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Discrimination and Economic Expectations

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Abstract. This paper examines whether perceptions of discrimination affect the economic expectations of U.S. households. We focus on two forms of expectations that play a central role in economic and financial decisions of households: labor income and inflation. Using experimental data, we demonstrate that discrimination generates greater dispersion in household forecasts. It increases subjective expectations of income uncertainty by 8% and inflation uncertainty by 5%. The impact of discrimination is concentrated among racial/ethnic minorities, inducing 12%–16% greater variation in their income uncertainty expectations and 10%–12% greater variation in their inflation uncertainty expectations. Both psychological and emotional factors appear to influence the discrimination–economic expectations relation.

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1. Introduction

Subtle forms of discrimination, or even mere perceptions of discrimination, can have an adverse impact on individuals. These effects are likely to be particularly acute among racial/ethnic minority groups as they are more likely to experience discrimination. In this study, we examine whether perception of discrimination alters the economic outlook of U.S. households. Our key conjecture is that direct or indirect exposure to discrimination can generate systematic distortions in households' economic expectations.

We focus on two of the most important forms of expectations that play a central role in the economic and financial decisions of households: labor income and inflation. Expectations about future income are key drivers of important household decisions, such as consumption, savings, and occupation choices. Beliefs about future income also influence individuals' willingness to participate in the stock market (e.g., Choi and Robertson 2020), which can have long-term wealth consequences (e.g., Saez and Zucman 2016, Fagereng et al. 2020). Accordingly, any systematic distortion in beliefs about future income could generate considerable economic costs for households.

Inflation expectations are also likely to impact household consumption and savings decisions.[1] D'Acunto et al. (2022b) note that higher inflation expectations could influence households to increase their current consumption because the perceived real interest rates are lower. Expectations of future inflation also have the potential to influence household perceptions of own future income and income risk. Additionally, higher inflation uncertainty, that is, the second moment of inflation expectations, could reduce households' consumption through precautionary savings motives.

Although our conjectures are intuitive, empirically assessing how discrimination affects economic expectations is difficult. Representative surveys typically do not contain information about the necessary components of various important economic variables that have the greatest impact on households. To overcome this difficulty, we conduct an experiment with more than 1,500 U.S. households. Similar to Guiso et al. (1992), we directly elicit participants' expectations of their future income and inflation.

We quantify two elements of individuals' income expectations: (i) their average expected rate of earnings growth (i.e., income growth) and (ii) the standard deviation of their expectations (i.e., income uncertainty). We quantify inflation expectations in an analogous manner by asking participants to consider potential rates of inflation over the next 12 months. Whereas discrimination could affect both the average and the standard deviation of income and inflation distributions, we expect it to have a stronger impact on beliefs about the standard deviation because second moments are relatively harder to predict.

Further, ex ante, the direction in which discrimination would affect economic expectations is not clear. Whereas discrimination can generate pessimistic expectations of future income, forming an approximation of the average future income in the presence of historical earnings information may be relatively easier, especially because the psychology literature finds that people are less biased when a decision task is less complex (Brehmer and Brehmer 1988). Similarly, although relatively harder to predict, inflation expectations can be extrapolated from past inflation data.

In contrast, formulating opinions regarding the uncertainty of future income or inflation uncertainty is likely to be a more complex task because it requires individuals to consider a range of personal factors and economic elements. Accordingly, real or perceived discrimination may make it difficult for individuals to develop accurate expectations about future income and inflation uncertainty. As a result, prediction of real income uncertainty is likely to be relatively more difficult for individuals.

In our experiments, to identify a causal relation between discrimination and economic expectations, we randomly assign individuals into one of the following two groups: (i) exposure to pervasive discrimination or (ii) exposure to rare discrimination. Participants assigned into the pervasive condition are presented with a narrative that characterizes discrimination against African Americans as a pervasive societal problem. In contrast, individuals assigned to the rare discrimination group receive a prompt that describes discrimination as a declining element of modern society. Participants receive their narrative prior to forming their income and inflation forecasts. All other elements of the study are identical across the two groups.[2]

Our results indicate that exposure to discrimination affects subjective expectations of individuals for both income and inflation uncertainty. Compared with individuals in the rare discrimination group, participants in the pervasive group report about 10% greater variability in their potential future income growth rates. Discrimination has a similar effect on individuals' inflation beliefs, increasing the variability by about 5%. This observed impact of discrimination cannot be explained by demographic factors, such as age, gender, education, income, marital status, and numerical ability, which are known to influence household financial decisions. Likewise, employment status, industry of employment, and level of job satisfaction cannot fully explain the impact of discrimination.

In additional analyses, we find that the impact of discrimination is concentrated among racial/ethnic minority participants. Specifically, minority individuals in the high-discrimination condition relative to those in the rare discrimination group display 13%–16% greater variation in their income growth rate expectations. Similarly, their uncertainty related to future inflation is 11%–12% higher. In contrast, the economic perceptions of White participants are similar across the two conditions.

There are several potential mechanisms through which discrimination could influence and distort the subjective beliefs of individuals. We rely on the existing literature to guide the identification of potential mechanisms.[3] Prior psychological and sociological studies demonstrate that discrimination has an impact on multiple factors that are known to affect individuals' cognitive processes, which are essential for formulating proper economic expectations (D'Acunto et al. 2019, 2023). These factors, including individual vulnerability, trust, perceived socioeconomic status (SES), stress, emotions, and tendency to ruminate, are likely to affect the overall emotional state of individuals.[4]

In particular, these factors that affect cognitive processes are likely to direct attention to extreme outcomes, and individuals are likely to pay relatively less attention to average outcomes. As a result, individuals with exposure to discrimination are likely to perceive a wider range and greater variability in the possible outcomes of various economic variables. Specifically, in our context, individuals are likely to have inflated estimates of future income and inflation uncertainty.

We conduct a follow-up experiment to identify the potential channels through which discrimination influences the subjective economic expectations of households. We recruit new participants and rerun our primary experiment after including validated instruments for these mechanisms. Whereas the constraints in our experimental design prevents us from drawing clear conclusions, the evidence from the follow-up experiment suggests that discrimination influences economic expectations of minority participants through both psychological and emotional channels.

These findings contribute to the literature on heterogeneity in economic expectations. There is growing evidence that households exhibit substantial heterogeneity in their economic beliefs even when they forecast their own labor income (Dominitz and Manski 1997, Coibion et al. 2018). Similarly, field data show that there is substantial heterogeneity in beliefs about future inflation (e.g., Mankiw et al. 2003). In particular, D'Acunto et al. (2022b) document that inflation expectations are upwardly biased, diverge across households, and exhibit substantial volatility over time.[5] Further, heterogeneity in economic expectations have important implications for asset markets and the overall economy (e.g., Bhamra and Uppal 2014). We extend this literature by demonstrating that social factors, such as discrimination, are likely to introduce heterogeneity in households' economic expectations.

Our study also contributes to the literature on income risk and incomplete markets. Theoretical models find that households with greater uninsurable risks should reduce their exposure to risky assets.[6] Empirical studies

confirm that individuals with high income risk are less likely to invest in stocks and allocate less of their wealth to risky assets.[7] Complementing this evidence, we show that subtle exposure to discrimination can increase subjective perceptions of income and inflation uncertainty, leading to self-exclusion from financial markets, which could ultimately have long-term wealth consequences.

2. Data and Methods

Representative surveys of individuals that are used in the household finance literature typically do not include measures of economic expectations and perceptions of social discrimination. To circumvent this limitation, we use Amazon's Mechanical Turk (MTurk) website to gather experimental data. The platform provides access to a heterogeneous participant pool, and the data quality is similar to that of in-the-laboratory studies (Paolacci et al. 2010, Casler et al. 2013, Goodman et al. 2013).

To ensure high data quality, we follow best practice procedures (e.g., Goodman and Paolacci 2017). We require participants to have a successful completion rating of at least 90% on their prior tasks. We disallow repeat participation to support independent sampling. We also take steps to identify individuals who many not have diligently completed the experiment.

First, we exclude responses from individuals who completed the task in less than five minutes or took one hour or more. Second, we incorporate a question wherein participants are directed to select a particular answer option, to assess individuals' diligence during the experiment. We construct an indicator variable, *Task Diligence*, that equals one if a participant fails the question and zero otherwise. We use it as a control variable in our empirical tests.

2.1. Experimental Conditions

To identify the impact of perceived discrimination, we adapt the procedures in Schmitt et al. (2003) and Major et al. (2007) and randomly assign participants into one of the following two conditions at the beginning of the experiment: (i) pervasive discrimination or (ii) rare discrimination. Individuals in the pervasive group read a short narrative that describes discrimination against African Americans as a significant and widespread problem. Individuals in the rare condition read a prompt that characterizes discrimination to be a declining facet of society.[8]

To assess whether the narrative effectively raises the perception of discrimination among participants in the pervasive discrimination condition, we ask all participants to rate their agreement with the statement "Certain racial or ethnic groups are discriminated against." Responses are coded on a −3 (strongly disagree) to +3 (strongly agree) Likert scale.

We find that participants in the pervasive discrimination group provide higher response ratings (see Figure 1). Specifically, when using the full sample of participants, the average rating among participants in the high-discrimination condition is 1.17, whereas it is 0.89 among participants in the rare group. The difference of 0.28 is statistically significant (p-value = 0.002). Overall, individuals in the high-discrimination group report stronger perceptions of discrimination compared with rare discrimination group participants.

2.2. Measuring Economic Expectations

Similar to Guiso et al. (1992), we measure both microeconomic/personal and macroeconomic expectations. In particular, we elicit individuals' microeconomic expectations by asking each participant to consider the potential growth rate of the participant's earnings over the next 12 months. Then, the participant attributes weights to intervals of potential rates of growth in the participant's income (e.g., <0%, 0%–3%, etc.) with the weights summing to 100. We use the distribution to quantify two facets of a participant's subjective opinions about the participant's future earnings. *Income Growth* is the expected mean rate of change in income. And *Income Uncertainty* is the standard deviation of expected income growth.

We quantify individuals' macroeconomic expectations in an analogous manner. We ask participants to consider potential rates of inflation over the next 12 months. Each participant then attributes weights to intervals of potential inflation rates with the weights summing to 100. We again use the distribution to construct the following two measures of macroeconomic expectations. *Inflation Rate* is the expected mean rate of inflation over the next year, and *Inflation Uncertainty* is the standard deviation of the individual's inflation rate expectation.

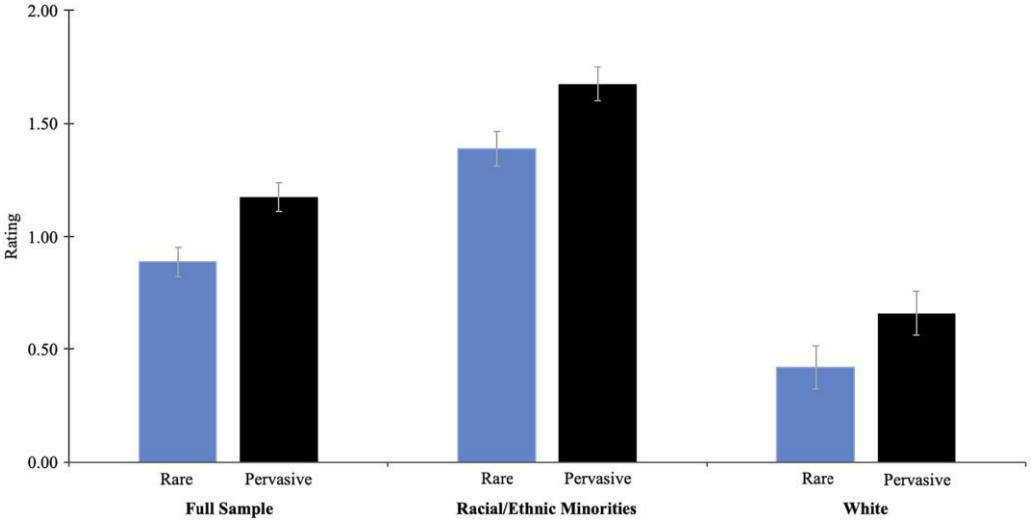
Importantly, before providing their economic expectations, participants review one of the prompts based on their random assignment to the pervasive or rare discrimination group. The only difference between the two groups of participants is their exposure to either the prominent or the rare discrimination narrative.

2.3. Experimental Data

Our sample data are from the responses of 1,529 U.S. participants.[9] Table 1 presents descriptive statistics of the participants. About 37% of our participants identify as female, and average individuals are in their mid-30 s. Consistent with the evidence from representative surveys of households, our typical participant displays a moderate degree of financial literacy, answering less than two of the three literacy questions correctly (Lusardi and Mitchell 2008, 2011, 2014).[10]

There are no significant differences between the socioeconomic characteristics of participants in the pervasive group with those of the participants in the rare discrimination group. This evidence suggests that the random assignment was successful and allows us to interpret the relation between perceived discrimination and subjective expectations in a causal manner.

Figure 1. (Color online) Manipulation Check



Notes. The figure reports estimates of the effect of the prejudice manipulation on individuals' perceptions of societal discrimination. The bars show the mean *Perceived Discrimination* for the pervasive and rare discrimination conditions. *Perceived Discrimination* is each experiment participant's response on a −3 (strongly disagree) to +3 (strongly agree) Likert scale to the statement "Certain racial or ethnic groups are discriminated against." Error bars show the mean ± one standard error.

3. Empirical Results

3.1. Estimation Framework

We estimate the following ordinary least squares (OLS) regression to examine whether perception of discrimination affects the economic expectations of individuals:

$$y_j = \alpha_0 + \beta_1 Pervasive\ Discrimination_j + \theta X_j + \varepsilon_j. \quad (1)$$

Here, the dependent variable y_j is either *Income Growth*, *Income Uncertainty*, *Inflation Rate*, or *Inflation Uncertainty*. *Pervasive Discrimination* is an indicator variable that equals one if the individual is randomly assigned to the pervasive discrimination group and zero otherwise. The key coefficient of interest, β_1, captures the effect of discrimination perception on subjective economic expectations. We consider a vector of control variables X to account for heterogeneity in individuals' socioeconomic characteristics. The standard errors are adjusted for heteroskedasticity (White 1980).

3.2. Income Expectations: Baseline Estimates

We first examine whether perception of discrimination affects microeconomic expectations related to earnings

Table 1. Summary Statistics

	Panel A: Pervasive discrimination			Panel B: Rare discrimination			
	Mean	Standard deviation	*N*	Mean	Standard deviation	*N*	*p*-value
Age	4.75	2.20	763	4.74	2.12	760	(0.908)
Female	0.37	0.48	765	0.38	0.49	764	(0.584)
Education	3.41	1.61	765	3.41	1.60	764	(0.957)
Income	4.42	1.78	761	4.42	1.82	763	(0.976)
Married	0.65	0.48	765	0.66	0.48	764	(0.972)
White	0.49	0.50	765	0.52	0.50	764	(0.371)
Risk Tolerance	2.92	0.73	765	2.86	0.74	764	(0.159)
Democrat	0.48	0.50	765	0.49	0.50	764	(0.939)
Employment Status	4.79	0.94	765	4.85	0.79	764	(0.157)
Unhappy at Work	0.31	1.92	765	0.25	1.92	764	(0.516)
Numeracy	2.74	2.67	765	2.84	2.85	764	(0.449)
Financial Literacy	1.61	1.10	765	1.65	1.12	764	(0.410)
Financial Decision Maker	1.13	0.84	765	1.12	0.90	764	(0.909)
Task Diligence	0.12	0.33	765	0.14	0.34	764	(0.488)

Notes. The table reports participant descriptive statistics, means, and standard deviations across the pervasive and rare discrimination conditions for individuals who participated in the experiment. Panel A reports estimates for individuals who were randomly assigned to the pervasive discrimination condition. Panel B shows estimates for individuals who were assigned to the rare discrimination condition. The final column reports *p*-values from two-sample *t*-tests that compare the means for each variable across the two conditions. All variables are defined in Appendix A.

growth that participants expect to experience over the next 12 months. Specifically, we estimate Equation (1) using *Income Growth* as the dependent variable. We report the results in Table 2.

We find that high discrimination perception does not significantly impact the expected rate of income growth. Across univariate and various multivariate specifications that account for participants' demographic characteristics, we find that the estimated coefficients on *Pervasive Discrimination* are small and statistically insignificant. We interpret these results to indicate that individuals in both the pervasive and rare discrimination groups expect about the same level of earnings growth (about a 9.7% increase) in the near future. The insignificant effect is consistent with psychological evidence that people tend to be less biased when a decision task is relatively less complex (e.g., Brehmer and Brehmer 1988).

Next, we test whether discrimination influences individuals' subjective expectations of income uncertainty. Because discrimination has the potential to disrupt cognitive functioning, which is essential for completing complex tasks such as formulating beliefs about the distribution of potential economic outcomes, we expect β_1 to be positive when estimating Equation (1) using *Income Uncertainty* as the dependent variable. We report these results in Table 3.

We find that income uncertainty among individuals in the pervasive discrimination group is higher relative to the participants in the rare discrimination condition. For instance, in column (1), the estimate on *Pervasive Discrimination* is 0.470 and statistically significant (p-value = 0.002). This coefficient indicates that the typical participant who perceives higher levels of discrimination reports greater variability in the potential rates of the participant's future income growth.[11] Specifically, the variability is about 10% greater than that of the average individual in the rare condition.[12]

Expanding the analysis to account for heterogeneity in participants' demographic characteristics does not fully

Table 2. Effects of Discrimination on Income Growth Expectations

	(1)	(2)	(3)	(4)	(5)	(6)
Pervasive Discrimination	0.308	0.235	0.256	0.228	0.229	0.243
	(0.98)	(0.77)	(0.85)	(0.77)	(0.77)	(0.82)
Age		−0.219***	−0.211***	−0.150**	−0.154**	−0.153**
		(−2.92)	(−2.76)	(−2.01)	(−2.07)	(−2.06)
Female		0.602*	0.686**	0.438	0.452	0.461
		(1.85)	(2.08)	(1.37)	(1.41)	(1.44)
Education		0.099	0.149	0.170*	0.171*	0.180*
		(0.98)	(1.45)	(1.68)	(1.69)	(1.77)
Income		0.082	0.178*	0.131	0.128	0.111
		(0.84)	(1.78)	(1.35)	(1.31)	(1.13)
Married		0.934**	1.009***	0.691*	0.706*	0.654*
		(2.48)	(2.61)	(1.80)	(1.82)	(1.68)
White		−1.345***	−1.488***	−1.267***	−1.271***	−1.324***
		(−4.43)	(−4.87)	(−4.20)	(−4.21)	(−4.38)
Risk Tolerance		1.521***	1.478***	0.596**	0.588**	0.583**
		(6.24)	(5.60)	(2.00)	(1.98)	(1.97)
Democrat		0.324	0.467	0.452	0.448	0.457
		(1.02)	(1.46)	(1.44)	(1.43)	(1.47)
Employment Status			−0.042	0.046	0.041	0.042
			(−0.15)	(0.16)	(0.14)	(0.15)
Unhappy at Work			−0.057	−0.153*	−0.151*	−0.155*
			(−0.64)	(−1.67)	(−1.65)	(−1.69)
Numeracy				−0.381***	−0.383***	−0.374***
				(−5.64)	(−5.62)	(−5.46)
Financial Literacy				−0.632***	−0.634***	−0.603***
				(−3.50)	(−3.52)	(−3.34)
Financial Decision Maker					0.076	0.083
					(0.34)	(0.36)
Task Diligence						0.934**
						(2.57)
N	1,529	1,518	1,473	1,473	1,473	1,473
Adjusted R^2	−0.000	0.059	0.075	0.112	0.112	0.114
Industry of employment indicators	No	No	Yes	Yes	Yes	Yes

Notes. The table reports estimates from OLS regressions of the effects of discrimination on individuals' expected income growth rate. The dependent variable is *Income Growth*, which is each participant's mean expected earnings growth rate over the next 12 months. *Pervasive Discrimination* is an indicator variable that takes the value of one if the individual was randomly assigned to the pervasive condition and zero otherwise. All variables are defined in Appendix A. Standard errors are White (1980) heteroskedasticity robust, and t-statistics are presented in parentheses.

Significance at the 10%, 5%, and 1% levels are denoted by *, **, and ***, respectively.

Table 3. Effects of Discrimination on Income Uncertainty

	(1)	(2)	(3)	(4)	(5)	(6)
Pervasive Discrimination	0.470***	0.372***	0.397***	0.379***	0.377***	0.388***
	(3.05)	(2.93)	(3.15)	(3.16)	(3.14)	(3.26)
Age		−0.092***	−0.100***	−0.057*	−0.052*	−0.052*
		(−2.93)	(−3.08)	(−1.85)	(−1.69)	(−1.68)
Female		0.240*	0.198	0.043	0.027	0.034
		(1.78)	(1.46)	(0.33)	(0.20)	(0.26)
Education		0.078*	0.085*	0.097**	0.096**	0.104**
		(1.81)	(1.96)	(2.29)	(2.27)	(2.47)
Income		0.123***	0.127***	0.094**	0.098**	0.084**
		(2.93)	(2.98)	(2.32)	(2.40)	(2.06)
Married		0.927***	0.907***	0.705***	0.688***	0.646***
		(6.03)	(5.75)	(4.65)	(4.51)	(4.27)
White		0.077	0.120	0.220*	0.224*	0.180
		(0.60)	(0.93)	(1.78)	(1.81)	(1.46)
Risk Tolerance		1.874***	1.723***	1.122***	1.131***	1.127***
		(17.83)	(14.83)	(8.60)	(8.63)	(8.69)
Democrat		0.085	0.119	0.113	0.118	0.126
		(0.65)	(0.91)	(0.91)	(0.95)	(1.02)
Employment Status			0.028	0.077	0.082	0.083
			(0.25)	(0.66)	(0.71)	(0.72)
Unhappy at Work			0.072**	0.005	0.004	0.001
			(1.99)	(0.15)	(0.12)	(0.03)
Numeracy				−0.195***	−0.192***	−0.185***
				(−8.03)	(−7.89)	(−7.54)
Financial Literacy				−0.538***	−0.536***	−0.510***
				(−7.18)	(−7.13)	(−6.80)
Financial Decision Maker					−0.089	−0.084
					(−1.08)	(−1.03)
Task Diligence						0.761***
						(4.42)
N	1,529	1,518	1,473	1,473	1,473	1,473
Adjusted R^2	0.005	0.331	0.346	0.406	0.406	0.412
Industry of employment indicators	No	No	Yes	Yes	Yes	Yes

Notes. The table reports estimates from OLS regressions of the effects of discrimination on individuals' income uncertainty expectations. The dependent variable is *Income Uncertainty*, which is the standard deviation of each participant's income growth expectations. *Pervasive Discrimination* is an indicator variable that takes the value of one if the individual was randomly assigned to the pervasive condition and zero otherwise. All variables are defined in Appendix A. Standard errors are White (1980) heteroskedasticity robust, and *t*-statistics are presented in parentheses.

Significance at the 10%, 5%, and 1% levels are denoted by *, **, and ***, respectively.

account for the effect of high discrimination perception on income uncertainty (see column (2)). Further, we find that including additional explanatory variables yields results similar to those reported in Guiso et al. (1992). In particular, individuals with more education report greater income uncertainty, whereas older people report less uncertainty.

Incorporating controls for participants' employment status, job satisfaction, and industry of employment also does not materially influence the discrimination–microeconomic expectations relation (see column (3)). In column (4), we account for heterogeneity in participants' numeracy and financial literacy. The estimate on *Pervasive Discrimination* remains positive (= 0.379) and statistically significant (p-value = 0.002). In column (5), we find that accounting for participants' role in the household financial decision-making process does not explain the observed discrimination–expectations relation.[13]

Finally, individuals' lack of diligence during the experiment relates positively with expected income uncertainty but does not subsume the effect of high perceived discrimination. That is, even in our strictest specification, the estimate on *Pervasive Discrimination* is 0.388 and statistically significant (p-value = 0.001). This evidence suggests that subtle exposure to discrimination increases perceived variability in microeconomic beliefs by about 8.4%.

3.3. Inflation Expectations: Baseline Estimates

Turning to macroeconomic expectations, we find a similar and consistent pattern when examining individuals' subjective opinions about future inflation. Similar to our results on microeconomic expectations, in Table 4, we find no evidence that high perceived discrimination influences participants' beliefs about the rate of inflation in the near future. Across both univariate and multivariate specifications, the estimated coefficients on *Pervasive*

Table 4. Effects of Discrimination on Inflation Expectations

	(1)	(2)	(3)	(4)	(5)	(6)
Pervasive Discrimination	0.291	0.169	0.285	0.249	0.251	0.267
	(1.00)	(0.63)	(1.06)	(0.96)	(0.97)	(1.04)
Age		−0.172***	−0.171***	−0.080	−0.085	−0.084
		(−2.67)	(−2.61)	(−1.26)	(−1.34)	(−1.32)
Female		0.905***	0.835***	0.532*	0.550**	0.560**
		(3.15)	(2.88)	(1.92)	(1.96)	(2.00)
Education		−0.008	0.024	0.046	0.047	0.057
		(−0.10)	(0.28)	(0.54)	(0.55)	(0.67)
Income		0.152*	0.179**	0.110	0.105	0.086
		(1.78)	(2.05)	(1.29)	(1.23)	(1.01)
Married		1.149***	1.132***	0.735**	0.755**	0.696**
		(3.38)	(3.35)	(2.20)	(2.25)	(2.07)
White		−0.191	−0.245	−0.099	−0.103	−0.165
		(−0.72)	(−0.91)	(−0.39)	(−0.40)	(−0.64)
Risk Tolerance		2.576***	2.505***	1.271***	1.261***	1.255***
		(11.72)	(10.17)	(4.50)	(4.44)	(4.42)
Democrat		0.454*	0.486*	0.479*	0.473*	0.483*
		(1.67)	(1.78)	(1.83)	(1.80)	(1.85)
Employment Status			0.081	0.167	0.161	0.162
			(0.36)	(0.73)	(0.70)	(0.71)
Unhappy at Work			−0.022	−0.162**	−0.161**	−0.165**
			(−0.27)	(−2.10)	(−2.08)	(−2.14)
Numeracy				−0.321***	−0.324***	−0.314***
				(−6.07)	(−6.05)	(−5.83)
Financial Literacy				−1.237***	−1.239***	−1.203***
				(−7.97)	(−7.99)	(−7.76)
Financial Decision Maker					0.103	0.111
					(0.56)	(0.60)
Task Diligence						1.066***
						(3.01)
N	1,529	1,518	1,473	1,473	1,473	1,473
Adjusted R^2	−0.000	0.158	0.170	0.236	0.235	0.239
Industry of employment indicators	No	No	Yes	Yes	Yes	Yes

Notes. The table reports estimates from OLS regressions of the effects of discrimination on individuals' inflation expectations. The dependent variable is *Inflation Rate*, which is each participant's mean expected rate of inflation over the next 12 months. *Pervasive Discrimination* is an indicator variable that takes the value of one if the individual was randomly assigned to the pervasive condition and zero otherwise. All variables are defined in Appendix A. Standard errors are White (1980) heteroskedasticity robust, and *t*-statistics are presented in parentheses.

Significance at the 10%, 5%, and 1% levels are denoted by *, **, and ***, respectively.

Discrimination are small and statistically insignificant. We interpret these results as indicative that individuals in both the pervasive and rare discrimination groups expect similar rates of inflation, about 8.8%, in the near future.

Further, similar to the evidence related to income uncertainty, we find that the variability of expected inflation rates among individuals in the pervasive discrimination group is greater than variability among participants in the rare discrimination group. The results are reported in Table 5. In column (1), the univariate estimate on *Pervasive Discrimination* is 0.324 and statistically significant (p-value = 0.043). This estimate corresponds to about 7.4% more variability among the high-discrimination group compared with the rare group.

Sequentially expanding the regression specification to account for participants' demographic characteristics does not subsume the effect of high perceived discrimination on *Inflation Uncertainty*. Even after accounting for traditional determinants of financial decision making (e.g., age, gender, income, marital status, risk preferences, and political orientation) and employment characteristics, the estimates in column (3) show that perception of discrimination increases the variability in individuals' macroeconomic forecasts by about 5.5% (p-value = 0.052). The estimates from the strictest specification (see column (6)) indicate that high perceived discrimination increases the variation in the typical person's forecast of future inflation rates by about 5.3% (p-value = 0.052).

Overall, we consistently find that perceptions of discrimination distort individuals' economic expectations. Specifically, exposure to discrimination reduces the precision of individuals' beliefs about potential outcomes related to both personal and macroeconomic factors.[14]

3.4. Economic Expectations Among Minorities

A natural follow-up question is whether discrimination has heterogeneous effects across individuals with respect to their racial/ethnic identity. To investigate this

Table 5. Effects of Discrimination on Inflation Uncertainty

	(1)	(2)	(3)	(4)	(5)	(6)
Pervasive Discrimination	0.324**	0.214*	0.243*	0.225*	0.225*	0.231*
	(2.03)	(1.73)	(1.94)	(1.89)	(1.88)	(1.95)
Age		−0.093***	−0.094***	−0.048	−0.047	−0.047
		(−3.02)	(−2.94)	(−1.57)	(−1.52)	(−1.52)
Female		0.319**	0.273**	0.124	0.120	0.125
		(2.46)	(2.03)	(0.95)	(0.92)	(0.96)
Education		0.071*	0.078*	0.088**	0.088**	0.092**
		(1.71)	(1.86)	(2.18)	(2.17)	(2.29)
Income		0.131***	0.122***	0.088**	0.089**	0.080**
		(3.21)	(2.91)	(2.20)	(2.18)	(1.97)
Married		1.153***	1.132***	0.937***	0.933***	0.908***
		(7.57)	(7.19)	(6.16)	(6.06)	(5.87)
White		0.184	0.229*	0.296**	0.297**	0.270**
		(1.47)	(1.79)	(2.41)	(2.42)	(2.20)
Risk Tolerance		2.149***	1.957***	1.346***	1.347***	1.345***
		(20.65)	(16.66)	(10.04)	(10.03)	(10.05)
Democrat		0.104	0.113	0.109	0.110	0.115
		(0.83)	(0.89)	(0.91)	(0.92)	(0.96)
Employment Status			0.071	0.113	0.114	0.114
			(0.69)	(1.09)	(1.10)	(1.11)
Unhappy at Work			0.115***	0.045	0.045	0.043
			(3.03)	(1.25)	(1.24)	(1.20)
Numeracy				−0.152***	−0.151***	−0.147***
				(−6.37)	(−6.32)	(−6.10)
Financial Literacy				−0.625***	−0.625***	−0.609***
				(−8.04)	(−8.02)	(−7.79)
Financial Decision Maker					−0.018	−0.015
					(−0.23)	(−0.19)
Task Diligence						0.461***
						(2.59)
N	1,529	1,518	1,473	1,473	1,473	1,473
Adjusted R^2	0.002	0.410	0.413	0.465	0.464	0.466
Industry of employment indicators	No	No	Yes	Yes	Yes	Yes

Notes. The table reports estimates from OLS regressions of the effects of discrimination on individuals' inflation uncertainty expectations. The dependent variable is *Inflation Uncertainty*, which is the standard deviation of each participant's inflation rate expectations. *Pervasive Discrimination* is an indicator variable that takes the value of one if the individual was randomly assigned to the pervasive condition and zero otherwise. All variables are defined in Appendix A. Standard errors are White (1980) heteroskedasticity robust, and *t*-statistics are presented in parentheses.

Significance at the 10%, 5%, and 1% levels are denoted by *, **, and ***, respectively.

issue, we oversample individuals who identify as racial/ethnic minorities to participate in the experiment. We then disaggregate the broader sample and repeat our analysis on subsamples of racial/ethnic minorities and Whites.

In Figure 1, we find that racial/ethnic minorities in the pervasive group, relative to minorities in the rare condition, report higher levels of perceived discrimination (p-value = 0.008). That is, among racial/ethnic minorities, the high-discrimination prompt increased perceptions of societal prejudice against racial and ethnic groups relative to individuals in the rare discrimination group. In contrast, White individuals are less likely to report high levels of discrimination. White individuals in the pervasive discrimination group compared with White participants in the rare discrimination condition report marginally more agreement (p-value = 0.080) with the statement that some racial or ethnic groups are discriminated against.

Based on this evidence, we expect that the economic expectations of racial/ethnic minorities are more likely to be influenced by discrimination. We test this conjecture by reestimating Equation (1) using the subsamples of minority and White participants. The results are reported in Tables 6 and 7.

In panel A of Table 6, we find no evidence that racial/ethnic minority and White individuals' expectations about average income growth is influenced by perceptions of discrimination. In contrast, the estimates in panel B of Table 6 indicate that the effects of discrimination appear in the range of possible income growth realizations provided by racial/ethnic minority participants. Specifically, minority individuals in the pervasive discrimination condition relative to those in the low-discrimination group display between 12% and 16% greater variation in their income growth rate expectations. In contrast, we do not find that the income uncertainty among White participants in the high-discrimination condition is substantially

Table 6. Effect of Discrimination on Income Expectations, Conditional upon Race/Ethnicity

	(1)	(2)	(3)	(4)	(5)	(6)
Panel A: Income growth						
Racial/ethnic minorities						
Pervasive Discrimination	0.404	0.435	0.535	0.581	0.586	0.590
	(0.83)	(0.89)	(1.08)	(1.19)	(1.20)	(1.20)
N	758	749	718	718	718	718
Adjusted R^2	−0.000	0.011	0.019	0.049	0.047	0.046
White						
Pervasive Discrimination	0.176	0.108	−0.072	−0.153	−0.153	−0.128
	(0.44)	(0.30)	(−0.20)	(−0.43)	(−0.43)	(−0.36)
N	771	769	755	755	755	755
Adjusted R^2	−0.001	0.165	0.193	0.224	0.223	0.228
Demographic characteristics	No	Yes	Yes	Yes	Yes	Yes
Employment characteristics	No	No	Yes	Yes	Yes	Yes
Industry of employment indicators	No	No	Yes	Yes	Yes	Yes
Numeracy & financial literacy	No	No	No	Yes	Yes	Yes
Financial decision maker	No	No	No	No	Yes	Yes
Task diligence	No	No	No	No	No	Yes
Panel B: Income uncertainty						
Racial/ethnic minorities						
Pervasive Discrimination	0.668***	0.549***	0.510***	0.557***	0.551***	0.559***
	(2.99)	(2.88)	(2.66)	(3.06)	(3.02)	(3.06)
N	758	749	718	718	718	718
Adjusted R^2	0.010	0.299	0.328	0.389	0.389	0.392
White						
Pervasive Discrimination	0.308	0.215	0.238	0.158	0.159	0.175
	(1.47)	(1.27)	(1.41)	(0.98)	(0.98)	(1.08)
N	771	769	755	755	755	755
Adjusted R^2	0.002	0.351	0.355	0.419	0.418	0.427
Demographic characteristics	No	Yes	Yes	Yes	Yes	Yes
Employment characteristics	No	No	Yes	Yes	Yes	Yes
Industry of employment indicators	No	No	Yes	Yes	Yes	Yes
Numeracy & financial literacy	No	No	No	Yes	Yes	Yes
Financial decision maker	No	No	No	No	Yes	Yes
Task diligence	No	No	No	No	No	Yes

Notes. The table reports estimates from OLS regressions of the effects of discrimination on income expectations among racial/ethnic minority (i.e., non-White) and White participants. In panel A, the dependent variable is *Income Growth*, which is each experiment participant's mean expected earnings growth rate over the next 12 months. In panel B, the dependent variable is *Income Uncertainty*, which is the standard deviation of each participant's income growth expectations. *Pervasive Discrimination* is an indicator variable that takes the value of one if the individual was randomly assigned to the pervasive condition and zero otherwise. All variables are defined in Appendix A. Standard errors are White (1980) heteroskedasticity robust, and *t*-statistics are presented in parentheses.

Significance at the 10%, 5%, and 1% levels are denoted by *, **, and ***, respectively.

different from that of counterfactual White participants in the rare discrimination group.

Table 7 reports estimates from regressions examining whether discrimination heterogeneously affects the inflation beliefs of racial and ethnic minorities and White participants. None of the coefficients in panel A are statistically significant when we examine whether discrimination affects *Inflation Rate*. This evidence again suggests that perceptions of discrimination are unlikely to influence individuals' expectations about the average rate of inflation in the near future.

However, as before, in panel B of Table 6, we find that discrimination distorts the precision of minority participants' inflation expectations. That is, minority participants in the high-discrimination condition tend to report greater inflation uncertainty than minority individuals in the rare discrimination group. Without any control variables, the estimate in column (1) shows that discrimination increases the variation in the average minority participant's forecast of future inflation rates by about 12.3% (p-value = 0.041).

Incorporating various controls to account for potential heterogeneity in individuals' socioeconomic characteristics does not absorb the effect of discrimination. Based on estimates from the strictest specification, that is, column (6), we find that the typical minority individual in the pervasive discrimination condition has about 10.2% (p-value = 0.030) greater variability in their forecast of potential future inflation rates. And, consistent with our previous estimates, we find no evidence that discrimination increases inflation uncertainty among Whites.

Table 7. Effects of Discrimination on Inflation Expectations, Conditional upon Race/Ethnicity

	(1)	(2)	(3)	(4)	(5)	(6)
Panel A: Inflation rate						
Racial/ethnic minorities						
Pervasive Discrimination	0.074	−0.030	0.146	0.262	0.275	0.287
	(0.17)	(−0.07)	(0.34)	(0.64)	(0.67)	(0.70)
N	758	749	718	718	718	718
Adjusted R^2	−0.001	0.089	0.101	0.166	0.166	0.167
White						
Pervasive Discrimination	0.532	0.419	0.464	0.281	0.284	0.303
	(1.39)	(1.27)	(1.38)	(0.86)	(0.87)	(0.94)
N	771	769	755	755	755	755
Adjusted R^2	0.001	0.259	0.262	0.320	0.319	0.322
Demographic characteristics	No	Yes	Yes	Yes	Yes	Yes
Employment characteristics	No	No	Yes	Yes	Yes	Yes
Industry of employment indicators	No	No	Yes	Yes	Yes	Yes
Numeracy & financial literacy	No	No	No	Yes	Yes	Yes
Financial decision maker	No	No	No	No	Yes	Yes
Task diligence	No	No	No	No	No	Yes
Panel B: Inflation uncertainty						
Racial/ethnic minorities						
Pervasive Discrimination	0.473**	0.335*	0.334*	0.392**	0.388**	0.393**
	(2.05)	(1.81)	(1.76)	(2.17)	(2.14)	(2.17)
N	758	749	718	718	718	718
Adjusted R^2	0.004	0.379	0.390	0.443	0.442	0.443
White						
Pervasive Discrimination	0.219	0.108	0.117	0.016	0.014	0.023
	(1.02)	(0.65)	(0.70)	(0.10)	(0.09)	(0.14)
N	771	769	755	755	755	755
Adjusted R^2	0.000	0.419	0.415	0.476	0.476	0.478
Demographic characteristics	No	Yes	Yes	Yes	Yes	Yes
Employment characteristics	No	No	Yes	Yes	Yes	Yes
Industry of employment indicators	No	No	Yes	Yes	Yes	Yes
Numeracy & financial literacy	No	No	No	Yes	Yes	Yes
Financial decision maker	No	No	No	No	Yes	Yes
Task diligence	No	No	No	No	No	Yes

Notes. The table reports estimates from OLS regressions of the effects of discrimination on inflation expectations among racial/ethnic minority (i.e., non-White) and White participants. In panel A, the dependent variable is *Inflation Rate*, which is each participant's mean expected rate of inflation over the next 12 months. In panel B, the dependent variable is *Inflation Uncertainty*, which is the standard deviation of each participant's inflation rate expectations. *Pervasive Discrimination* is an indicator variable that takes the value of one if the individual was randomly assigned to the pervasive condition and zero otherwise. All variables are defined in Appendix A. Standard errors are White (1980) heteroskedasticity robust, and *t*-statistics are presented in parentheses.

Significance at the 10%, 5%, and 1% levels are denoted by *, **, and ***, respectively.

3.5. Perceptions of Real Income Uncertainty

In the last set of tests related to our first experiment, we examine the overall effect of discrimination on economic expectations. By eliciting participants' expectations about their future earnings variability and inflation uncertainty, we are able to approximate their expectations related to the variance of their real earnings. Specifically, we follow Guiso et al. (1992) to create the *Real Income Uncertainty* variable, which is the sum of the variance of each participant's *Income Growth* and the variance of the participant's *Inflation Rate*. We then examine whether discrimination affects real income uncertainty by reestimating Equation (1).

In Table 8, we find that individuals in the high-discrimination group systematically display greater uncertainty with respect to their real income expectations. For instance, when using the full sample of participants, the univariate estimate in column (1) is 6.969 (p-value = 0.009), which indicates that discrimination perception increases individuals' subjective expectations of real income risk by about 11.7% relative to that of participants in the rare discrimination group. Introducing controls in column (2) to account for traditional determinants of individuals' financial decision making has limited impact on the influence of high-discrimination perception.

In columns (3)–(6), we sequentially expand the regression model to include controls for participants' employment characteristics, numeracy, financial literacy, role in the households' financial decision-making process, and diligence during the experimental task. The amplifying effect of high discrimination perception on participants' perceptions of their real income risk is not subsumed by

Table 8. Effects of Discrimination on Real Income Uncertainty

	(1)	(2)	(3)	(4)	(5)	(6)
Full sample						
Pervasive Discrimination	6.969***	5.185**	5.317**	5.000**	4.997**	5.150**
	(2.63)	(2.43)	(2.48)	(2.46)	(2.46)	(2.54)
N	1,529	1,518	1,473	1,473	1,473	1,473
Adjusted R^2	0.004	0.364	0.373	0.432	0.432	0.436
Racial/ethnic minorities						
Pervasive Discrimination	9.528**	7.397**	6.531**	7.377**	7.332**	7.424**
	(2.56)	(2.43)	(2.10)	(2.49)	(2.47)	(2.50)
N	758	749	718	718	718	718
Adjusted R^2	0.007	0.351	0.371	0.424	0.423	0.424
White						
Pervasive Discrimination	5.049	3.319	3.607	1.959	1.927	2.144
	(1.36)	(1.12)	(1.19)	(0.68)	(0.67)	(0.75)
N	771	769	755	755	755	755
Adjusted R^2	0.001	0.361	0.355	0.424	0.424	0.429
Demographic characteristics	No	Yes	Yes	Yes	Yes	Yes
Employment characteristics	No	No	Yes	Yes	Yes	Yes
Industry of employment indicators	No	No	Yes	Yes	Yes	Yes
Numeracy & financial literacy	No	No	No	Yes	Yes	Yes
Financial decision maker	No	No	No	No	Yes	Yes
Task diligence	No	No	No	No	No	Yes

Notes. The table reports estimates from OLS regressions of the effects of discrimination on real income uncertainty expectations. The dependent variable is *Real Income Uncertainty*, which is the sum of the variance of a participant's income growth expectations and the variance of their inflation rate expectations. *Pervasive Discrimination* is an indicator variable that takes the value of one if the individual was randomly assigned to the pervasive condition and zero otherwise. All variables are defined in Appendix A. Standard errors are White (1980) heteroskedasticity robust, and *t*-statistics are presented in parentheses.

Significance at the 10%, 5%, and 1% levels are denoted by *, **, and ***, respectively.

these additional controls. In column (6), which includes all controls, the positive estimate on *Pervasive Discrimination* indicates that discrimination perception increases participants' subjective real income uncertainty by about 8.6% (p-value = 0.011).

The subsample estimates indicate that the effects of discrimination on expectations about real income risk are concentrated among racial/ethnic minority participants. The estimate in column (1) shows that exposure to discrimination increases the variation in the average minority participant's real income expectations by about 18.4% (p-value = 0.011). Accounting for potential heterogeneity in participants' socioeconomic characteristics has minimal effect on the influence of discrimination. In the strictest specification in column (6), we find that racial/ethnic minorities who are exposed to the high-discrimination condition report about 14.3% (p-value = 0.013) greater real income risk relative to counterfactual participants. As before, we find no evidence that perceived real income uncertainty among Whites is affected by exposure to discrimination.

4. Discrimination and Expectations: Potential Mechanisms

4.1. Selection of Underlying Channels

Our first experiment establishes that perceptions of discrimination increase the degree of uncertainty in individuals' economic expectations, particularly among racial and ethnic minorities. Existing research provides insights into how discrimination could impact subjective economic expectations. In particular, forming accurate expectations of future economic outcomes relies on cognitive resources and mental bandwidth (Enke and Graeber 2019, Hirshleifer et al. 2019). If perception of discrimination amplifies factors that can disrupt cognitive processes, it could distort individuals' economic expectations.

Prior research in psychology and sociology suggests that perceptions of discrimination could influence several of these factors. First, exposure to risky environments and trauma can affect expectations about future outcomes and behavior (Kidd et al. 2013). Even perceiving one's self as vulnerable to a traumatic experience can impact cognitive evaluations, particularly among minorities (Steele and Aronson 1995). Accordingly, individuals who are susceptible to or have previously encountered discrimination may perceive greater economic uncertainty when discrimination is salient.

Second, sociopolitical factors, including discrimination, can influence an individual's trust in others, which could influence formation of expectations about future outcomes (Finucane et al. 2013, Christelis et al. 2020). Third, socioeconomic status influences individuals' subjective outlooks, and experience with discrimination could alter their perceived socioeconomic status (Finucane et al. 2013, Das et al. 2020).

Experience with discrimination is also associated with higher levels of stress, internalizing symptoms, and negative emotions (Korous et al. 2017). Further, perceptions of threats and uncontrollable negative events, including discrimination, can induce rumination (Borders and Liang 2011, Wu et al. 2022). And repetitive thinking about negative experiences can affect cognitive performance and exacerbate psychological symptoms (Borders and Liang 2011).

Overall, the extant psychology and sociology literature highlights several channels through which perceptions of discrimination could influence subjective economic expectations of individuals. Motivated by these previous findings, we posit that discrimination can affect economic expectations through stress, emotions, and cognitive response channels.

4.2. Second Experiment Setup

To identify the dominant channels through which discrimination potentially distorts economic expectations, we conduct a follow-up experiment.[15] Specifically, we expand our original experiment to include several validated instruments following the economic forecasting task, which allows us to identify the possible mechanisms via which discrimination operates.

First, we measure individuals' perceived prior exposure to discrimination by asking them to rate their agreement with the following two statements: (i) "In the past year, I have been discriminated against because of my race or ethnicity" and (ii) "In the past year, I have observed someone being discriminated against because of their race or ethnicity." Responses are reported on a seven-point Likert scale ranging from −3 (strongly disagree) to +3 (strongly agree). For each participant, we add the participant's response scores to create a *Prior Exposure* measure, which increases in the degree of perceived experience with discrimination.

Second, we measure individuals' degree of trust using the Naef and Schupp (2009) method. Participants rate their agreement with several statements related to their trust in people and societal institutions. We add the responses of each participant to create a *Trust* measure, which increases with the degree of trust. Third, to measure the perceived SES, we employ the procedure in Adler et al. (2000). We present a figure of a ladder to each participant and instruct the participant to indicate on which rung the participant would place the participant's self with the top (bottom) rung representing people in the United States who are best (worst) off.

Because perceptions of discrimination can potentially influence individuals' level of stress, we also elicit participants' perceived stress level using the Cohen et al. (1983) method. Namely, we create a *Stress* measure, defined as the sum of each participant's ratings on the underlying questions composing the perceived stress scale. This measure is increasing in stress.

Next, we measure individuals' emotional state using the questionnaire developed in Harmon-Jones et al. (2016). Specifically, we quantify participants' degree of negative emotions using their ratings related to feelings of anger, disgust, fear, anxiety, and sadness.[16] Finally, we measure participants' propensity to ruminate using their total score on two rumination questions developed in Garnefski and Kraaij (2006).

We recruit new participants on the MTurk platform following the same procedures as in our original experiment.[17] We exclude data for individuals who are likely to have paid limited attention to the experiment, that is, those who completed the task in less than five minutes or took one hour or more. As before, we also construct the *Task Diligence* measure based on participants' answer to the attention check question and use it as a control variable in our empirical tests. At the end of the experiment, we collect participants' demographic details. We report their characteristics in Online Table IA3. We find no significant differences in the demographic attributes of participants in the high- and low-discrimination groups.

4.3. Second Experiment: Baseline Results

To begin, we assess whether exposure to the pervasive discrimination narrative affects perceptions about discrimination in society. As in our initial experiment, we find that racial and ethnic minority participants in the high-discrimination condition compared with counterfactual participants report greater agreement with the notion that certain racial or ethnic groups are discriminated against (p-value < 0.001). The perceptions of White participants do not vary significantly across the pervasive and rare discrimination groups (p-value = 0.243).

Next, we reestimate Equation (1) and again find that economic expectations of racial/ethnic minorities are affected by exposure to the pervasive discrimination condition.[18] These results are reported in Table 9. The estimates show that high discrimination perception induces minority participants to have greater uncertainty in their expectations about their future income growth and inflation exposure.

For instance, the coefficient in column (2) indicates that minority individuals in the high-discrimination condition relative to those in the low-discrimination group display about 16.4% greater variation in their income growth rate expectations. Similarly, the coefficients in columns (4) and (6) suggest about 10.6% and 12.2% greater uncertainty in their inflation and real income expectations, respectively. As before, we do not find any evidence that the economic expectations of White participants are influenced by discrimination perceptions.[19]

4.4. Potential Mechanisms: Suggestive Evidence

To identify the potential mechanisms through which perceptions of discrimination might affect individuals' subjective economic expectations, we use evidence from

Table 9. Follow-up Experiment: Primary Results

	Income Uncertainty		*Inflation Uncertainty*		*Real Income Uncertainty*	
	(1)	(2)	(3)	(4)	(5)	(6)
Racial/ethnic minorities						
Pervasive Discrimination	0.867***	0.759***	0.656**	0.483**	10.737**	7.647**
	(3.20)	(3.47)	(2.35)	(2.28)	(2.25)	(2.11)
N	484	447	484	447	484	447
Adjusted R^2	0.019	0.459	0.009	0.521	0.008	0.520
White						
Pervasive Discrimination	−0.091	−0.112	0.016	−0.011	−0.654	−1.195
	(−0.64)	(−0.93)	(0.11)	(−0.09)	(−0.24)	(−0.52)
N	1,016	997	1,016	997	1,016	997
Adjusted R^2	−0.001	0.291	−0.001	0.314	−0.001	0.286
Demographic characteristics	No	Yes	No	Yes	No	Yes
Employment characteristics	No	Yes	No	Yes	No	Yes
Industry of employment indicators	No	Yes	No	Yes	No	Yes
Numeracy & financial literacy	No	Yes	No	Yes	No	Yes
Financial decision maker	No	Yes	No	Yes	No	Yes
Task diligence	No	Yes	No	Yes	No	Yes

Notes. The table reports estimates from OLS regressions of the effects of discrimination on the economic expectations of racial/ethnic minority (i.e., non-White) and White participants. *Income Uncertainty* is the standard deviation of each experiment participant's income growth expectations. *Inflation Uncertainty* is the standard deviation of each participant's inflation rate expectations. *Real Income Uncertainty* is the sum of the variance of a participant's income growth expectations and the variance of their inflation rate expectations. *Pervasive Discrimination* is an indicator variable that takes the value of one if the individual was randomly assigned to the pervasive condition and zero otherwise. All variables are defined in Appendix A. Standard errors are White (1980) heteroskedasticity robust, and *t*-statistics are presented in parentheses.

Significance at the 10%, 5%, and 1% levels are denoted by *, **, and ***, respectively.

psychology and sociology as summarized in Section 4.1. We consider a set of factors, including prior exposure to discrimination, trust, socioeconomic status, stress, negative emotions, and rumination. We reestimate Equation (1) in which each potential mechanism measure is the dependent variable. Our focus is on the subsample of racial/ethnic minority participants.

We report the results in Table 10. The regression results suggest that several mechanisms are likely to be important. Specifically, we find that pervasive discrimination significantly increases individuals' recognition of being exposed to social discrimination in the recent past. We also find evidence that psychological and emotional factors play an important role. In particular, perception of high discrimination significantly increases individuals' levels of stress and negative emotions. It also raises individuals' reported propensity to ruminate on negative experiences. Whereas the coefficients are negative when examining trust and perceived socioeconomic status, indicating that high discrimination perceptions may reduce individuals' degree of trust and sense of status, they are not statistically significant.

Overall, these correlations suggest that prior exposure to discrimination, stress, negative emotions, and rumination are likely channels through which discrimination influences economic expectations. In particular, perceptions of vulnerability and prior experience with discrimination are likely to reduce the precision of individuals' economic expectations. Similarly, by inducing negative emotions, perceptions of discrimination may affect the precision of economic forecasts. Of course, these results related to underlying mechanisms should be interpreted

Table 10. Regression Estimates to Identify Potential Mechanisms

	(1) *Prior Exposure*	(2) *Trust*	(3) *SES*	(4) *Stress*	(5) *Negative Emotions*	(6) *Ruminate*
Pervasive Discrimination	0.867***	−0.416	−0.238	1.458***	10.436***	0.384**
	(3.53)	(−0.62)	(−1.56)	(2.71)	(4.18)	(2.15)
N	447	447	447	447	447	447
Adjusted R^2	0.306	0.384	0.379	0.274	0.578	0.250

Notes. The table reports OLS regression estimates of the effect of discrimination on potential mechanisms among racial/ethnic minority (i.e., non-White) participants. The dependent variable in each regression is indicated in the column heading. *Pervasive Discrimination* is an indicator that equals one if the individual was randomly assigned to the pervasive condition and zero otherwise. All regressions include the full range of control variables, and all variables are defined in Appendix A. Standard errors are White (1980) heteroskedasticity robust, and *t*-statistics are presented in parentheses.

Significance at the 10%, 5%, and 1% levels are denoted by *, **, and ***, respectively.

with caution because we can only establish that perceived discrimination is correlated with these channels. They do not imply a causal link because our experimental design only randomizes with respect to discrimination and not with respect to these channels.

5. Summary and Conclusions

The beliefs and expectations of economic agents about future environments are likely to be fundamental determinants of a wide range of economic and financial decisions. In this study, we examine whether social factors influence the economic expectations of U.S. households. Specifically, we focus on the impact of discrimination, a negative social experience that is known to have long-lasting adverse effects. Our main conjecture is that real or even perceived discrimination systematically distorts expectations about future economic outcomes.

Using online experiments with heterogeneous groups of participants, we find that perception of discrimination generates greater dispersion in individuals' economic forecasts. Specifically, it increases subjective expectations of income uncertainty by about 8% and inflation uncertainty by about 5%. The impact of discrimination on economic expectations is concentrated among racial/ethnic minorities. When perceiving discrimination, they display 12%–16% greater variation in their income growth rate expectations and 10%–12% greater variation in their inflation expectations. Further analysis indicates that both psychological and emotional mechanisms are likely to shape the influence of discrimination on individuals' economic expectations.

Collectively, these findings establish a novel link between social factors and economic decision making. In particular, our study highlights that the indirect impact of discrimination on household economic expectations may be as damaging as its direct effects. By creating psychological barriers, discrimination could impede individuals from taking on financial risk, which may lead to suboptimal financial decisions, and generate persistent wealth differences across demographic groups.

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Appendix A. Variable Definitions

Name	Definition
Key variables	
Income Growth	Average expected earnings growth rate over the next 12 months
Income Uncertainty	Standard deviation of the participant's expected earnings growth rate
Inflation Rate	Average expected rate of inflation over the next 12 months
Inflation Uncertainty	Standard deviation of the participant's inflation rate expectations
Real Income Uncertainty	Sum of the variance of a participant's income growth expectations and the variance of the participant's inflation rate expectations
Perceived Discrimination	Participant's response, on a −3 (strongly disagree) to +3 (strongly agree) Likert scale, to the statement "Certain racial or ethnic groups are discriminated against"
Pervasive Discrimination	Equal to one if the participant is in the pervasive discrimination condition, zero otherwise
Explanatory variables	
Age	Age group of the participant: (1) 18–20, (2) 21–25, (3) 26–30, (4) 31–35, (5) 36–40, (6) 41–45, (7) 46–50, (8) 51–55, (9) 56–60, (10) 61–65, (11) above 65
Democrat	Equal to one if the participant is a Democrat, zero otherwise
Education	Education level of the participant: (0) some high school, (1) high school graduate, (2) some college, (3) associate's degree, (4) undergraduate degree, (5) postgraduate degree, (−1) prefer not to answer
Employment Status	Equal to one if the participant is retired, two if disabled, three if student, four if homemaker, five if employed, zero otherwise
Female	Equal to one if the participant identifies as female, zero otherwise
Financial Literacy	Index from zero (low literacy) to three (high literacy) based on the three literacy questions in Lusardi and Mitchell (2008, 2011)
Financial Decision Maker	Response, on a −2 (definitely not) to +2 (definitely yes) Likert scale, to "Are you the primary financial decision maker in your household?"
Income	Income group: (1) less than $15,000, (2) between $15,000 and $25,000, (3) between $35,000 and $50,000, (4) between $50,000 and $75,000, (5) between $75,000 and $100,000, (6) between $100,000 and $150,000, (7) between $150,000 and $200,000, (8) more than $200,000
Job Duration	Length of employment at current job

Appendix A. (Continued)

Name	Definition
Married	Equal to one if the participant is married, zero otherwise
Negative Emotions	Index composed of the negative emotion elements from Harmon-Jones et al. (2016)
Numeracy	Score, from 0 to 11, on a 60-second numeracy questionnaire adapted from Lipkus et al. (2001)
Prior Exposure	Participant's total score based on levels of agreement with two statements about perceived prior exposure to discrimination
Risk Tolerance	Index composed of the gambling and investing risk assessment questions from Weber et al. (2002)
Ruminate	Total score on the two rumination measures from Garnefski and Kraaij (2006)
Socioeconomic Status	Participant's reported rung of the socioeconomic ladder
Stress	Total score on the perceived stress questions from Cohen et al. (1983)
Task Diligence	Equal to one if the participant incorrectly answered the attention check question, and zero otherwise
Trust	Total score on the trust questions from Naef and Schupp (2009)
Unhappy at Work	Response, on a −3 (strongly disagree) to +3 (strongly agree) Likert scale, to "I am not happy at my current job"
White	Equal to one if the participant identifies as White, zero otherwise

Endnotes

[1] A growing literature in economics and finance finds a strong link between inflation expectations and economic behavior (Dräger and Nghiem 2021; Weber et al. 2022; D'Acunto et al. 2022a, 2023). In particular, inflation expectations affect individuals' employment decisions, home-buying behavior, and portfolio decisions (Bernanke 2007, D'Acunto et al. 2022a).

[2] We adapt the procedures used in Schmitt et al. (2003) and Major et al. (2007), who study the implications of discrimination against women.

[3] In particular, forming precise economic forecasts relies on cognitive resources and processes (D'Acunto et al. 2019, 2023; Enke and Graeber 2019; Hirshleifer et al. 2019). If discrimination amplifies factors that disrupt those cognitive processes, then such factors would be the primary determinants of the discrimination–economic expectations relation.

[4] See Becker (1957), Pascoe and Richman (2009), Purnell et al. (2012), Ozier et al. (2019), and Zahodne et al. (2020). Also, see Arrow (1973), Blau and Graham (1990), Chiteji and Stafford (1999), and Charles and Guryan (2008).

[5] Heterogeneity in inflation expectations is related to socioeconomic and demographic characteristics of households. Madeira and Zafar (2015) find that women, ethnic minorities, and less educated individuals exhibit greater heterogeneity in their expectations and are slower to update their expectations. D'Acunto et al. (2021) document a gender gap with women expecting systematically higher levels of future inflation. Armantier et al. (2022) demonstrate that "keeping up with the Joneses" preferences can affect inflation expectations. And Cavallo et al. (2017) find that rational inattention and cognitive factors affect inflation expectations.

[6] See Pratt and Zeckhauser (1987), Kimball (1993), Bertaut and Haliassos (1997), and Koo (1998, 1999).

[7] See Aiyagari and Gertler (1991), Guiso et al. (1996), Heaton and Lucas (2000), and Angerer and Lam (2009).

[8] The procedures used in the study were approved by the respective university's institutional review board. The prompts are presented in the online appendix. At the conclusion of the experiment, we debriefed all participants to inform them that the prompts were randomly assigned and are hypothetical.

[9] Based on the median participant's time to complete the experiment, participant compensation corresponds to about $7.70 per hour.

[10] We define all variables in Appendix A.

[11] In Online Figure IA1, we compare the distributions of participants' reported economic uncertainty across experimental conditions. For instance, comparing the plotted functions within each figure in panel A reveals that the cumulative distribution functions based on forecasts from participants in the rare discrimination condition are consistently shifted left, indicating that they have lower uncertainty in their expectations about their future income and inflation relative to participants in the pervasive discrimination condition. Untabulated results from Kolmogorov–Smirnov tests of the equality of the distributions indicate that the distributions are not equal and economic uncertainty is lower among participants in the rare discrimination condition. In addition, we find that the cumulative distributions related to the average income growth and average inflation rate are not statistically different.

[12] We estimate the magnitude of the difference as 0.470/4.626 = 0.1016, where 4.626 is the mean of *Income Uncertainty* among rare condition participants.

[13] Some caution is warranted when interpreting the regression estimates on the demographic variables. Because our focus is on identifying the causal relation between perceived discrimination and economic expectations, our randomized controlled trial design only manipulates perceptions of discrimination. Therefore, all we can conclude from our results is that the estimates on our key variable capture the causal relation between discrimination perception and economic expectations in the presence of various self-reported demographic controls. Nevertheless, as an additional check, we use data spanning 2020–2022 from the Federal Reserve Bank of New York's Survey of Consumer Expectations (SCE) to examine how socioeconomic characteristics of individuals relate to their economic expectations in a representative sample. As reported in Online Table IA1, the regression coefficients using field data are broadly consistent with our experimental results. When we compare the coefficients on our demographic variables with those obtained using the SCE, we find that 58% of estimates are consistent (have the same signs), 30% are neutral (coefficients have opposite signs but one or both estimates are statistically insignificant), and 12% are mismatched (coefficient estimates have opposite signs and they are significant). Our regression coefficients are also consistent with the estimates of socioeconomic characteristics reported in prior studies that examine individuals' economic expectations (Guiso et al. 1992, D'Acunto et al. 2021). Although these are mere correlations, our experimental estimates are broadly consistent with field data estimates, which suggests that our findings can potentially be generalized.

[14] We note that some differences exist across demographic characteristics in the survey and the overall population. For instance, our participant sample comprises 37.3% females, 65.5% married persons, and 50.4% White individuals, whereas 2022 estimates from the U.S. Census suggest the overall U.S. population is 50.4% female, 47.3% married, and 75.5% White. To ensure our results are not

driven by these demographic differences, we calculate sample weights and reestimate the main regressions. The results reported in Online Table IA2 indicate that estimates from weighted regressions are consistent with our primary evidence.

[15] The experiment is preregistered with the University of Pennsylvania's Wharton Credibility Laboratory (AsPredicted #118751).

[16] We also measure participants' disposition toward experiencing anxiety based on their responses to statements comprising the anxiety instrument of Spitzer et al. (2006). However, we find that this measure is highly correlated with our measure of negative emotions. For instance, among racial and ethnic minority participants, the correlation between the anxiety measure and negative emotions is 0.84. In our analysis, we rely on the negative emotions measure because it captures a broad set of emotional vectors, including an anxiety component.

[17] Our follow-up experiment uses the same discrimination narratives and forecasting task as our primary experiment. However, to reduce potential noise related to heterogeneity in individuals' interpretation of inflation, we define inflation to be a general increase in the overall price level of goods and services in the economy. We obtain this characterization of inflation from the frequently asked questions section of the Board of Governors of the Federal Reserve System's website: https://www.federalreserve.gov/faqs/economy_14419.htm.

[18] As in the original experiment, we find no evidence that perceptions of high discrimination distort participants' expectations about their income growth or inflation rate in the near future. Online Table IA4 reports these results.

[19] As a robustness check, we exclude participants who did not answer the attention check correctly from our analyses. The results from this subsample, reported in Online Table IA5, are consistent with our primary findings.

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