 76 AM. ECON. REV. 228, 231–32 (1986) (deriving necessary and sufficient conditions for efficiency of statistical discrimination given truth of stereotype).

<sup>51</sup> See Shelly J. Lundberg & Richard Startz, *Private Discrimination and Social Intervention in Competitive Labor Markets*, 73 AM. ECON. REV. 340, 342 (1983) (recognizing that decisions regarding investment in human capital are affected by labor-market discrimination); Cass R. Sunstein, *Why Markets Don’t Stop Discrimination*, 8 SOC. PHIL. & POL. 22, 29–30 (1991) (highlighting effects of discrimination on investment in human capital); Finis Welch, *Education and Racial Discrimination*, in *DISCRIMINATION IN LABOR MARKETS*,

example, if women or nonwhites are paid lower wages and promoted less often than a favored group, the returns on investment in education or skills training for them may be lower than for members of the favored group. Given the diminished returns, it is rational for members of these disfavored groups to underinvest in education or skills training, which in turn produces group characteristics that mirror employers' stereotypes. In this case, the statistical inference is accurate but only because of historical discrimination. If this occurs, the welfare consequences of statistical discrimination are far from benign, even if there is no underlying invidious discrimination in the current inference.

### 3. *Sorting and Search*

In his own analysis of employment discrimination, Richard Epstein combined elements of both the taste and statistical models.<sup>52</sup> Epstein argued that some portion of employment discrimination is an efficient response by firms to sorting problems.<sup>53</sup> If employee tastes are tied to group characteristics, then employers may prefer homogeneous workforces, seeing them as a way to minimize the chance of conflict among employees of the firm.<sup>54</sup>

Thus, while Epstein acknowledges that employment antidiscrimination laws did reduce much invidious discrimination,<sup>55</sup> he suggests that a significant portion of the remaining discrimination is a rational means of avoiding employee conflict, the result of which is sorting or occupational segregation by demographic characteristics.<sup>56</sup> As with the statistical model, discrimination does not result from employers' invidious preferences. Rather, discrimination is a rational response by employers to the discriminatory preferences of their employees. In this sense, the sorting model shares elements of both Becker's employee taste model and the statistical discrimination model.

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*supra* note 3, at 43 (arguing for association between improved quality of schools attended by black youth and improved income yields in schooling).

<sup>52</sup> See Schwab, *supra* note 5, at 581 (noting Epstein's combination of statistical and taste models).

<sup>53</sup> See EPSTEIN, *supra* note 2, at 59–72 (claiming some level of persistent discrimination is rational in context of long-term relationships found in labor market). For a related search model, see Dan A. Black, *Discrimination in an Equilibrium Search Model*, 13 J. LAB. ECON. 309, 312–21 (1995).

<sup>54</sup> See EPSTEIN, *supra* note 2, at 63 (describing costs that arise for employers when employees have divergent preferences).

<sup>55</sup> *Id.* at 251, 258.

<sup>56</sup> *Id.* at 77. For a discussion of this view, see Gregory S. Crespi, *Market Magic: Can the Invisible Hand Strangle Bigotry?*, 72 B.U. L. REV. 991, 1009–11 (1992) (reviewing EPSTEIN, *supra* note 2).

#### 4. Status Production

McAdams's status-production theory of employment discrimination<sup>57</sup> has much in common with what is sometimes termed a cartel theory of discrimination.<sup>58</sup> McAdams argues that the notions of tastes or associational preferences that dominate the economics literature give inadequate consideration to group status. In the status-production model, members of one group invest in elevating the status of their own group by subordinating other groups. Discrimination allows members of one group to raise their self-esteem by lowering the status of the group against whom they discriminate.<sup>59</sup>

Whereas the taste model focuses on the individual discriminator, the status-production model emphasizes the importance of groups and social norms in producing and maintaining discriminatory practices. For example, whites might enforce a norm against hiring or promoting nonwhites. Because employers who fail to adhere to the norm may lose status within their own group and simultaneously risk punishment for violating the discrimination norm, both primary and secondary norms operate to maintain discrimination.<sup>60</sup>

Thus, even though an employer could theoretically obtain cheaper labor and maximize profits by not discriminating, the employer might also face sanctions from other firms or customers, negating the competitive advantage. If those sanctions outweigh potential profit gains, employers who would otherwise hire nonwhites (in the race context) or women (in the sex context) may refrain from doing so.<sup>61</sup>

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<sup>57</sup> See generally McAdams, *supra* note 5 (arguing that groups engage in discriminatory behavior to boost their own status in society).

<sup>58</sup> See Donohue, *supra* note 4, at 20–21 (describing cartel model of discrimination and associating McAdams's theory with it).

<sup>59</sup> McAdams, *supra* note 5, at 1044; see also Donohue, *supra* note 40, at 617 (describing McAdams's status-production model); Donohue, *supra* note 4, at 21 (describing internal justification of discriminators). For a general discussion of exclusion of groups from the labor force, see Joseph G. Altonji & Rebecca M. Blank, *Race and Gender in the Labor Market*, in 3C HANDBOOK OF LABOR ECONOMICS 3143 (Orley Ashenfelter & David Card eds., 1999).

<sup>60</sup> See Schwab, *supra* note 5, at 582 (noting role of group solidarity among whites as means of enforcing discriminatory norm). The role of social norms in perpetuating discrimination has also been recognized by John J. Donohue III & James J. Heckman, *Re-evaluating Federal Civil Rights Policy*, 79 GEO. L.J. 1713, 1728–29 (1991), and J. Hout Verkerke, *Free to Search*, 105 HARV. L. REV. 2080, 2091–94 (1992) (reviewing EPSTEIN, *supra* note 2).

<sup>61</sup> See McAdams, *supra* note 5, at 1029–31 (arguing such intragroup behavior directed at other groups is rational means of securing group benefits).

Not surprisingly, the status-production theory has also drawn criticism.<sup>62</sup> For example, John Donohue has suggested that although the status-production model captured important elements of pre-1960s discrimination, Becker's model may now provide more insight into current racial discrimination.<sup>63</sup> Be that as it may, the status-production model remains relatively untested, at least compared to various other economic theories of discrimination.

### B. Evidence of Discrimination

Despite their common features, these theories provide distinct explanations of, and therefore competing hypotheses about, employment discrimination. However, answering the *positive* question—what explains the phenomenon of employment discrimination?—requires testing these theories against each other. Doing so requires answering a prior *descriptive* question—how much discrimination exists?—which raises a number of related questions about measurement and methods. Although space limitations prevent a comprehensive review of the voluminous empirical literature on discrimination, a brief review is necessary and, I hope, sufficient.<sup>64</sup>

Labor economists have long provided the most rigorous and extensive efforts to measure employment discrimination<sup>65</sup> using hiring, wage, or occupational achievement differentials;<sup>66</sup> audit-pair studies;<sup>67</sup> and (less frequently) the volume of employment discrimina-

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<sup>62</sup> See generally Richard A. Epstein, *The Status-Production Sideshow: Why the Antidiscrimination Laws Are Still a Mistake*, 108 HARV. L. REV. 1085 (1995) (offering comprehensive critique of McAdams's status-production model of discrimination).

<sup>63</sup> Cf. Donohue, *supra* note 4, at 22 (suggesting profit-seeking U.S. companies' practice of establishing foreign call centers is inconsistent with self-enforcing discriminatory norms).

<sup>64</sup> For an excellent comprehensive review of the employment discrimination literature, see generally Donohue, *supra* note 4. Other useful general surveys of the empirical literature include HANDBOOK ON THE ECONOMICS OF DISCRIMINATION (William M. Rodgers III ed., 2006) (surveying recent innovations in research methodology, empirical examinations of previously overlooked demographic groups, and impact of antidiscrimination efforts), and PANEL ON METHODS FOR ASSESSING DISCRIMINATION, NAT'L RESEARCH COUNCIL, MEASURING RACIAL DISCRIMINATION (Rebecca M. Blank et al. eds., 2004) (assessing current methods for measuring and analyzing racial discrimination data and recommending approaches for future study).

<sup>65</sup> See generally Glen G. Cain, *The Economic Analysis of Labor Market Discrimination: A Survey*, in 1 HANDBOOK OF LABOR ECONOMICS 693 (Orley Ashenfelter & Richard Layard eds., 1986) (providing overview of theories of discrimination); Darity & Mason, *supra* note 2 (surveying empirical research on employment discrimination).

<sup>66</sup> See Darity & Mason, *supra* note 2, at 67 (noting that economic research has focused on earnings and occupational disparities).

<sup>67</sup> See, e.g., Ayres, *Fair Driving*, *supra* note 26, at 822–27 (describing design of audit-pair study of effect of race and sex on new car negotiation).

tion litigation.<sup>68</sup> Of these alternatives, the differential method dominates the literature. The differential method seeks to isolate differences in wages, hiring, or promotion rates among races or sexes. In contrast, in the audit-pair method, the investigator pairs individuals that are similar along all dimensions except the characteristic of interest—typically race or sex—and then examines whether hiring, promotion, or salary outcomes differ. Finally, analyses of employment discrimination litigation do not attempt to measure discrimination directly, but instead focus on the number of litigated complaints.<sup>69</sup>

Interpretations of these types of empirical evidence vary substantially. For example, William Darity and Patrick Mason conclude from the literature that “[t]he evidence [of employment discrimination] is ubiquitous: careful research studies which estimate wage and employment regressions, help-wanted advertisements, audit and correspondence studies, and discrimination suits which are often reported by the news media.”<sup>70</sup> On the other hand, Heckman suggests that market disparities must be distinguished from market discrimination and that much of the empirical evidence alleged to show widespread employment discrimination is subject to significant methodological criticism.<sup>71</sup> Specifically, Heckman argues that wage differentials between blacks and whites in the 1990s were predominantly due to differences in skills rather than discrimination in the labor market.<sup>72</sup>

The conventional wisdom is that wage differentials between men and women generally narrowed in the 1980s and 1990s.<sup>73</sup> This dimin-

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<sup>68</sup> See, e.g., Donohue & Siegelman, *Changing Nature*, *supra* note 15, at 985 & n.3 (describing employment discrimination litigation data used in study).

<sup>69</sup> See Donohue & Siegelman, *Law and Macroeconomics*, *supra* note 15, at 718 (claiming amount of litigation is function of actual discrimination, likelihood that worker will sue for perceived discrimination, and number of events perceived as discriminatory).

<sup>70</sup> Darity & Mason, *supra* note 2, at 63.

<sup>71</sup> See Heckman, *supra* note 2, at 102, 104, 107–11 (critiquing audit-pair studies for implicit assumption that distribution of unobserved productivity is equal across groups).

<sup>72</sup> *Id.* at 101. Indeed, the consensus in the literature is that race and sex differentials in employment result from both discrimination and productivity or human capital characteristics. See Darity & Mason, *supra* note 2, at 67 (noting typical hybrid position taken by economists). The real debate is over how heavily to weight these two factors. See *id.* at 67–68 (contrasting results of regression of earnings or occupational status on education, experience, tenure, race, and sex with the Blinder-Oaxaca decomposition procedure). See generally Kenneth Y. Chay & David S. Lee, *Changes in Relative Wages in the 1980s: Returns to Observed and Unobserved Skills and Black-White Wage Differentials*, 99 J. ECONOMETRICS 1 (2000) (estimating effects of education and race on college–high school wage gap).

<sup>73</sup> See FRANCINE D. BLAU ET AL., *THE ECONOMICS OF WOMEN, MEN, AND WORK* 145–46 (4th ed. 2001) (reporting women’s earnings were fifty-nine percent of men’s in 1981, but seventy-one percent by 1995); Francine D. Blau, *Trends in the Well-Being of American Women, 1970–1995*, 36 J. ECON. LITERATURE 112, 129–30 (1998) (providing data

ishing differential is often explained by the combination of falling wages for men in certain industries, an increase in human capital among women, and legal pressure creating greater opportunities for women in the labor force.<sup>74</sup> However, even controlling for these variables, continuing sex differentials appear to persist.<sup>75</sup>

As for racial discrimination, one 1997 study concludes that wage differentials cannot be explained by productivity differences alone and that significant wage differences are the result of discrimination.<sup>76</sup> However, more recent studies at least question that view.<sup>77</sup> In one of the more well-known empirical studies, James Heckman and Brook Payner trace the impact of federal antidiscrimination law on the economic status of African Americans in South Carolina.<sup>78</sup> The authors suggest that black employment levels and wages rose suddenly after 1965, as entrepreneurs hired blacks after federal civil rights legislation was enacted.<sup>79</sup> In general, racial employment and wage differentials improved dramatically from 1965 to 1975 and then stagnated.<sup>80</sup>

As this summary suggests, empirical evidence and analyses of discrimination abound. However, there remains a relative dearth of data comparing discrimination across different industries on any measures other than wage disparities. Consequently, one of the key questions regarding employment discrimination remains: “What is the role of the competitive process in elimination or reproduction of discrimination in employment?”<sup>81</sup>

This question has certainly not been entirely ignored. For example, scholars have explored the effects of drastic changes in the market structure of a single industry (e.g., deregulation) on the

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on female-to-male weekly wage ratios by age and education for full-time workers, 1969–94).

<sup>74</sup> See BLAU ET AL., *supra* note 73, at 158–62 (reporting decline in male-female disparity with respect to investment in educational aspects of human capital); Blau & Kahn, *supra* note 3, at 3–4 (tracing improvement in women’s relative skills to increase in work experience, better education, and less occupational segregation).

<sup>75</sup> See *supra* note 73.

<sup>76</sup> See William Darity, Jr. et al., *Racial and Ethnic Inequality in the United States: A Secular Perspective*, 87 AM. ECON. REV. 301, 303–04 (1997) (finding loss of income for blacks attributed to discrimination increased between 1880 and 1910 while loss attributed to qualities such as premarket literacy and assimilation status decreased).

<sup>77</sup> See, e.g., Pedro Carneiro et al., *Labor Market Discrimination and Racial Differences in Premarket Factors*, 48 J.L. & ECON. 1, 25 fig.9 (2005) (concluding only five to fifteen percent of racial wage gap is unexplained after controlling for prelabor market factors).

<sup>78</sup> Heckman & Payner, *supra* note 14.

<sup>79</sup> *Id.* at 140–43.

<sup>80</sup> Schwab, *supra* note 5, at 588–89.

<sup>81</sup> Darity & Mason, *supra* note 2, at 63.

volume of discrimination,<sup>82</sup> compared wage differentials across industries,<sup>83</sup> examined the effect of market competition on the relationship between a firm's female workforce and its productivity,<sup>84</sup> and analyzed the general impact of increased international trade on wage differentials.<sup>85</sup> In their recent volume, Heywood and Peoples assembled essays about the links between market structure and labor discrimination that focused predominantly on international rather than domestic market settings.<sup>86</sup> However, virtually all of this recent work has focused exclusively on wage differentials, ignoring other potential indicators of discrimination.

Such work is extremely important, but it also risks focusing too much energy on what is, at best, an imperfect and incomplete indi-

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<sup>82</sup> See Jacqueline Agesa & Anita Brown, *Regulation, Unionization, and Racial Wage Discrimination: An Analysis of the Trucking Industry*, 57 AM. J. ECON. & SOC. 285, 293–302 (1998) (evaluating race-based wage discrimination in trucking industry before and after regulatory reform); Sandra E. Black & Philip E. Strahan, *The Division of Spoils: Rent-Sharing and Discrimination in a Regulated Industry*, 91 AM. ECON. REV. 814, 823–25 (2001) (examining effect of bank deregulation on wages and proportion of managerial positions for women); John S. Heywood, *Regulated Industries and Measures of Earnings Discrimination*, in REGULATORY REFORM AND LABOR MARKETS 287, 287–89 (James Peoples ed., 1998) (describing theoretical and empirical relationship between deregulation and traditional measures of discrimination); Heywood & Peoples, *supra* note 13, at 139–40 (analyzing effect of deregulation on employment for black truck drivers); Peoples & Robinson, *supra* note 13, at 313–22 (analyzing effect of implementation of less aggressive affirmative action policy in telecommunication industry on employment and earnings by race and gender); James Peoples, Jr. & Wayne K. Talley, *Black-White Earnings Differentials: Privatization Versus Deregulation*, 91 AM. ECON. REV. 164, 166–67 (2001) (estimating effects of privatization and deregulation on racial wage differentials for bus drivers).

<sup>83</sup> See Jacqueline Agesa & Darrick Hamilton, *Competition and Wage Discrimination: The Effects of Interindustry Concentration and Import Penetration*, 85 SOC. SCI. Q. 121, 125–32 (2004) (estimating racial wage differentials across manufacturing industries); Fujii & Trapani, *supra* note 16, at 560–63 (same); Johnson, *supra* note 16, at 73–78 (same); James Peoples, Jr., *Monopolistic Market Structure, Unionization, and Racial Wage Differentials*, 76 REV. ECON. & STAT. 207, 209–11 (1994) (examining effect of market structure on wage differentials for union and nonunion black workers).

<sup>84</sup> Judith K. Hellerstein et al., *Market Forces and Sex Discrimination*, 37 J. HUM. RESOURCES 353, 357–75 (2002).

<sup>85</sup> See Agesa & Hamilton, *supra* note 83, at 132 (finding little evidence that increased foreign and domestic competition reduced domestic wage differentials); George J. Borjas & Valerie A. Ramey, *Foreign Competition, Market Power, and Wage Inequality*, 110 Q.J. ECON. 1075, 1100–03 (1995) (finding evidence that rising unemployment in concentrated industries induced by trade increased wage differential between skilled and unskilled workers).

<sup>86</sup> See generally Clive Belfield & John S. Heywood, *Product Market Structure and Gender Discrimination in the United Kingdom*, in PRODUCT MARKET STRUCTURE, *supra* note 11, at 39; John S. Heywood & Xiangdong Wei, *Gender Composition and Market Structure in Hong Kong*, in PRODUCT MARKET STRUCTURE, *supra* note 11, at 81; Uwe Jirjahn & Gesine Stephan, *Gender and Wages in Germany: The Impact of Product Market Competition and Collective Bargaining*, in PRODUCT MARKET STRUCTURE, *supra* note 11, at 59.

cator of discrimination. The vast majority of employment discrimination claims filed with the EEOC concern disputes over terminations, not wages. Current scholarship's emphasis on wage differentials risks focusing on the wrong piece of the discrimination puzzle (perhaps only because there is a wealth of wage differential data available).<sup>87</sup> While the analysis of wage differentials is critically important, so too is the investigation of other empirical manifestations of employment discrimination.

### C. Normative Analysis

Much of the treatment of employment discrimination in the legal (as opposed to economic) literature is normative, concerning the desirability, efficacy, and efficiency of the legal regime that regulates such discrimination (typically federal antidiscrimination laws like Title VII of the 1964 Civil Rights Act<sup>88</sup>).<sup>89</sup> Unfortunately, the conclusions from the normative literature are strongly influenced by divergent theoretical understandings of the employment discrimination phenomenon. For example, in a world where employment discrimination is caused by employer taste-based animus, competitive markets will (under certain conditions) eliminate or greatly reduce discrimination.<sup>90</sup> On this view, a comprehensive legal regime of employment discrimination legislation is at best unnecessary and at worst unwise.<sup>91</sup> In the short run, interference with market processes is harmful; in the long run, it is unnecessary because discriminators will be driven from the market because they are not profit maximizers.<sup>92</sup> Thus, the taste

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<sup>87</sup> For an exception to this trend, see Paul Oyer & Scott Schaefer, *Litigation Costs and Returns to Experience*, 92 AM. ECON. REV. 683, 691–93, which analyzes termination claims.

<sup>88</sup> The Civil Rights Act of 1964, Pub. L. No. 88-352, 78 Stat. 241, 253 (codified as amended at 42 U.S.C. §§ 2000e–2000e-17).

<sup>89</sup> See, e.g., Donohue, *supra* note 6, at 1426–29 (arguing that Title VII enhances welfare by eliminating discriminating firms faster than unregulated market would). *But see* Posner, *supra* note 6, at 514–21 (claiming if Title VII is effective, it may be inefficient, and if it is not effective, its administrative cost is deadweight loss). For Donohue's response to Posner's critique, see John J. Donohue III, *Further Thoughts on Employment Discrimination Legislation: A Reply to Judge Posner*, 136 U. PA. L. REV. 523, 528–31 (1987) [hereinafter Donohue, *Further Thoughts*], in which he provides a cost-benefit analysis suggesting that Title VII is efficient. See generally Epstein, *supra* note 62 (critiquing McAdams's status-production model as justification for employment antidiscrimination laws).

<sup>90</sup> See *supra* note 7.

<sup>91</sup> See generally EPSTEIN, *supra* note 2, for a comprehensive argument that civil rights laws threaten individual liberty.

<sup>92</sup> See Donohue, *Further Thoughts*, *supra* note 89, at 523 (describing claims commonly made against use of antidiscrimination laws).

model has been taken by some as the foundation for an efficiency critique of Title VII.<sup>93</sup>

In contrast, Donohue argues that, despite Title VII's potential inefficiency in the short run, the legal regime produces benefits by eliminating discriminators more quickly than an unregulated free market would.<sup>94</sup> If Donohue's analysis is correct, Title VII may be a second-best regime, but it may also be more efficient than critics suggest.<sup>95</sup>

This exchange on the welfare consequences of employment antidiscrimination law continued well into the 1990s.<sup>96</sup> Richard Epstein's 1992 book *Forbidden Grounds*, a comprehensive critique of employment discrimination legislation, inspired a series of symposia on the law and economics of Title VII, as well as the relationships among Title VII, free markets, and economic efficiency.<sup>97</sup> This largely theoretical effort, however, raised as many empirical questions as it answered, and claims about the efficacy and efficiency of Title VII and other employment discrimination regulations are still hotly disputed.<sup>98</sup>

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<sup>93</sup> See, e.g., EPSTEIN, *supra* note 2, at 77 (critiquing as unrealistic Donohue's assumption that no rational firm will discriminate in competitive market equilibrium); Posner, *supra* note 6, at 514 (arguing that Donohue fails to account for administrative costs of Title VII).

<sup>94</sup> Donohue, *Further Thoughts*, *supra* note 89, at 524–28.

<sup>95</sup> For the basic arguments given by advocates and critics of Title VII as applied to race, see *supra* note 89. The debate between Donohue and Posner regarding sex discrimination traces similar themes. Compare Donohue, *supra* note 22, at 1347–56 (defending efficiency of prohibiting sex discrimination), with Posner, *supra* note 22, at 1317–21 (offering economic analysis of sex discrimination regimes and highlighting possibility that those laws have hurt women in certain contexts).

<sup>96</sup> For example, Donohue and Heckman argued in 1991 that Title VII had a dramatic impact in the South. Donohue & Heckman, *supra* note 60, at 1718; see also Heckman, *supra* note 2, at 103 (claiming greatest progress in South against racial discrimination came from external legal intervention).

<sup>97</sup> EPSTEIN, *supra* note 2. An issue of Volume 31 of the *San Diego Law Review* consists of essays on Epstein's book originally presented at a symposium at the University of San Diego School of Law. Richard A. Epstein, *Standing Firm, on Forbidden Grounds*, 31 SAN DIEGO L. REV. 1, 1 (1994). Prior to the publication of Epstein's book, the *Georgetown Law Journal* sponsored a symposium on the law and economics of racial discrimination in employment. Symposium, *The Law and Economics of Racial Discrimination in Employment*, 79 GEO. L.J. 1619 (1991) (including articles on federal civil rights policies, implementation of quotas, and numerical standards).

<sup>98</sup> See generally Kenneth Y. Chay, *The Impact of Federal Civil Rights Policy on Black Economic Progress: Evidence from the Equal Employment Opportunity Act of 1972*, 51 INDUS. & LAB. REL. REV. 608 (1998) (finding that Equal Employment Opportunity Act of 1972 had positive impact on black employment, wage differentials, and occupational segregation); William J. Collins, *The Labor Market Impact of State-Level Anti-Discrimination Laws, 1940–1960*, 56 INDUS. & LAB. REL. REV. 244 (2003) (assessing impact of fair-employment legislation on black workers' relative income and unemployment); Samuel Issacharoff, *Contractual Liberties in Discriminatory Markets*, 70 TEX. L. REV. 1219 (1992)

This efficiency debate is important, but I wish to address it only indirectly; this is well-trodden scholarly ground, and I have little to add on this front. Most facets of that debate are purely theoretical in that once a model of discrimination is specified, the normative welfare consequences of legal regulation follow. The key phrase in the prior sentence is, of course, “once a model of discrimination is specified.” Normative conclusions often diverge radically depending on one’s favored explanation of employment discrimination; in that sense, the validity of the normative conclusions hinges critically on the validity of positive theories.<sup>99</sup> To the extent that the empirical analysis in this Article provides evidence that supports or undermines specific theoretical accounts, it makes a modest contribution to the normative literature. Rather than enter the normative debate directly, this Article tries to occupy a theoretical and methodological halfway house, providing an empirical analysis that is useful to both the positive and normative literature.

#### D. *Empirical Implications of Theoretical Models*

As highlighted above, the literature on employment discrimination is compartmentalized into positive, descriptive, and normative analysis. The major positive accounts surveyed in Part I.A—the taste, statistical, sorting, and status-production theories—seek to explain the prevalence of employment discrimination. The descriptive scholarship described in Part I.B is concerned mainly with measuring the extent of employment discrimination. The normative literature reviewed in Part I.C generally focuses either on the efficiency and welfare consequences of employment discrimination legislation or on the efficacy of different legislative regimes, conditional on an assumed goal of reducing employment discrimination of various sorts.<sup>100</sup>

Of course, these pockets of scholarship are all intricately related. Testing any of the positive accounts of employment discrimination requires first deriving empirical implications and then relying on evi-

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(reviewing EPSTEIN, *supra* note 2) (challenging Epstein’s description of how Title VII works and his claims about its effects).

<sup>99</sup> I do not mean to overstate this claim. Aspects of the efficiency debate can be resolved without resolving the positive debate. For example, even if one posits that markets would drive out discrimination in the long run, legislation may still reduce discrimination more quickly than the market would. In that case, the gains from this quicker reduction of discrimination might outweigh the losses from federal intervention. Donohue, *supra* note 6, at 1427–29.

<sup>100</sup> See, for example, the debates between Donohue and Posner noted *supra* notes 89 & 95, regarding the efficiency of antidiscrimination laws related to race and sex discrimination, respectively. See also EPSTEIN, *supra* note 2, at 76, 242–66, 367–91 (discussing efficiency and efficacy of Title VII with respect to race and sex discrimination).

dence of the sort produced by the descriptive literature. And the welfare consequences of employment discrimination legislation depend on one's assumed model of discrimination. Understanding how employers and employees will adjust their behavior in response to legislative prohibitions requires an assumption about why discrimination exists.

Suggesting that there are relationships among descriptive, positive, and normative analysis is hardly revolutionary. However, these relationships are often obscured in the literature, and I suggest that this has hindered conceptual debate. Appreciating the connection between the descriptive and normative questions highlights the need to bring alternative indicators or measures of discrimination to bear on normative debates. Recognizing the importance of the positive question to the normative issue underscores the need to develop a coherent strategy for testing those positive accounts.

The rest of this Article is devoted to developing such a testing strategy. Part of that strategy is to identify predictions or implications of each of the four theories described in Part I.A. With respect to the taste model, the most commonly cited (and criticized) prediction is that perfect market competition should eliminate employment discrimination in equilibrium.<sup>101</sup> As noted above, critics of Becker's work point to evidence that discrimination persists and then conclude that his model is clearly erroneous.<sup>102</sup> Supporters of Becker's work highlight the fact that the level of discrimination has fallen—at least in terms of wage differentials—and that the persistence of employment discrimination against the backdrop of extensive government regulation tells us little about the results competitive markets would reach on their own. A range of scholars has argued that discrimination may persist in competitive economics because of underinvestment in human capital,<sup>103</sup> desires by employees to generate status for them-

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<sup>101</sup> See Donohue, *supra* note 40, at 616 (explaining Becker's version of this claim).

<sup>102</sup> See *supra* notes 41–42 and accompanying text. An important caveat is warranted here. Becker's prediction holds absent the backdrop of extensive government regulation of employment. It is an open question whether more competitive markets would still drive out discrimination to a greater extent than less competitive markets given Title VII and other employment discrimination laws. Thus, empirical evidence that more competitive markets do not exhibit lower levels of discrimination does not necessarily disprove Becker's theory. This somewhat undermines the power of the analysis, but there is simply no viable alternative when analyzing United States industries.

<sup>103</sup> See Cass R. Sunstein, *Three Civil Rights Fallacies*, 79 CAL. L. REV. 751, 760–61 (1991) (arguing that discrimination may cause underinvestment in human capital that in turn reinforces both ordinary prejudice and statistical discrimination).

selves,<sup>104</sup> discriminatory tastes of consumers,<sup>105</sup> the law itself,<sup>106</sup> barriers to entry,<sup>107</sup> and transaction costs.<sup>108</sup>

Whether articulated as defenses of the taste model or as criticisms, most commentary treats the test of the taste theory to be whether or not discrimination exists. Unfortunately, the mere existence of continuing discrimination in the economy justifies either theoretical adjustment or rejection of the theory. For purposes of testing the theory, a more useful prediction is that the level of discrimination should vary with the competitive structure of different markets. That is, the employer taste model predicts a negative relationship between the degree of market competition and the level of discrimination.

One might test this proposition in several ways. First, one could take a single industry and look for some discontinuity in the degree of monopoly or market organization, like the deregulation of particular industries (e.g., trucking). On balance, studies using this method show smaller wage differentials in the deregulated period than in the regulated period, suggesting competitive pressure reduces wage discrimination.<sup>109</sup> Alternatively, wage differentials in industries with competitive market structure could be compared to differentials in industries with less competitive market structure. Here, the evidence is mixed.<sup>110</sup>

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<sup>104</sup> McAdams, *supra* note 5, at 1063–74.

<sup>105</sup> BECKER, *supra* note 5, at 75–81.

<sup>106</sup> EPSTEIN, *supra* note 2, at 77–78.

<sup>107</sup> See Daria Roithmayr, *Barriers to Entry: A Market Lock-in Model of Discrimination*, 86 VA. L. REV. 727, 734 (2000) (advocating use of antitrust theory in understanding employment discrimination dynamics).

<sup>108</sup> See George A. Akerlof, *Discriminatory, Status-Based Wages Among Tradition-Oriented, Stochastically Trading Coconut Producers*, 93 J. POL. ECON. 265, 272–76 (1985) (presenting scenario in which transaction costs of defecting from discriminatory norms are too high to allow profitable deviation from those norms); John J. Donohue III, *Employment Discrimination Law in Perspective: Three Concepts of Equality*, 92 MICH. L. REV. 2583, 2596 (1994) (arguing transaction costs, limited worker mobility, and search costs may interfere with functioning markets); David A. Strauss, *The Law and Economics of Racial Discrimination in Employment: The Case for Numerical Standards*, 79 GEO. L.J. 1619, 1637 (1991) (arguing information costs may keep competition from eliminating employee-based discrimination).

<sup>109</sup> See Agesa & Brown, *supra* note 82, at 296 (finding that increased competition reduces wage discrimination); Heywood, *supra* note 82, at 313 (demonstrating that racial earnings differentials decline following deregulation except in airline industry); Heywood & Peoples, *supra* note 13, at 144 (reporting that deregulation of trucking industry led to less hiring discrimination against blacks); cf. Curtis Grimm & Robert J. Windle, *Regulation and Deregulation in Surface Freight, Airlines, and Telecommunications*, in REGULATORY REFORM AND LABOR MARKETS, *supra* note 82, at 15, 25 (James Peoples ed., 1998) (suggesting deregulation of rail industry created management opportunities for younger, more-educated individuals).

<sup>110</sup> See Agesa & Monaco, *supra* note 16, at 30, 33 tbl.2.5 (finding market competition reduces wage differentials between black and white workers for low- and medium-skill jobs).

Yet another approach—one adopted in this Article—is to look beyond wage differentials to compare actual EEOC discrimination claims filed in different industries.<sup>111</sup> The focus on industries rather than the aggregate economy allows for variation with respect to the key independent variable—market structure—and the use of claims data to indicate discrimination fills a gap in the existing empirical scholarship.

Although challenging to test in practice, the employer taste model is at least straightforward to specify in theory. Testing the statistical model of discrimination is more challenging, particularly when one allows for the possibility of both accurate and inaccurate group-based inferences. As noted above, because discrimination in the statistical model is not the result of employer animus, any incorrect inferences arguably should be driven out either by the competitive market or by dynamic learning about inaccurate inferences.<sup>112</sup> In equilibrium, only accurate—but still discriminatory—inferences remain.<sup>113</sup>

Recall that the statistical discrimination model assumes employers make inferences about worker productivity (i.e., individual-level characteristics) on the basis of group membership (i.e., group characteristics). In other words, employers rely on stereotypes when making employment-related decisions.<sup>114</sup> However, unless the correlation between individual and group characteristics is extremely high, the use of group characteristics will also be less accurate than reliance on individual characteristics.

Such discriminatory mechanisms may economize on transaction or decision costs, but they also become less feasible and less effective if the group in question makes up a large portion of the labor force in a specific industry. To the extent that the industry is dominated by female or nonwhite workers, group-based inferences about productivity will generally be of little use because almost all available workers will share the same group characteristics. Such industries should, then, exhibit relatively less employment discrimination than

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but not for high-skill jobs); Fujii & Trapani, *supra* note 16, at 563 (finding no systematic relationship between wage differentials and market concentrations); Johnson, *supra* note 16, at 78 (suggesting cost-minimizing industries discriminate more than non-cost-minimizing industries).

<sup>111</sup> See *infra* Parts II.A and II.B.

<sup>112</sup> See *supra* text accompanying note 49.

<sup>113</sup> This suggests that while competitive markets should drive out inaccurate discriminatory inferences, they might not eliminate all discriminatory inferences. Indeed, even initially inaccurate negative (or positive) stereotypes could become more accurate by providing incentives for underinvestment (or overinvestment) in human capital.

<sup>114</sup> See generally Kirschenman & Neckerman, *supra* note 48 (exploring ways employers' perceptions of race and ethnicity are qualified and reinforced by employee characteristics).

industries dominated by male or white workers. Thus, if the statistical discrimination model is correct, the proportion of female or nonwhite workers should be negatively associated with the observed level of discrimination.

Epstein's sorting model of discrimination can be read in a similar way. The sorting intuition is that employers prefer to sort workers according to demographic characteristics in order to reduce employee conflict and satisfy discriminatory employee tastes.<sup>115</sup> On this account, discrimination by employers is a rational response to the discriminatory preferences of *employees*, producing occupational segregation.<sup>116</sup>

The subtlety of Epstein's theory suggests it will also be particularly difficult to test. As a first cut at the problem, however, consider how discrimination manifests itself in the model. The ultimate product of employer responses to employee preferences is occupational sorting, that is to say, occupational segregation. Empirically, when discrimination is present, it produces an increasingly homogeneous workforce. If so, then a key empirical prediction of the sorting model concerns the relationship between labor force heterogeneity and employment discrimination. Heterogeneity in the sorting model is one empirical manifestation of nondiscriminatory behavior by employers.<sup>117</sup> Thus, like the statistical model, the sorting model predicts a negative relationship between the proportion of women or nonwhites in an industry's workforce and the level of discrimination in that industry.

Finally, the status-production model predicts first that competitive markets will not drive out discrimination.<sup>118</sup> That is, the status-production model predicts no association between increasing levels of market competition and the level of employment discrimination.<sup>119</sup> Because secondary discrimination norms sanction employers who fail

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<sup>115</sup> See EPSTEIN, *supra* note 2, at 66–69 (arguing that sorting employees on basis of languages, lifestyles, or prejudices can be rational).

<sup>116</sup> *But see* McAdams, *supra* note 5, at 1036–42 (contending explanation for occupational segregation based on employees' discriminatory preferences both over- and underpredicts discrimination).

<sup>117</sup> Measuring heterogeneity is a challenge, since the heterogeneity of the labor force is tied to the proportion of the *potential* workforce that is made up of women or nonwhites.

<sup>118</sup> McAdams, *supra* note 5, at 1063 (“As long as such investments are cost-effective for the discriminator, the status-production model predicts that race discrimination will persist in the face of market competition.”). Discrimination may exist in competitive equilibrium because of the power of discriminatory norms, the existence of reciprocity among whites, and the effect of esteem-producing racial biases. *Id.* at 1064. McAdams also suggests that federal antidiscrimination laws may be efficient, since they are likely to curb inefficient efforts to transfer status from one group to another. *Id.* at 1074–82.

<sup>119</sup> *Id.* at 1063.

to discriminate, the profit-maximizing motive will not drive out discrimination.

The status-production model also predicts that discrimination in an industry should rise as the proportions of women and nonwhite workers increase in that industry.<sup>120</sup> In the status-production world, the efficacy of discriminating is inversely related to the size of the nondominant population. As McAdams notes, “the larger black population meant that racial subordination was more productive of status for southern than for northern whites.”<sup>121</sup> This same logic applies in the context of more contained industry-specific labor markets, with the status-production payoff of discrimination rising as the proportion of women and nonwhites in the labor force increases. Thus, in contrast to both the other models, the status-production model predicts a positive relationship between the percentage of women and nonwhite workers and the amount of discrimination in a given industry.

Before proceeding to the analysis, a few caveats are in order. The preceding discussion is admittedly somewhat superficial. These theories are elaborate and nuanced, and my description does not do justice to their true sophistication. My aim has been to convey the actual mechanics of, and intuitions behind, those theories in a way that is both parsimonious and descriptively accurate. Furthermore, like the descriptions of the theories themselves, the derived empirical implications are remarkably truncated. Employment discrimination is an enormously complicated phenomenon and the different elements of each theory might be interpreted to produce a range of empirical predictions. This Article focuses on only a few of the most straightforward ones. Finally, the derived implications are only directional (positive versus negative effects), rather than precise predictions of the magnitude or relative importance of different factors.

The decision to emphasize relatively simple and straightforward empirical predictions is appropriate, given that this project is a preliminary attempt to apply novel data. However, this preliminary generality must ultimately give rise to greater specification and rigor in future work. Although the descriptions of these economic theories and the predictions associated with each are oversimplified, there is

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<sup>120</sup> An alternative prediction of the status-production model is a positive but curvilinear relationship, according to which the rate of increase in discrimination decreases after a certain point as the percentage of women and nonwhites in the workforce grows.

<sup>121</sup> McAdams, *supra* note 5, at 1054. McAdams also cites evidence for an inverse relationship between social status and prejudicial attitudes, along with other evidence that whites who consider their membership in ethnic, religious, occupational, and other social groups most important are most likely to hold ambivalent or negative attitudes about blacks. *Id.* at 1055.

value in emphasizing these straightforward empirical questions to lay the foundation for more nuanced future analysis.

## II METHODOLOGICAL ISSUES

Part I presented the major theories of employment discrimination and derived specific empirical predictions to test the viability of competing theories. With the conceptual foundation laid, this Part turns to methodological questions.

Testing any of the predictions requires identifying an adequate measure of employment discrimination to serve as the dependent variable. This, in turn, requires grappling with two related issues. First, what is the appropriate indicator of discrimination? That is, what empirical manifestation of employment discrimination is to be measured? Second, once we have selected an indicator, what is the appropriate unit of analysis at which discrimination should be analyzed? That is, should employment discrimination be measured at the level of individual workers or firms, at the national level, or at some intermediate level like industries or regions? This Part provides an overview of these measurement, data, and estimation issues.

### A. *Measuring Employment Discrimination*

Judgments about the existence or extent of employment discrimination—at both a population level and in individual cases—concern employers' intentions. Without direct access to those intentions, indirect evidence must be used to infer employer intent. Within the empirical literature on employment discrimination, five basic kinds of evidence have been used: individual perceptions of discrimination, results of audit-pair experiments, differentials, complaints, and litigation.<sup>122</sup> Each of these has its strengths and weaknesses, and each provides a piece of the employment discrimination puzzle.

*Individual perceptions* of discrimination in the workplace, whether related to hiring, promotion, or firing, could provide a useful measure of employment discrimination. A sample could be constructed consisting of past or current workers in different industries or regions, and individuals could be surveyed about their experience with discrimination. Several major national surveys have included historical questions about experience with and views on discrimination.<sup>123</sup>

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<sup>122</sup> See *supra* Part I.B.

<sup>123</sup> The National Opinion Research Center has conducted a regular survey of U.S. households since 1972. Survey questions cover topics ranging from seat belts to civil liberties. Some questions ask directly about employment discrimination, e.g., the relative

Although such data are useful, self-reporting also creates measurement error or bias.<sup>124</sup>

*Audit-pair methods* also provide valuable data regarding discrimination.<sup>125</sup> These are observations of pairs of individuals who are similar along all dimensions except the dimension of interest (e.g., race or sex). The pair applies for a job or negotiates for a good.<sup>126</sup> If the outcomes differ, discrimination is inferred to explain the difference. One of the virtues of this research design is that it allows the researcher to control for confounding variables and to isolate the precise effect in question.<sup>127</sup> But at the same time, audit-pair studies are somewhat less useful for summarizing larger units of analysis and are also subject to a host of criticisms.<sup>128</sup> For instance, although one can pair similar individuals in a given firm or across industries, this merely simulates experimental conditions rather than serving as a genuine controlled experiment. Even workers within the same firm are likely to have different histories of workplace interactions; such differences may undermine the reliability of inferences about the role of discrimination in outcomes.

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importance of several explanations for why “women who are employed full time earn less than men earn.” The cumulative results of surveys conducted between 1992 and 2000 are compiled in a searchable database. General Social Survey, <http://webapp.icpsr.umich.edu/GSS> (last visited Feb. 19, 2007). To view results for the question quoted above, follow “Subject” hyperlink; then follow “Employment” under subject index “E.”

<sup>124</sup> Marianne Bertrand & Sendhil Mullainathan, *Do People Mean What They Say? Implications for Subjective Survey Data*, 91 AM. ECON. REV. 67, 67–69 (2001) (discussing issues that arise when subjects of survey self-report).

<sup>125</sup> Recent examples of the audit-pair method can be found in studies exploring the effects of discrimination on African Americans in the job application process. See, e.g., Marianne Bertrand & Sendhil Mullainathan, *Are Emily and Greg More Employable Than Lakisha and Jamal? A Field Experiment on Labor Market Discrimination*, 94 AM. ECON. REV. 991, 997–99 (2004) (finding that for job applicants with equivalent résumés, applicants with white-sounding names received fifty percent more interviews than applicants with African American-sounding names); Devah Pager, *The Mark of a Criminal Record*, 108 AM. J. SOC. 937, 955–60 (2003) (finding that white job applicants with criminal records received more callback interviews than blacks with similar credentials but no criminal record).

<sup>126</sup> See, e.g., Ayres, *Fair Driving*, *supra* note 26, at 822–24 (describing audit-pair method used to test for discrimination in car purchase negotiations).

<sup>127</sup> See, e.g., *id.* at 823 & nn.19 & 21–22, 824 & nn.23 & 26–27 (randomizing order in which testers went to dealership, controlling script used by testers, eliminating consideration of creditworthiness of testers, and specifying amount of testers’ counteroffers).

<sup>128</sup> See James J. Heckman & Peter Siegelman, *The Urban Institute Audit Studies: Their Methods and Findings*, in CLEAR AND CONVINCING EVIDENCE: MEASUREMENT OF DISCRIMINATION IN AMERICA 187, 190–93 (Michael Fix & Raymond J. Struyk eds., 1993) (noting subjectivity involved in deciding when audit pairs are indistinguishable, improbability of finding pairs that match all relevant qualities, and limits on number of observations for each pair).

The most extensively used indicator of employment discrimination is the *differential*. The most common version is the wage differential,<sup>129</sup> which is simply a summary of the difference in wages, all else equal, between sexes or races.<sup>130</sup> As already noted, the method is likely to be a far more accurate indicator of *wage* discrimination than other forms of discrimination.<sup>131</sup> Similarly, hiring or termination differentials will accurately reflect some aspects of discrimination but are likely to obscure the extent of other, equally significant forms of employment discrimination like sexual harassment, wrongful termination, or discriminatory hiring practices. Again, the point is not that the differential is unhelpful; rather, it provides a key summary of one type of discrimination. At best, this provides an incomplete picture of the extent of discrimination. A more serious limitation may be that wage differentials summarize precisely the type of discrimination that, at least as indicated by EEOC claims, appears to be on the decline<sup>132</sup>—which may misdirect efforts to curb the worst forms of discrimination.

Fourth, *complaints* or allegations of employment discrimination could serve as an indicator of discrimination. The EEOC receives some 80,000 allegations of employment discrimination each year,<sup>133</sup> which can be parsed by the nature of the alleged discrimination. Because they are largely fungible across different portions of the economy and across firms, these actual claims of discrimination are a particularly valuable resource for making comparisons across industries.<sup>134</sup>

Complaints will, however, both overstate and understate the amount of actual employment discrimination. On the one hand, not every discriminatory act will result in a filed claim with the EEOC (if only because filing a claim entails costs that individuals may choose not to bear). Thus, filed claims will understate the amount of discrimination because of underreporting. On the other hand, some portion of the claims filed with the EEOC will, after an initial investigation, be

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<sup>129</sup> 1 LABOR ECONOMICS, at xvi (Orley C. Ashenfelter & Kevin F. Hallock eds., 1995) (noting that wage differential is “oldest topic in labor economics”).

<sup>130</sup> Both sex and race differentials seem to have diminished over the years, albeit at a decreasing rate. See Blau, *supra* note 73, at 129–30 (same for sex wage-differential); Schwab, *supra* note 5, at 588–89 (noting diminishing race wage-differential).

<sup>131</sup> See *supra* text accompanying note 87. Again, there is nothing inherent in the differential method that precludes its use for other differences like hiring, promotion, or termination.

<sup>132</sup> EEOC CHARGE STATISTICS, *supra* note 1.

<sup>133</sup> *Id.*

<sup>134</sup> A few recent empirical papers have sought to use these data, albeit at different levels of analysis. See, e.g., Nielsen & Nelson, *supra* note 2, at 687–92 (analyzing trends in annual EEOC filings (1992–2002) by type of complaint, e.g., race, age, and disability).

found to lack merit. Using filed claims, therefore, might overestimate the level of discrimination.<sup>135</sup> On net, the most likely conclusion is that the degree of underestimation will swamp the degree of overestimation, but both possibilities are legitimate concerns.<sup>136</sup>

A fifth alternative is to use employment discrimination *litigation*.<sup>137</sup> Because relatively few filed charges are litigated, this indicator is less susceptible to the overestimation problem noted above. However, this indicator is likely to understate the extent of discrimination significantly since, as with all litigation, it represents the tip of the “disputing pyramid.”<sup>138</sup> Moreover, if certain types of employment discrimination are more likely to reach litigation, the indicator may present a biased picture of the underlying distribution of actual employment discrimination in the economy.

All of the above measures are reasonable and all are also imperfect. The current literature is dominated mainly by differentials and sporadic reliance on surveys and audit-pair methods. In contrast, this Article relies on employment discrimination claims filed with the EEOC as its core indicator of discrimination. Using claims data balances concerns relating to the risk of over- or underestimating dis-

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<sup>135</sup> For example, over the past decade the EEOC has found no reasonable cause to think discrimination occurred in about sixty percent of all Title VII claims. U.S. EQUAL EMPLOYMENT OPPORTUNITY COMM’N, TITLE VII OF THE CIVIL RIGHTS ACT OF 1964 CHARGES, <http://www.eeoc.gov/stats/vii.html> (last modified Feb. 26, 2007) (indicating that for 1997–2006, EEOC found no reasonable cause in 58.8–63.6% of charges). Note, however, that so long as the employee bears the burden of proof with respect to the allegation, some claims will be erroneously deemed to lack merit. If so, the overinclusiveness in the claims data will be reduced.

<sup>136</sup> A related concern with using claims to indicate discrimination is that if an alleged instance of discrimination (that would constitute a Title VII violation) is also a violation of state antidiscrimination law, an employee may file the claim with a state agency. EEOC regulations specify a series of conditions under which the state agency will forward complaints to the EEOC. 29 C.F.R. § 1603.103 (2006). So, if certain industries are clustered in states with agencies that have concurrent jurisdiction over employment discrimination, employees regularly file with the state agency, and the state agency does not forward claims to the EEOC pursuant to EEOC regulations, then the EEOC claims data could underestimate discrimination in those industries. This potential bias cannot be remedied with the current data; however, future research is planned to address this concern.

<sup>137</sup> See, e.g., Donohue & Siegelman, *Law and Macroeconomics*, *supra* note 15, at 713–17, 718 tbl.2 (testing relationship between discrimination litigation and macroeconomic conditions). Donohue and Siegelman do not purport to use litigation to measure discrimination. Nonetheless, one could technically do so. The measure would be less useful and subject to more criticisms than EEOC claims.

<sup>138</sup> For a discussion of the disputing pyramid in the context of employment discrimination, see Nielsen & Nelson, *supra* note 2, at 680–82, 703–07. See generally Marc Galanter, *Reading the Landscape of Disputes: What We Know and Don’t Know (and Think We Know) About Our Allegedly Contentious and Litigious Society*, 31 UCLA L. REV. 4 (1983) (discussing “dispute pyramid” of litigated grievances).

crimination, the cost of data collection, and the ability to compare the measure across various units of analysis and over time.

Just like the other measures described above, claims data are not a perfect indicator of discrimination. For instance, workers in certain firms or industries will be more or less likely to file discrimination claims, depending on workplace culture, available information, likelihood of retaliation, or a range of unspecified factors. While it is important to recognize the potential for these data to bias analyses, it is also important to consider what actual discrimination claims might indicate. Until now, these data have been relatively underutilized.<sup>139</sup> Even if one disagrees that claims are the best measure of employment discrimination, there is value in developing alternative measures and data for use in combination with the other imperfect measures of discrimination.

### B. Unit of Analysis

The next question concerns the level or unit of analysis at which these claims data should be measured—e.g., (1) an individual worker, (2) a specific firm, (3) an industry, (4) a geographic region, or (5) the entire economy.<sup>140</sup> As with the potential indicators, each of these units of analysis has advantages.

Two observations are relevant. First, the choice of indicator will naturally affect the appropriate level of analysis. For example, because of confidentiality concerns, neither the individual nor the specific firm against which a charge has been filed is ascertainable. Thus, if one is using claims as an indicator of discrimination, neither the individual nor the firm can be used as the unit of analysis. Nor is geography readily ascertainable from the claims data. Thus, categories (1), (2), and (4) are not feasible possibilities for the analysis in this Article.

Second, the appropriate unit of analysis depends partially on one's theory of employment discrimination. Because the theoretical explanations for employment discrimination surveyed above tend to predict empirical effects relating to either demographic characteristics

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<sup>139</sup> To the best of my knowledge, actual EEOC claims have been used only to describe aggregate national trends. See, e.g., Donohue & Siegelman, *Changing Nature*, *supra* note 15, at 1015, 1016 fig.6 (tracking number of and grounds for complaints filed with EEOC against private employers nationwide from 1970s through mid-1980s); Donohue & Siegelman, *Law and Macroeconomics*, *supra* note 15, at 741–44 (analyzing nationwide filing of EEOC complaints relative to national business cycles); Nielsen & Nelson, *supra* note 2, at 687–92 (discussing claims filed with EEOC nationwide through 1990s by type of claim).

<sup>140</sup> These units might also be combined. For example, one might analyze historical changes in the number of discrimination claims in a specific industry in the Northeast.

of labor populations or market structure, I adopt the industry rather than the overall economy as my unit of analysis. Even crudely estimating the relationship between market conditions or labor force characteristics and discrimination requires that there be variation across observations. Comparing industries is one—if not the only—appropriate method to accomplish this task. In essence, the analysis calls for an interindustry study, which links market conditions in different industries with patterns of discrimination.<sup>141</sup>

To summarize, this Article uses claims filed with the EEOC as its indicator of employment discrimination and industries—as demarcated by the Standard Industrial Classification (SIC) system—as its unit of analysis. The SIC system categorizes industries with increasing degrees of specificity using a four-digit code.<sup>142</sup> The first two digits of the code specify very broad sectors of the economy, e.g., Metal Mining or Transportation Equipment Manufacturing; successive digits correspond to finer distinctions within that broad sector such as Copper Ore Mining or Aircraft and Parts Manufacturing.<sup>143</sup> The analysis herein uses two- and three-digit SIC categories.

### C. Data Description

The data on employment discrimination claims are drawn from the EEOC charge-filing system.<sup>144</sup> These claims data cover the years 1990–98 and contain all filed claims of Title VII employment discrimination based on race or sex. Individual claims were aggregated such that for each industry, the data set contains a summary of the number of claims filed against firms in that industry during a given year. The EEOC data were then merged with data from the U.S. Economic Census and the Bureau of Labor Statistics on labor force demographics, the volume of economic activity in the industry, and (for selected years) market concentration. The result is a data set in which each observation contains information for a single industry

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<sup>141</sup> In other areas of economics such interindustry empirical analysis largely fell out of favor in the 1980s. However, this design remains the most appropriate one for testing the theories presented in Part I.A and is still used sporadically. See, e.g., Coleman, *supra* note 11, at 666 tbl.1, 671–74 (comparing discrimination data across industrial classifications).

<sup>142</sup> For the complete structure of the Standard Industrial Classification (SIC), see SIC Division Structure, [http://www.osha.gov/pls/imis/sic\\_manual.html](http://www.osha.gov/pls/imis/sic_manual.html) (last visited Feb. 19, 2007) (categorizing structure by first two SIC digits). The SIC system has now been replaced by the North American Industry Classification (NAIC) system as the standard method of classifying industries. Before 1997, however, most government agencies—including the EEOC—used the SIC system.

<sup>143</sup> For example, SIC 3713 refers to Truck and Bus Bodies manufacturing. The first two digits—37—denote the Transportation Manufacturing industry, and the first three digits—371—refer to the manufacture of Motor Vehicles and Motor Vehicle Equipment.

<sup>144</sup> The author obtained the claims data with a Freedom of Information Act request.

during a calendar year, including the number of employment discrimination claims based on race, the number of employment discrimination claims based on sex, the number of firms and establishments, market concentration, the number of employees, demographic characteristics of the employee population, and unionization.<sup>145</sup>

### III

#### DESCRIPTIVE ANALYSIS

##### *A. Discrimination Rates and Indicators*

This Part offers a basic descriptive overview of employment discrimination in different industries. Such information can be used both in large  $N$  quantitative analysis like that contained below and also to inform more industry-specific case studies. For example, by ascertaining which industries produce especially high or low volumes of discrimination claims, future scholarship could focus on why a given industry is an outlier. Alternatively, public policy concerns might dictate concentrating antidiscrimination regulation in industries where more discrimination is observed than one would otherwise expect.

Aggregating the number of employment discrimination claims within a given industry shows which industries produce the largest volume of employment discrimination. For example, in 1997 the Meat Products industry generated 114 employment discrimination claims based on sex and 129 claims based on race. But these summary statistics reveal little about whether those numbers are surprisingly high, surprisingly low, or expected. That is, since the number of complaints in a given industry may depend on the “size” of that industry, we should compare the claim *rate* rather than the raw number of complaints. Calculating this rate requires identifying an appropriate denominator that will allow for meaningful comparisons across large and small industries.

Intuitively, the appropriate denominator is some measure of the number of employees. Simply dividing the number of claims by the number of employees in an industry produces reasonably comparable figures across industries. But these statistics are also misleading. If, say, industries  $A$  and  $B$  each employs one hundred workers, it would be surprising if the number of sex discrimination claims made in each was equal if  $A$  employs only women while  $B$  employs a mix of men and women.

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<sup>145</sup> Integrating other information reported by SIC code would be relatively straightforward. Since many government agencies began using the NAIC system in 1997, integrating more recent government data will require converting between SIC and NAIC, a task that is possible but not trivial.

A somewhat better approach is to divide the number of race-based employment discrimination claims by the number of nonwhite workers in the industry and the number of sex-based claims by the number of female workers in the industry. However, even this method is subject to criticism. As more women participate in an industry's labor market, there is greater opportunity for certain forms of discrimination, e.g., pay or discharge. To the extent that discrimination takes the form of complete exclusion from an industry (rather than selective pay or promotion), such rates may *mask* actual discrimination because no claims of discrimination with respect to wages, promotion, or termination would arise.

### 1. *Discrimination Rates*

Meaningful interindustry comparisons intuitively require controlling for labor demographics, but as the discussion above suggests, there is no unambiguously optimal denominator. As shown in this Part, the results of those comparisons are also likely to be sensitive to the denominator selected. That is, the choice of denominator is no less determinative of a study's conclusions than the choice of the measure of discrimination.<sup>146</sup>

For example, when using the number of employees in an industry as the denominator, some of the industries with the highest race discrimination rates are Communications Services (4890), Automotive Dealers (5590), Trucking Terminal Facilities (4230), and Bus Terminals and Facilities (4170). Industries with the lowest rates of race discrimination include Bituminous Coal Mining (1200) and Water Transportation of Passengers (4480).

Changing the denominator from the number of employees in an industry to the number of black employees in an industry changes the results substantially. Using that denominator yields high discrimination rates for Schools and Educational Services (8290), Automotive Dealers (5590), Labor Organizations (8630), and Miscellaneous Transportation Equipment (3790).

Rates of sex discrimination are similarly sensitive to the choice of denominator. When the total number of employees is used as the denominator, the highest rates of sex discrimination are exhibited by

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<sup>146</sup> Given the ambiguity of demographic-based industry discrimination rates, two other alternatives are worth noting. First, the number of claims might be measured relative to the number of firms or establishments in an industry. Second, the number of claims in an industry could be divided by a measure of that industry's total economic activity. Neither measure offers a particularly rigorous theoretical foundation (although the former is on marginally stronger footing), but each avoids the pitfalls of using measures based on worker demographics.

Schools and Educational Services (8290), Food Stores (5490), Miscellaneous Manufacturers (3990), and Miscellaneous General Merchandise Stores (5390). The lowest rates produced by this measure are observed in Crop Services (0720), Transportation Equipment (3700), and Ophthalmic Goods (3850). When the denominator is changed to the number of female employees in an industry, the highest rates are produced by Miscellaneous Manufacturers (3990), Automotive Services (except repair) (7540), Miscellaneous Textile Goods (2290), and Miscellaneous Coal and Petroleum Products (2990). By this measure the lowest rates are observed in Accounting Auditing and Book-keeping (8720), Personal Services (7200), and Social Services (8300).

Three points concerning these results are worth highlighting. First, altering the denominator produces very different rates. This cautions against using discrimination rates without carefully considering the appropriateness of the denominator used. Second, there is widespread variety in the type of industries represented at the top and bottom of the discrimination rates. Third, the industries that generate high rates of race discrimination are not generally the ones that generate high rates of sex discrimination. This is not surprising, but it highlights the importance of contextual industry-specific analysis in the formulation of general employment discrimination policies.

## 2. *Residual Diagnostics*

The preceding discussion showed that the choice of denominator can have dramatic effects on calculated discrimination rates. This Part describes an alternative method of comparing the number of discrimination claims across industries that mitigates the inherent subjectivity of calculating rates and provides a useful additional method for identifying industries that appear particularly discriminatory relative to other industries.

The basic idea behind this method is as follows. An ordinary least squares (OLS) regression model produces an equation containing estimates of the relationship between a given set of exogenous or independent variables and an endogenous or dependent variable of interest. Calculating the difference between the model's predicted value of the dependent variable and the actual observed value in the data (residuals) is straightforward.

Now suppose the potential denominators (number of firms, workers, etc.) are treated as independent variables and the number of discrimination claims as the dependent variable. The coefficient on, say, the number of firms in the industry is an estimate of the expected increase in the number of discrimination claims for each additional firm in the industry. The value the model predicts for a given observa-

tion (industry) is the expected number of discrimination claims, given the industry-specific values of the number of firms. The residual is the observed value of the dependent variable for a given observation minus the value that the model predicts for the given observation.

The average value of the residuals is zero, by construction. Residuals greater than zero represent underpredicted values—industries that produced more discrimination claims than expected, given the number of firms, workers, and other potential denominators—while those less than zero represent overpredicted values. One can then inspect a plot of the residuals against the predicted values to identify industries with unusually high or low numbers of claims, conditional on the value of potential denominators.

Figure 1 illustrates the method, showing a scatter plot of the residuals (on the vertical axis) against the predicted values (on the horizontal axis). The dependent variable in the model is the natural log of the number of sex discrimination claims in an industry.<sup>147</sup> Three independent variables were used: (1) the percentage of female workers, (2) the number of establishments, and (3) the number of overall workers in the industry. Figure 2 contains the residual plot from a similar regression with race discrimination claims as the dependent variable. In both figures, most points are clustered near zero on the vertical axis. Industries with especially high or low levels of discrimination claims, given their size and demographic characteristics, are the points near the top or bottom of the plot, i.e., those either greater than +2 or less than -2.

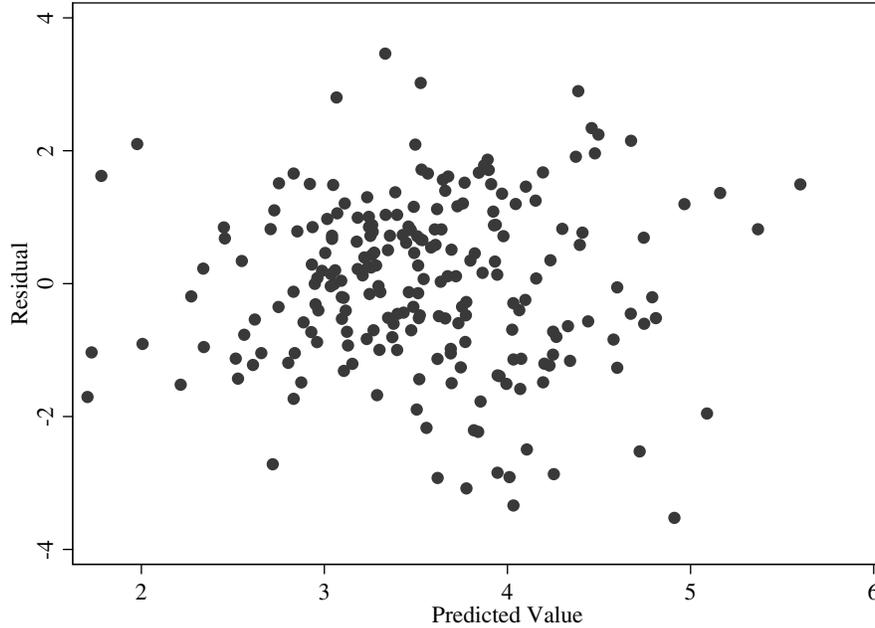
According to this method, Miscellaneous Manufacturers (3390), Miscellaneous Food Stores (5490), Automotive Dealers (5590), Hotels and Motels (7010), Hospitals (8060), and Elementary and Secondary Schools (8210) had the largest residuals. That is, these industries produced unexpectedly high numbers of race and sex discrimination claims given their characteristics. Textile Mills (2200), Accounting, Auditing, and Bookkeeping (8720), and Research, Development, and Testing Services (8730) each generated unexpectedly low numbers of sex and race discrimination claims given the underlying industry characteristics.

The residuals method does not entirely avoid the subjectivity inherent in picking a single denominator, but it does eliminate the arbitrariness associated with choosing among several plausible denominators. Including all of the potential denominators in the regression maximizes the extent to which the data identify industries

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<sup>147</sup> The natural log of a variable is a common transformation used in regression analysis when those variables are not normally distributed.

FIGURE 1: SEX DISCRIMINATION CLAIM RESIDUALS BY PREDICTED VALUES



with more than the expected amount of discrimination, given the number of firms, workers, and economic activity of that industry.<sup>148</sup>

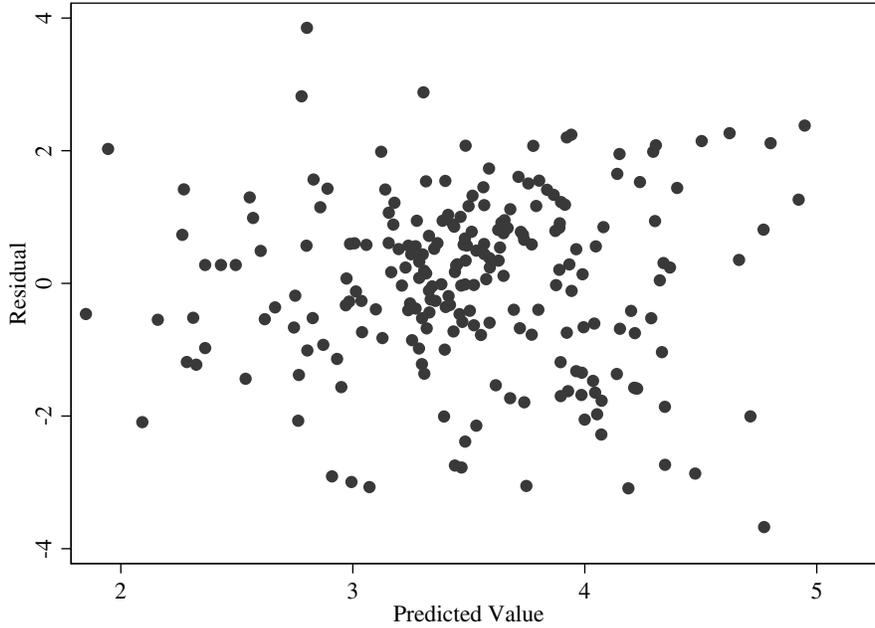
In addition, the method accommodates the intuition that employment discrimination is sensitive to more than just the total number of workers or just the number of firms in an industry. Calculating simple rates requires characterizing the amount of discrimination in an industry in terms of just one of several different denominators. The residual method allows multiple denominators to be used, with the estimated coefficients functioning as quasi-rates for those denominators.

This discussion is merely illustrative. However, it highlights the flexibility and potential productivity of using interindustry regression with residual diagnostics as a tool for identifying industries with abnormal levels of discrimination. These descriptive tools may be useful for both scholarship and public policy.

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<sup>148</sup> Unusually large residuals only flag industries that appear to have discrimination rates much higher or lower than the model predicts. Such residuals might indicate discrimination but might also be the result of other factors, e.g., institutional features like widespread agreements to arbitrate discrimination disputes as an initial matter. Moreover, there will, in fact, be larger-than-average residuals in any regression model. Thus, identifying large residual industries is only the first step in identifying high-discrimination industries.

FIGURE 2: RACE DISCRIMINATION CLAIMS RESIDUALS BY PREDICTED VALUES



3. *Discrimination Trends*

In addition to this static analysis, we might also ask about temporal trends in employment discrimination claims. For example, in a related study, John Donohue and Peter Siegelman found that the rate of EEOC claim filings is not affected by the macroeconomic business cycle, even though employment litigation that results from these claims is affected by the business cycle.<sup>149</sup> They conclude that the rate of filings is fairly constant over the business cycle. When the economy is growing and the demand for labor is brisk, those who file complaints generally allow their claims to lapse when they find new employment. However, when the national economy takes a downturn, claimants who have had difficulty finding new work will file in court, using potential back-pay damages as a substitute for unemployment insurance.<sup>150</sup>

Although Donohue and Siegelman offer evidence at the national level that EEOC filings are not cyclical, a variant of the business cycle

<sup>149</sup> Donohue & Siegelman, *Law and Macroeconomics*, *supra* note 15, at 741–42, 743 tbl.8.

<sup>150</sup> *See id.* at 741 (hypothesizing that complainants let their claims lapse when able to find work but file in court when economy worsens).

hypothesis can be tested at the industry level as well. Economic conditions are not uniform across industries. If EEOC claims are responsive to economic conditions, but some industries are expanding as others are contracting, aggregate national data could mask this effect, producing results consistent with Donohue and Siegelman's data.

This hypothesis can be evaluated by using panel data to specify the rate of discrimination claim filings in specific industries as a function of industry expansion or contraction.<sup>151</sup> If increased claims are systematically associated with economic downturns in specific industries, those data may suggest that much of the Title VII regime (at least with respect to race and sex discrimination claims) functions as an alternative form of unemployment insurance.

Table 1 reports results from six different models that can be used to evaluate the business cycle hypothesis. The table presents coefficient estimates from two different types of analyses: a fixed effects panel data model and a pooled (OLS) model with panel corrected standard errors (PCSEs).<sup>152</sup> Each method was then applied to three different dependent variables: (1) the natural log of the number of discrimination claims, (2) the natural log of the discrimination rate (relative to the industry's total workforce),<sup>153</sup> and (3) the percentage change in the discrimination rate (also relative to the industry's total workforce) from the prior year. As indicators of the business cycle, the analysis used percentage change in employment (relative to twelve and twenty-four months prior) and gross domestic product (GDP) from the industry (also relative to twelve and twenty-four months prior).<sup>154</sup> Labor force and industry characteristics are the other control variables.

Note that in only one of the models (the pooled model with PCSEs estimating the natural log of the number of claims) is any measure of the business cycle statistically significant. In that case, however, the coefficient is *positive*, which means increases in employment (relative to twenty-four months prior) increase the number of claims—the opposite of what the business cycle hypothesis predicts. Because the estimate is not robust to any of the alternative specifications, the best reading of these data is that they provide no additional

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<sup>151</sup> This portion of the analysis relies on two-digit SIC categories.

<sup>152</sup> Both techniques are ways of correcting for the effects of panels. For an overview of related issues, see generally Nathaniel Beck & Jonathan N. Katz, *Nuisance vs. Substance: Specifying and Estimating Time-Series-Cross-Section Models*, in 6 *POLITICAL ANALYSIS 1* (John R. Freeman ed., 1996), and Nathaniel Beck & Jonathan N. Katz, *What to Do (and Not to Do) with Time-Series-Cross-Section Data*, 89 *AM. POL. SCI. REV.* 634 (1995).

<sup>153</sup> See *supra* note 147 (describing rationale for using natural log in regression).

<sup>154</sup> Excluding the second-year difference variables does not alter the findings.

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TABLE 1: BUSINESS CYCLE EFFECTS FOR RACE DISCRIMINATION

	Fixed Effect Panel Model			Pooled Estimates (PCSEs)		
	Claims	Claim Rate	Rate Delta	Claims	Claim Rate	Rate Delta
GDP Change (yr. 1)	0.005 (0.005)	-0.0001 (0.005)	0.003 (0.004)	0.009 (0.011)	0.011 (0.009)	0.004 (0.007)
Employment Change (yr. 1)	-0.002 (0.005)	0.001 (0.005)	0.00001 (0.006)	-0.016 (0.013)	-0.012 (0.013)	0.001 (0.005)
GDP Change (yr. 2)	-0.005 (0.006)	0.001 (0.005)	0.003 (0.003)	-0.002 (0.008)	-0.006 (0.005)	-0.002 (0.005)
Employment Change (yr. 2)	0.002 (0.003)	-0.002 (0.004)	-0.003 (0.006)	0.029* (0.013)	0.012 (0.012)	-0.001 (0.004)
GDP (log)	-0.384* (0.218)	-0.286 (0.211)	-0.405* (0.224)	-0.080*** (0.012)	-0.047*** (0.008)	0.002 (0.006)
Percent Nonwhite	0.747 (0.815)	0.117 (0.782)	-0.092 (1.46)	-0.169 (.424)	-1.34*** (0.310)	0.121 (0.312)
Percent Union	0.008 (0.006)	0.010 (0.007)	0.003 (0.005)	0.002** (0.001)	0.008*** (0.002)	0.0002 (0.001)
Employment (log)	0.006 (0.536)			0.754*** (0.016)		
Constant	7.04 (6.61)	4.91 (1.14)	2.02 (1.15)	-4.35 (0.195)	3.84 (0.081)	-0.048 (0.070)
	N=251	N=251	N=251	N=251	N=251	N=251

\* p&lt; .10; \*\* p&lt;.05; \*\*\* p&lt;.01

support for the business cycle hypothesis with respect to race discrimination claims.

What of sex discrimination? Table 2 presents the results from a set of analyses analogous to those performed for race discrimination.

As Table 2 suggests, the sex discrimination data lends more support to the business cycle hypothesis than the race discrimination data. When using the number of claims as the dependent variable in the fixed effects model, the percentage change in employment (relative to twelve months prior) has a negative and statistically significant effect: Increases in employment result in fewer claims and decreases in employment over the same period result in more claims. This effect could be taken as evidence for the business cycle hypothesis, but it falls out in the other specifications. In none of the other models does either measure of the business cycle yield significant results.

TABLE 2: BUSINESS CYCLE EFFECTS FOR SEX DISCRIMINATION

	Fixed Effect Panel Model			Pooled Estimates (PCSEs)		
	Claims	Claim Rate	Rate Delta	Claims	Claim Rate	Rate Delta
GDP Change (yr. 1)	0.004 (0.003)	0.002 (0.004)	0.004 (0.007)	0.011 (0.016)	0.012 (0.014)	0.003 (0.009)
Employment Change (yr. 1)	-0.010* (0.005)	-0.004 (0.005)	0.001 (0.010)	-0.011 (0.017)	-0.009 (0.015)	0.0002 (0.006)
GDP Change (yr. 2)	-0.002 (0.004)	-0.001 (0.005)	-0.002 (0.007)	-0.007 (0.009)	-0.010 (0.008)	-0.005 (0.006)
Employment Change (yr. 2)	0.006** (0.003)	0.004 (0.004)	0.002 (0.006)	0.025** (0.011)	0.006 (0.009)	0.001 (0.003)
GDP (log)	-0.488** (0.149)	-0.211 (0.166)	-0.613** (0.246)	-0.059*** (0.012)	-0.028** (0.012)	0.009 (0.023)
Employment (log)	0.953** (0.443)			0.750*** (0.016)		
Percent Woman	-0.162 (0.176)	-0.231 (0.138)	0.258 (0.220)	0.936*** (0.083)	0.427*** (0.085)	0.018 (0.041)
Percent Union	-0.004 (0.004)	0.003 (0.005)	-0.018* (0.008)	0.008*** (0.002)	0.008*** (0.002)	-0.003 (0.003)
Constant	-4.54 (5.39)	4.54 (.896)	3.39 (1.19)	-4.68 (.167)	3.29 (0.075)	0.010 (0.088)
	<i>N</i> =252	<i>N</i> =252	<i>N</i> =252	<i>N</i> =252	<i>N</i> =252	<i>N</i> =252

\*  $p < .10$ ; \*\*  $p < .05$ ; \*\*\*  $p < .01$

On balance, then, these data confirm Donohue and Siegelman's results from their analysis of nationwide claims data and the business cycle,<sup>155</sup> i.e., there is no evident relationship between the business cycle and discrimination claims.

#### IV POSITIVE ANALYSIS

With this analysis of the panel data in hand, this Part turns to an analysis of a single year of data (1992) that focuses on a finer disaggregation of industries than that used in the analyses in Part III.A.3. Restricting the analysis to 1992 allows industry-specific claims data to

<sup>155</sup> See *supra* notes 149–50 and accompanying text.

be matched to data from the U.S. Economic Census.<sup>156</sup> Included in the Census are measures of how competitive industries are; this makes it possible to test the relationship between market competition and discrimination claims, bringing this study in line with prior work focusing on wage differentials.

The general conceptual discussion in Part I suggested hypotheses derived from the four main theories of employment discrimination. The employer taste theory predicts a negative relationship between the degree of market competition and the level of discrimination. The statistical discrimination model predicts that the proportion of female or nonwhite workers should be negatively related to the level of discrimination. The sorting model predicts that heterogeneity in the labor force should be negatively related to the level of discrimination.<sup>157</sup> The status-production model predicts that discrimination will be positively related to the proportion of female or nonwhite workers. Additionally, the status-production, sorting, and statistical models predict that there should be little or no relationship between market competition and discrimination.<sup>158</sup> To test these hypotheses, data are needed on market competition, characteristics of the labor pool, the level of discrimination, and other exogenous measures that control for the size of different industries.

Measures of market competition are notoriously poor. The two most common indicators are *four-firm concentration ratios* and the *Herfindahl-Hirschman Index* (HHI) values. Four-firm concentration ratios indicate the share of a market's business done by the four largest firms in a given market. The ratio varies between 0 and 1, where 1 indicates an oligopoly in which the largest four firms do all the business in the market, and a ratio of zero indicates perfect competition. The HHI is an alternative measure of competition defined as the sum of the squares of the market share of each firm in the market. In general, when each of the  $N$  firms in the market has an equal share, the HHI is  $1/N$ ; in a monopoly, the HHI is 1.<sup>159</sup>

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<sup>156</sup> The last year in which the U.S. Economic Census used the SIC classification system was 1992. Future analyses will incorporate data using the NAIC system that was adopted in 1997. See *supra* note 142.

<sup>157</sup> If we take the proportion of women or nonwhites in the workforce as an indicator of heterogeneity, then the predictions of the statistical and the sorting and search theories are the same.

<sup>158</sup> As noted in Part I.D, *supra*, these predictions are not inevitable implications of the theories. For example, one might argue that the sorting and search theory predicts occupational segregation—homogeneity within a given occupational category—but not necessarily industry-wide exclusion or inclusion. Nonetheless, as a first approximation these basic directional predictions are plausible enough to investigate.

<sup>159</sup> See Marshall Hall & Nicolaus Tideman, *Measures of Concentration*, 62 J. AM. STAT. ASS'N 162, 165 (1967) (describing properties of Herfindahl-Hirschman Index (HHI)).

The analysis below uses concentration ratios as the measure of market competition. Concentration ratios are generally acknowledged to be inferior to HHIs, in part because HHIs reflect the share of every firm in the market, not just the largest four.<sup>160</sup> However, this same feature of HHIs makes them difficult to calculate, since the market shares of the smallest firms are—as in this case—not available.<sup>161</sup> Despite their imperfection, it is reasonable to use concentration ratios as indicators of the degree of market competition in each industry.

Additionally, this analysis includes an *interaction term* between market competition and the proportion of either female or nonwhite workers (depending on whether sex or race discrimination is being analyzed).<sup>162</sup> The reason for including such a term is that competitive markets should be expected to affect the level of discrimination precisely when potential victims of discrimination are in the labor force. The interaction term measures the effect of having a high proportion of both female or nonwhite workers and very competitive markets, beyond the independent effect of either variable alone.

The labor force demographics are drawn mainly from the Bureau of Labor Statistics.<sup>163</sup> The analysis also controls for differences in the sizes of industries by including the number of establishments in an industry, the volume of business done in an industry, and the aggregate payroll size.<sup>164</sup> Although larger industries produce a greater volume of employment discrimination claims, analyses of discrimination rates (as opposed to the raw number of claims) show the remaining effect is actually negative.<sup>165</sup> In each model the dependent variable is the natural log of the discrimination rate (using the number of employees in the industry as the denominator).<sup>166</sup>

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<sup>160</sup> See Stephen Calkins, *The New Merger Guidelines and the Herfindahl-Hirschman Index*, 71 CAL. L. REV. 402, 404–06, 415–19 (1983) (describing properties of HHI values as compared to concentration ratios); Hall & Tideman, *supra* note 159, at 163–65 (arguing for superiority of HHI over concentration ratios).

<sup>161</sup> Calkins, *supra* note 160, at 405.

<sup>162</sup> An *interaction term* is another independent variable for which a coefficient is estimated. The difference is that this term is the *product* of two or more variables, e.g., given variables *A* and *B*, the interaction between them would be represented by the term  $A \times B$ . Thus, the term takes the value zero when either *A* or *B* (or both) are zero.

<sup>163</sup> Bureau of Labor Statistics, <http://www.bls.gov> (last visited Mar. 27, 2007).

<sup>164</sup> Only industry revenues were used in the analyses reported *supra*, Part II.B and *infra* Part IV.A, because of high colinearity among the controls.

<sup>165</sup> See *infra* Parts IV.A and IV.B. It is also worth noting what is not included in the models. First, the current analysis does not account for changing economic conditions. Second, it would be ideal to have HHI figures for all the analyzed industries. Subsequent analysis will attempt to make use of both measures.

<sup>166</sup> See *supra* note 147 (describing rationale for taking natural log of variable).

A. Sex Discrimination Findings

The results from the model of sex discrimination are presented in Table 3. Overall, the model performs respectably, explaining roughly thirty-three percent of the variation in the dependent variable.

TABLE 3: COEFFICIENT ESTIMATES FROM SEX DISCRIMINATION REGRESSION

	Coefficient	Standard Error
Market Competition <sup>167</sup>	-0.049**	0.023
Interaction (Competition & Percent Female)	0.064	0.051
Percent Female Workers	-0.076*	0.043
Female Workers (log)	0.005***	0.002
Industry Revenues (log)	-0.006***	0.001
Constant	2.43	0.021

$N=107$ ;  $R^2=0.326$ ;  $F(5, 101)= 9.76^e$

\*  $p<.10$ ; \*\*  $p<.05$ ; \*\*\*  $p<.01$

A number of findings are worth highlighting. First, note that the coefficient on market competition is negative and statistically significant.<sup>168</sup> That is, all else being equal, more competitive industries actually do produce lower discrimination rates. These data suggest there is something to the idea, grounded in the employer taste model, that competitive markets reduce discrimination.<sup>169</sup> At first glance, then, the sex discrimination analysis presents a preliminary piece of evidence in favor of the employer taste theory of discrimination.

Second, the effect of the interaction term between market competition and the female workforce percentage is positive (though not statistically significant). This suggests an intriguing possible caveat to the employer taste hypothesis. Were the effect significant, it would suggest that competitive markets may reduce discrimination, but the effect depends on underlying labor force demographics.

Third, as the percentage of female workers in an industry increases, the level of sex discrimination claims falls. This result is

<sup>167</sup> To clarify the presentation of results, the concentration ratios were recoded so that 1 represents a maximally competitive industry and 0 a monopoly. The transformation alters the sign of the coefficient, but does not alter the magnitude or statistical significance of the results.

<sup>168</sup> That is, given the rest of the variables in the model, these data allow us to reject the null hypothesis that market competition (as measured by concentration ratios) has no relationship to the sex discrimination rate.

<sup>169</sup> See *supra* Part I.A.1. This result is also consistent with recent work on wage differentials described *supra* note 3.

consistent with the statistical discrimination theory and inconsistent with the status-production theory. The statistical discrimination model predicts that, as the proportion of women in an industry increases, returns on stereotypical inferences about worker productivity based on sex diminish. When the proportion of women in an industry remains low, holding all else constant, rates of sex discrimination are higher than when women are better represented—just as the statistical model suggests.<sup>170</sup> In contrast, the status-production model predicted that as the percentage of women in an industry’s workforce increases, the returns to male workers from discriminating also increase. In fact, the data show precisely the opposite.

The sorting and search theory is also consistent with these results. The theory suggests that discrimination manifests itself as occupational segregation; all else being equal, low proportions of female workers should be associated with more discrimination. This is consistent with the data: As the proportion of women in an industry increases, lower discrimination rates are observed.

*B. Race Discrimination Findings*

The coefficient estimates from the model of race discrimination are presented in Table 4. The model performs reasonably well, explaining approximately two-thirds of the variation in the dependent variable.

TABLE 4: COEFFICIENT ESTIMATES FROM RACE DISCRIMINATION REGRESSION

	Coefficient	Standard Error
Market Competition	0.121***	0.018
Interaction (Competition & Percent Nonwhite)	-1.17***	0.117
Percent Nonwhite Workers	0.928***	0.106
Nonwhite Workers (log)	0.002***	0.001
Industry Revenues (log)	-0.004***	0.001
Constant	2.27	0.022

$N=107$ ;  $R^2=0.667$ ;  $F(5, 101)= 40.75^{***}$

\*  $p < .10$ ; \*\*  $p < .05$ ; \*\*\*  $p < .01$

First, note that the race and sex discrimination coefficients for all but the percent of nonwhite workers and industry revenue differ in

<sup>170</sup> This effect is distinct from the effect of the raw number of women working in an industry. As the data show, the more women in an industry, the more claims result. But status production through discrimination turns not on raw numbers but on proportions.

sign. For instance, the market competition coefficient is statistically significant and positive. That is, more competitive markets produce higher rates of race discrimination claims than less competitive markets. At the same time, the percentage of nonwhites in the workforce is also positively correlated with the discrimination rate. Note also the negative sign on the interaction term between competition and the percentage of the nonwhite workforce. This indicates that markets that are very competitive *and* have high proportions of nonwhite workers have lower rates of discrimination than those that are very competitive and have a low percentage of nonwhites *or* have a high percentage of nonwhite and are very uncompetitive.

One way of interpreting this finding is that there is relatively little opportunity for competitive pressure to do much work in industries with a small, proportionally, nonwhite workforce. In workforces where nonwhite employment is higher, the potential labor supply is greater and the effect of competition more pronounced. Nevertheless, one should proceed cautiously, given that the indicator of competition itself and the interaction term cut in different directions.

Just as was the case for the sex discrimination model, the number of discrimination claims increases as the raw number of nonwhite workers in an industry increases. However, unlike the sex discrimination model, the percentage of nonwhite workers in the industry is positively related to the discrimination rate. The status-production theory predicts this result, which suggests that status production may play a significant role in race discrimination, even if it does not help explain sex discrimination.

### C. Discussion

The interpretations of the analyses in Parts IV.A and IV.B should be treated with caution for several reasons. First, missing data may influence the results. The study period (1992) was selected to maximize the amount of industry-specific data available.<sup>171</sup> However, the data set used in these analyses combines several different government sources, and some industry-specific records from those sources are missing data. Consequently, several records in the composite data set are missing data for one or more variables. The preceding analyses drop records that are missing even a single variable, which means that whatever information there was in the dropped records is ignored.<sup>172</sup>

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<sup>171</sup> See *supra* note 156 and accompanying text.

<sup>172</sup> Techniques for dealing with missing data, such as imputation methods that estimate missing values, may be used to increase the number of observations in this data set. See generally Donald B. Rubin, *Multiple Imputation After 18+ Years*, 91 J. AM. STAT. ASS'N 473 (1996) (surveying various imputation methods).

Second, the desire to analyze market competition as an exogenous variable meant limiting the time period to a single year (1992). Current work is under way to incorporate later time periods, which should make the current findings more robust.

Third, I have sought to link the new data to existing theories of discrimination, but as noted above, one might derive alternative empirical predictions from the various theories.<sup>173</sup> I do not resist this claim. Indeed, specifying these theories and their predictions more crisply and rigorously will only advance the research program to which this Article contributes.

These caveats aside, the empirical analyses above add several key pieces of evidence to the law and economics of discrimination debates. First, more competitive markets are associated with lower rates of sex discrimination but not with lower rates of race discrimination. This suggests that traditional opponents in the fight over competitive markets and discrimination should take more nuanced positions. If the effect of market competition on race discrimination differs from its effect on sex discrimination, it makes little sense to debate these matters in general terms.

Moreover, the degree of market competition seems to interact with the distribution of female and nonwhite workers in the labor force in different ways. With respect to race at least, market structure interacts with labor demographics. Competitive industries with high proportions of nonwhite workers have lower discrimination rates than either highly competitive industries with low percentages of nonwhite workers or uncompetitive industries with high proportions of nonwhite workers. Thus, one caveat to the market structure finding is empirical: Interaction effects may well exist. This does not necessarily undermine the employer taste theory, but it suggests the picture is more complicated than simple forms of that theory suggest.

A theoretical caveat is in order here as well. According to the taste theory, the market equilibrium presumes no government regulation. Of course, the analyses presented above take place against a backdrop of extensive government regulation of employment. Thus, it may not be clear what effect market competition *should* have on employment discrimination, given substantive legal regulation like that imposed by Title VII.<sup>174</sup>

The findings also provide some support for the status-production theory of discrimination. With respect to race discrimination, the status-production theory seems to have genuine legs. Holding other

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<sup>173</sup> See *supra* note 158.

<sup>174</sup> See *supra* note 102.

factors constant, discrimination rates increase as the proportion of nonwhite workers in an industry increases—a result perfectly in line with McAdams’s argument. That said, no such effect was observed with respect to sex discrimination. This can be taken either as ambiguous evidence or as evidence that race discrimination is driven by status production in a way that sex discrimination is not. Similar inferences can be drawn regarding the statistical and sorting theories. For each of those theories, the results of the analyses may be taken either as ambiguous or as suggesting that sex discrimination arises from stereotype-based inferences in ways that race discrimination does not.<sup>175</sup>

#### *D. Policy Implications*

Although the empirical results in this Article are preliminary, they suggest several legal and policy implications. First, the Title VII statutory scheme treats race discrimination and sex discrimination in largely the same way, prohibiting both equally.<sup>176</sup> As a starting point for discrimination policy, this approach is not problematic. But as a resting place, it is troubling if the dynamics of race and sex discrimination are as different as the empirical analyses above suggest. For example, in industries with low percentages of nonwhite workers, competition appears to drive sex discrimination rates down while pushing the race discrimination rates up. For theorists, this adds an interesting complication to the debate over Becker’s competition thesis; for policymakers it is, at a minimum, a data-driven reminder of the fact that the underlying dynamics of race and sex discrimination in employment are different, requiring finer tailoring of policy tools. This is no less true for courts and litigants than it is for Congress or administrative agencies like the EEOC.<sup>177</sup>

Second, the Article’s emphasis on alternative mechanisms for identifying industries with abnormally high or low levels of discrimination claims could allow policy resources to be targeted towards indus-

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<sup>175</sup> Again, one may take issue with the specific predictions I have derived from the theories. The presented analysis represents only a first cut at these issues, and more fine-grained measures of discrimination would provide useful additional detail. For example, the sorting and search theory predicts that specific forms of employment discrimination will be associated with the homogeneity of labor. Currently, the analysis makes no use of the different types of discrimination claims filed with the EEOC. Future analysis could integrate this additional information to provide more extensive and rigorous tests of the sorting and search theory’s predictions.

<sup>176</sup> 42 U.S.C. § 2000e-2(a)–(d), (l) (2000) (outlawing various employment practices based on individual’s “race, color, religion, sex, or national origin”).

<sup>177</sup> For instance, the empirical results suggest that allocating resources toward policing the use of stereotypes in the employment context may have a greater effect on sex discrimination than race discrimination.

tries that appear particularly discriminatory. A crude focus on all industries is likely to waste scarce resources. With better tools for identifying discriminatory industries, administrative agencies could be more proactive in targeting enforcement efforts.

Third, better mechanisms for identifying “low discriminating” industries are just as important as identifying those that discriminate. If particular efforts by firms, industries, or government have successfully reduced employment discrimination, policymakers should be aware of those efforts and understand why they have succeeded. Alternatively, some industries that exhibit abnormally low discrimination claim rates (either according to the standard rate calculations or residual calculations) might have devised ways to filter out claims that would otherwise be filed with the EEOC.<sup>178</sup> If so, the low claim rate might signal industry arbitrage rather than a low discrimination rate. Being able to identify and investigate such industries should support more effective government efforts to reduce actual discrimination.

Fourth, although the discussion in Part II does not resolve the problems associated with measuring discrimination, it makes explicit issues that are often only implicit in scholarship and policy analysis. In particular, highlighting the range of plausible indicators of discrimination and units of analysis underscores the need not to focus too narrowly on a single way of measuring discrimination. For scholars, exploring alternatives is likely to yield a more robust understanding of the general phenomenon of employment discrimination. For courts, legislators, agencies, and litigants, considering the full range of alternatives may reveal specific types of discrimination requiring specially tailored remedies. Advancing our understanding of how to measure discrimination is, therefore, worthwhile and significant given the underlying stakes.

Lastly, the more rigorous and accurate our understanding of the dynamics that actually underlie employment discrimination—employer tastes, employee bias, statistical inferences, and social norms—the greater our ability to design appropriate antidiscrimination policies. If, for instance, inaccurate inferences about worker productivity drive discrimination, the remedy would be to provide employers with better data on worker productivity that will (by assumption) reveal the errors in those inferences. If, however, *accu-rate* inferences drive discrimination (because of rational underinvestment in education and skills by women and nonwhites), the more appropriate policy might be to give subsidies for overinvesting in

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<sup>178</sup> See *supra* note 148 (suggesting arbitration agreements could mask high rates of discrimination).

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human capital. Similarly, if employee status-production norms cause workplace discrimination, an effective policy would target those norms rather than nonexistent or low-level discriminatory tastes.

In the United States, such policy debates have been ongoing for many years; this Article's suggestions are mere gestures at a highly complex problem. The modest claim is simply that the efficacy of antidiscrimination policy hinges, at least in part, on the accuracy of the underlying explanation for employment discrimination. Parsing out the relative validity of various theories is thus critical not just for scholarship, but also for legal and policy analysis.

#### CONCLUSION

After several decades of ongoing scholarship, the law and economics of employment discrimination is well developed. The theoretical, empirical, and normative literatures have all yielded tremendous insight into the nature and extent of employment discrimination. Rigorous testing of different theoretical models, however, remains a priority. In an effort to help fill existing gaps in the literature, this Article constructed an original data set of employment discrimination claims, economic conditions, and labor force characteristics. These data allow for meaningful comparisons of market conditions and patterns of discrimination across industries in the United States economy. The Article derived and tested some straightforward predictions from the major theories of discrimination in law and economics. At a minimum, the findings demonstrate the potential productivity of inter-industry analysis for employment discrimination research. No doubt the data are noisy and there is more work to be done. However, my hope is that empirical analysis of this sort will foster a renewed interest among legal scholars in the empirical analysis of employment discrimination. Even if one disagrees with particular methodological or theoretical claims made in the analysis above, I hope to have demonstrated that such analysis can make a meaningful contribution to the law and economics of discrimination.