VI. PRIVATE SECTOR ANALYSIS

A. Introduction

A Disparity analysis aids in determining if the government has assisted—at least indirectly—or will continue to assist in perpetuating the discriminatory conduct of private actors by being a passive participant in market processes that are discriminatory in their effects on minority owned business enterprise. Indeed, Justice O'Connor, speaking for the Supreme Court in Croson indicated that a state "has the authority to eradicate the effects of private discrimination within its own legislative jurisdiction", and can even "use its spending powers to remedy private discrimination if it identifies that discrimination with the particularity required by the Fourteenth Amendment.[148] GSPC sought to discover whether there is a pervasive pattern of private sector discrimination in the State of Maryland from which it can be inferred that Montgomery County has passively assisted in perpetuating the discriminatory conduct of private actors. The data utilized in this analysis comes from the US Census Bureau's 2007 Survey of Business Owners Public Use Microdata Sample (SPUMS).

SPUMS provides the only comprehensive, regularly collected source of information on selected economic and demographic characteristics for businesses and business owners by gender, ethnicity, race, and veteran status in the 50 states, and District of Columbia.[149] The SPUMS universe consists of the population of all nonfarm businesses filing Internal Revenue Service tax forms as individual proprietorships, partnerships, or any type of corporation, and with receipts of $1,000 or more. The SPUMS covers both firms with paid employees and firms with no paid employees.[150] A company or firm in the SPUMS is a business consisting of one or more domestic establishments that the reporting firm specified under its ownership or control. For each business sampled in the SPUMS, business ownership is also demographically defined.

Business ownership is defined for particular demographic groups having 51 percent or more of the stock or equity in the business and is categorized by: (1) Gender: Male; female; or equally male/female, (2)

[148] See: *Richmond v. J. A. Croson Co., 488 U.S. 469 (1989)* .

[149] SPUMS data are publicly available at http://www.census.gov/econ/sbo/pums.html

[150] The SPUMS data are stratified by state, industry, frame, and whether the company had paid employees in 2007. SPUMS does not report if business owners are disabled, and veteran's status—which is in all likelihood correlated with disability status—enables some understanding of the effects of disabled business owner status on business outcomes.

Ethnicity: Hispanic; equally Hispanic/non-Hispanic; non-Hispanic, (3) Race: White; Black or African American; American Indian or Alaska Native; Asian; Native Hawaiian or Other Pacific Islander; some other race; minority; equally minority/nonminority; nonminority, (4) Veteran status: Veteran; equally veteran/nonveteran; nonveteran, and (5) Publicly held and other firms not classifiable by gender, ethnicity, race, and veteran statusGSPC's private sector analysis considers the SPUMS data for the State of Maryland. While the State of Maryland need not constitute the relevant market area for public contracting by Montgomery County, SPUMS does not capture data at the county level—the state is the smallest level of geography measured in SPUMS. The value of using SPUMS to evaluate private sector discrimination is that it captures business owner outcomes that can be adversely impacted by discriminatory practice, and the sampling is representative of the universe of firms in the State of Maryland, which enables unbiased statistical estimates of the effects of minority status on business owner outcomes in the State of Maryland—a political jurisdiction that includes Montgomery County. In this context, basing the private sector analysis based on the State of Maryland SPUMS data is consistent with the reasoning in *Croson* that the relevant market for statistical analysis of discrimination is not necessarily confined to specific governmental jurisdictional boundaries, such as cities or counties.[151]

B. Minority Status as a Barrier To Business Start-up and Expansion Capital in the Maryland Private Sector

In neoclassical economic theory, the output of firms is conditioned on the complementary relationship between capital and other relevant inputs. In the absence of capital, and/or the means to finance capital and the other inputs required to produce goods/services for the market, profit-maximizing firms are constrained from entering a market to produce output. A firm's ability to acquire and finance capital and other necessary inputs therefore is arguably one of the most important determinants of whether it enters a market,and once in the market, whether it can finance additional capital and other inputs to expand the business.[152] A major source of financing for the capital and other inputs for businesses are the private actors in capital markets that provide equity, loans, and venture capital.[153] If business access to private equity, loans and venture

[151] See: Richmond v. J. A. Croson Co., 488 U.S. 469 (1989) .

[152] See: Beck, Thorsten, Asli Demirguç-Kunt, and Vojislav Maksimovic. "Financial and legal constraints to growth: does firm size matter?" *Journal of Finance* 60, no. 1 (2005): 137 - 177.

[153] See: Bates, Timothy, and William Bradford. "Analysis of venture-capital funds that finance minority owned businesses." *Review of Black Political Economy* 32, no. 1 (2004): 37 - 46., and Ratcliffe, Janneke. "Who's counting? Measuring social outcomes from targeted private equity." *Community Development Investment Review*, Federal Reserve Bank of San Francisco 3, no. 1 (2007): 23 - 37.

capital is adversely affected as a result of minority ownership status, this would be suggestive of, and consistent with discrimination against minority owned businesses in the private sector.

Given the significance of access to financing for capital and other inputs for the emergence and survival of small businesses, GSPC's private sector analysis considers the extent to which minority owned businesses in the State of Maryland face discriminatory barriers in securing such financing. The SPUMS is particularly well-suited to such an inquiry because it captures data that shows whether firms secured various types of financing during their initial start-up, and later during expansion. GSPC's emphasis on exploring barriers to financing is motivated by the research literature on minority owned businesses, which is dominated by considerations of access to financing, underscoring the importance of discriminatory barriers faced by minority owned businesses that compromise their formation, operation, and survival.[154] As such, GSPC's private sector analysis will determine whether private actors providing business financing in the State of Maryland are engaging in discriminatory practices in a way that is biased against minority owned businesses. Evidence of such a bias would be suggestive of a key private sector barrier faced by minority owned businesses in the State of Maryland—a barrier to equal opportunity access to financing that can constrain the ability of minority owned businesses to compete on equal terms with other businesses in the market for goods and services.[155]

Lastly, evidence of bias in the market for financing against minority owned businesses in the State of Maryland would lend support to the "but-for justification"' for targeted set-asides. Ian Ayres and Frederick Vars, in their consideration of the constitutionality of public affirmative programs posit a scenario in which private suppliers of financing systematically exclude or charge higher prices to minority businesses.[156] If a political jurisdiction awards contracts to the low-cost bidder, this effectively renders the political jurisdiction a passive participant in the private discrimination as minority owned firms may only have recourse to higher cost financing due to facing discrimination in private sector capital markets, which compromises the competitiveness of their bids. Such a perspective on discrimination suggests that barriers faced by minority owned firms in private markets for financing can rationalize targeted contracting

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[154] See Asiedu, Elizabeth, James A. Freeman, and Akwasi Nti-Addae. "Access to credit by small businesses: How relevant are race, ethnicity, and gender?." *American Economic Review* 102, no. 3 (2012): 532 - 537., Blanchard, Lloyd, Bo Zhao, and John Yinger. "Do lenders discriminate against minority and woman entrepreneurs?." *Journal of Urban Economics* 63, no. 2 (2008): 467 - 497., Blanchflower, David G., Phillip B. Levine, and David J. Zimmerman. "Discrimination in the small-business credit market." *Review of Economics and Statistics* 85, no. 4 (2003): 930 - 943., Mijid, Naranchimeg, and Alexandra Bernasek. "Decomposing racial and ethnic differences in small business lending: Evidence of discrimination." *Review of Social Economy* (2013): 1 - 31., and Robb, Alicia M., and Robert W. Fairlie. "Access to financial capital among US businesses: The case of African American firms." *Annals of the American Academy of Political and Social Science* 613, no. 1 (2007): 47 - 72.

[155] (See: Bates, Timothy. "Minority business access to mainstream markets." *Journal of Urban Affairs* 23, no. 1 (2001): 41-56.

[156] See: Ayres, Ian, and Fredrick E. Vars. "When does private discrimination justify public affirmative action?." *Columbia Law Review* 98, no. 7 (1998): 1577-1641.

programs by political jurisdictions, as the counterfactual is that in the absence of such discrimination, they would be able to compete with other firms in bidding for public contracts. Such a rationale for minority set-asides also coheres the finding that both the entry and performance of African American owned firms is compromised by their low trust in the capacity and willingness of federal government (e.g. courts, regulatory agencies) to mitigate the discrimination they face in the private sector.[157]

C. Statistical and Econometric Framework

Methodologically, the GSPC private sector analysis utilizes a binary regression model (BRM) framework—which will permit an assessment of the relationship between a binary/categorical dependent variable such as a business having received of a particular form of business-financing, and independent categorical variables such as race, ethnicity, gender and disability status. The central aim of our private sector analysis with a BRM is to examine how the race/gender/ethnicity/disability status of a business owner in the State of Maryland effects the likelihood and probability of securing particular types of financing in the private sector—relative to Non-MFD business owners.[158]

The SPUMS does not provide sampling weights, so GSPC's analysis reports estimates from a heteroscedastic probit specification of the BRM, as failing to account for omitted variables driving selection into the SPUMS data could result in biased parameter estimates if based on a homoscedastic specification for the variance of the error term as in standard simple logit and probit specifications of the BRM[159] A

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[157] See: Price, Gregory N. "Race, trust in government, and self-employment." *American Economist* 57, no. 2 (2012): 171 - 187.

[158] Formally, for an outcome deemed success and indexed by unity, a BRM specification for the process determining success is $Prob(Y_i = 1) = \phi(\sum \beta_i X_i)$, where the X_i are independent covariates that explain outcome Y_i, the β_i are the effects of the X_i, and ϕ is a cumulative probability function. The outcomes Y_i = 1 or 0 can be viewed as being generated by a linear latent variable regression function of the form $y_i^* = \sum \beta_i x_i + \varepsilon_i$, where the mean value of ε_i is zero and its variance is unity, $Y_i = 1$ if $y_i^* > 0$, and $Y_i = 0$ if $y_i^* \leq 0$. While the X_i account for the effects of observed covariates on Y_i for a given population, the effect of unobserved covariates can be assumed to be accounted for in an error term ε_i.

[159] A primary justification for sampling weights is to account for heteroscedasticity that can exist in a population, See: Solon, Gary., Steven J. Haider, an Jeffrey Wooldridge. 2013. "What are we weighting for?" National Bureau of Economic Research Working Paper No. 18859, Cambridge, MA.

heteroscedastic error specification of the BRM fit to the SPUMS data allows for unbiased estimation of the effects of the covariates on the dependent variable.[160]

D. The Effects of Minority owned Business Status on Financing Business Start-up and Expansion in Maryland

GSPC identified 11394 sample firm observations in the State of Maryland from the SPUMS. The data permitted identification of minority owned firms that were owned by 1.) Asians, 2.) Females, 3.) Disabled Veterans, 4.) Hispanic Americans, 5.) Blacks/African Americans, and 6.) Native Americans (American Indian or Alaskan Native). Approximately 29 percent of the sample firms in Maryland were owned by one of these six minority groups, and to estimate the parameters of our BRM specifications, GSPC uses binary variables for each separate minority group category, in addition to one for firm group membership in any of them.[161] To control for unobserved heterogeneity and the bias caused by omitted variables, GSPC allowed the heteroscedasticity in outcomes to be a function of the firm's reported sales revenues, a binary variable for whether the first owner was previously self-employed, and a binary variable for whether the business owner has at least a bachelor's degree.[162]

Heteroscedastic probit BRM parameter estimates are reported in Tables 73 - 90[163] GSPC reports, for each private sector outcome under consideration, a specification that considers all minority owned firm outcomes relative to Non-Minority owned firm outcomes, and a specification that disaggregates minority firm outcomes by race, ethnicity, gender and disabled-veteran status. The disaggregation permits assessment as

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[160] A heteroscedastic probit specification of the BRM is $Prob(Y_i = 1) = \phi[(\sum \beta_i X_i)/exp(\sum \gamma_i Z_i)]$, where ϕ is now the cumulative density function for the standard normal distribution, and $\sum \gamma_i Z_i$ is a specification for the error variance, which can differ across realizations of Y_i, as a function of covariates Z_i, which can differ from the covariates X_i. For the underlying heteroscedastic probit latent variable regression specification, the variance of ε_i is $[exp \sum \gamma_i z_i]^2$. The difference between the standard probit and heteroscedastic specification of the BRM is simply the denominator of $exp[(\sum \gamma_i z_i)]$, as the standard probit assumes the error variance is unity, and every observation has an equal weight. As the SBOPUMS does not provide sampling weights, and there could be some self-selection into the sample for which no controls may be available for—they are unobserved—the heteroscedastic probit specification of the BRM is more compelling.

[161] Among the 3,397 minority owned firms the approximate shares owned by each group were 4 percent for Asians, 83 percent for Females, 4 percent for Disabled Veterans, 8 percent for Hispanics, 2 percent for Blacks/African Americans, and 9 percent for Native Americans.

[162] The mean value of sales for firms in the sample was approximately $2,959. Approximately 31 and 49 percent of the owners in the sample were previously self-employed and had at least a bachelor's degree respectively.

[163] *STATA 11.0* was used to estimate the parameters of the heteroscedastic probit BRM specifications. For a description of *STATA*—software for statistical/econometric analysis—see http://www.stata.com/

to whether or not particular groups within the minority owned firm classification have different outcomes, suggestive of facing differential discrimination in the market for financing business enterprise in the Maryland private sector. For the sake of brevity, and economy of results presentation, GSPC does not report the estimated coefficients for the specification of heteroscedasticity, however in each instance the specification was significant implying that the presumed form of unobserved heterogeneity in the error term was consistent with the data.

For each specification GSPC reports the estimated coefficient—which measures how minority owned firm status affects the probability of the outcome under consideration. The standard error of the estimated coefficient along with the absolute value of its t-value, and its statistical significance is also reported. A significant t-value suggests that the estimated coefficient is not due to pure chance, and instead suggests that it is caused by the covariate in question—in this instance minority owned firm status.As diagnostic measures to assess the adequacy of the estimated specification GSPC reports a chi-square test that the covariates jointly have no effect on the dependent variable.[164] A significant chi-square statistic is consistent with rejecting a null hypothesis that the covariates jointly have no effect on the dependent variable under consideration in each specification.

1. Minority owned Firm Status and The Demand For Start-up Capital in the Maryland Private Sector

Tables 73-74 report parameter estimates of the effects of minority owned firm status on the demand, and measured by the need for start-up capital in the Maryland private sector. In general, private suppliers of financing for business firm start-ups satisfy the demand for it by business owners. The parameter estimates reported in Tables 73-74 enable insight into the extent to which relative to Non-Minority owned firms, minority owned firms are different with respect to having a need for start-up financing. For the specifications in Tables 73-74, the dependent binary variable is whether or not the firm had "no need" for start-up capital. The statistically significant and negative sign on the aggregate minority owned firm status indicator in Table 73 suggests that in general, minority owned firms are less likely, relative to Non-Minority owned firms, to have no need for start-up capital. With the exception of firms owned by Disabled Veterans, the results in Table 73 are similar, with the largest effect for African American owned firms. Overall, the parameter estimates in Tables 73-74 suggest that relative to Non-Minority owned firms, minority owned firms are more likely to need start-up financing provided by the private sector in Maryland.

[164] A chi-square test is a statistical test used to compare the parameters estimated from observed data with parameters we would expect to obtain according to a specific hypothesis that the parameters are not jointly and statistically different from zero.

Table 73: Heteroscedastic Probit Parameter Estimates:

Minority owned Business Status and The Demand For Start-up Capital In The Maryland Private Sector

	Coefficient	Standard Error	t-Value
Regressand: No Start-up Capital Needed (Binary)			
Regressors:			
Constant	.345	.049	7.04[a]
Minority owned	-.105	.023	4.56[a]
Business			
Number of	11396		
Observations			
χ^2_k	20.78[a]		

Notes:

[a] Significant at the .01 level

[b] Significant at the .05 level

[c] Significant at the .10 level

Table 74: Heteroscedastic Probit Parameter Estimates

Minority owned Business Status and The Demand

For Start-up Capital In The Maryland Private Sector

	Coefficient	Standard Error	t-Value
Regressand: No Start-up Capital Needed			
Regressors:			
Constant	.340	.046	7.39[a]
Asian owned	-.138	.058	2.38[b]
Business			
Female owned	-.087	.021	4.14[a]
Business			
Disabled Veteran owned	-.009	.083	.108
Business			
Hispanic owned	-.116	.049	2.37[b]
Business			
African American owned	-.268	.124	2.16[b]
Business			
Native American Owned	-.093	.042	2.21[b]
Business			
Number of	11394		
Observations			
χ^2_k	26.95[a]		

Notes:

[a] Significant at the .01 level

[b] Significant at the .05 level

[c] Significant at the .10 level

2. Minority owned Firm Status and Bank Loan Start-up Financing

Tables 75-76 report parameter estimates of the effects of minority owned firm status and financing firm start-up with a bank loan in the Maryland private sector. For the specifications in Tables 75-76, the dependent binary variable is whether or not the firm started-up with a bank loan. The statistically significant and negative sign on the aggregate minority owned firm status indicator in Table 75 suggests that in general, minority owned firms are less likely, relative to Non-Minority owned firms, to have bank loans as a source of start-up financing. With the exception of firms owned by Hispanic Americans, the parameter estimates reported in Table 75 are similar, with the largest effect for African American owned firms. Overall, the parameter estimates in Tables 75-76 suggest that relative to Non-Minority owned firms, minority owned firms are less likely to have bank loans as a source of start-up financing in the Maryland private sector.

Table 75: :Heteroscedastic Probit Parameter Estimates

Minority owned Business Status and Bank Loan Start-up Financing In The MarylandPrivate Sector

	Coefficient	Standard Error	t-Value
Regressand: Start-up			
Regressors:			
Constant	-1.07	.036	29.72[a]
Minority owned	-.259	.038	6.82[a]
Business			
Number of	11394		
Observations			
χ^2_k	46.27[a]		

Notes:

[a] Significant at the .01 level

[b] Significant at the .05 level

[c] Significant at the .10 level

Table 76: Heteroscedastic Probit Parameter Estimates

Minority owned Business Status and Bank Loan Start-up

Financing In The Maryland Private Sector

	Coefficient	Standard Error	t-Value
Regressand: Start-up			
Regressors:			
Constant	-1.07	.036	29.72 [a]
Asian owned	-.319	.177	1.80 [c]
Business			
Female owned	-.212	.039	5.43 [a]
Business			
Disabled Veteran	-1.03	.250	4.12 [a]
Business			
Hispanic owned	-.150	.114	1.32
Business			
African American	-.702	.308	2.27 [b]
Business			
Native American	-.173	.105	1.65 [c]
Business			
Number of	11394		
Observations			
χ^2	59.28 [a]		

Notes:

[a] Significant at the .01 level

[b] Significant at the .05 level

[c] Significant at the .10 level

3. Minority owned Firm Status and Government Guaranteed Bank Loan Start-up Financing

Tables 77-78 report parameter estimates of the effects of minority owned firm status and financing firm start-up with a government guaranteed bank loan in the Maryland private sector. For the specifications in Tables 77-78, the dependent binary variable is whether or not the firm started-up with a government

guaranteed bank loan. The statistically significant and negative sign on the aggregate minority owned firm status indicator for the parameter estimates reported in Table 77 suggest that in general, minority owned firms are less likely, relative to Non-Minority owned firms, to have government guaranteed bank loans as a source of start-up financing. The parameter estimates reported in Table 78 suggest that the reduced likelihood of minority owned firms having government guaranteed bank loans as a source of start-up financing driven exclusively by the reduced likelihood of African American owned businesses having such financing, as it is only significant and negative in that instance when disaggregated minority owned firm status is considered. Overall, the parameter estimates in Tables 77-78 suggest that relative to Non-Minority owned firms only African American owned businesses are less likely to have government guaranteed bank loans as a source of start-up financing in the Maryland private sector.

Table 77: : Heteroscedastic Probit Parameter Estimates

Minority owned Business Status and Government Guaranteed Bank Loan

Start-up Financing In The Maryland Private Sector

	Coefficient	Standard Error	t-Value
Regressand: Start-up			
Bank Loan (Binary)			
Regressors:			
Constant	-2.14	.054	39.63 [a]
Minority owned	-.222	.076	2.92 [a]
Business			
Number of	11394		
Observations			
χ^2_k	8.80 [a]		

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Notes:

[a] Significant at the .01 level

[b] Significant at the .05 level

[c] Significant at the .10 level

Table 78: : Heteroscedastic Probit Parameter Estimates

Minority owned Business Status and Government Guaranteed Bank Loan

	Coefficient	Standard Error	t-Value
Regressand: Start-up			
Bank Loan (Binary)			
Regressors:			
Constant	-2.15	.054	39.81
Asian owned	-.198	.364	.312
Business			
Female owned	-.210	.081	2.59[a]
Business			
Disabled Veteran	-.314	.362	.867
Business			
Hispanic owned	.007	.223	.031
Business			
African American	-3.03	.108	28.05[a]
Business			
Native American	-.089	.220	.404
Business			
Number of	11394		
Observations			
χ^2	800.06[a]		

Notes:

[a] Significant at the .01 level

[b] Significant at the .05 level

[c] Significant at the .10 level

4. Minority owned Firm Status and Home Equity Start-up Financing

Tables 79-80 report parameter estimates of the effects of minority owned firm status and financing firm start-up with a home equity loan in the Maryland private sector. For the specifications in Tables 79-80, the dependent binary variable is whether or not the firm started-up with a home equity loan. The statistically significant and negative sign on the aggregate minority owned firm status indicator for the parameter

estimates in Table 79 suggest that in general, minority owned firms are less likely relative to Non-Minority owned firms to have home equity loans as a source of start-up financing. The parameter estimates reported in Table 80 suggest that the reduced likelihood of minority owned firms having home equity loans as a source of start-up financing is driven exclusively by the reduced likelihood of Disabled veteran owned and Native American owned businesses having such financing, as it is only significant and negative in those instances when disaggregated minority owned firm status is considered. Overall, the parameter estimates reported in Tables 79-80 suggest that relative to Non-Minority owned firms only Disabled veteran owned and Native American owned firms are less likely to have home equity loans as a source of start-up financing in the Maryland private sector.

Table 79: Heteroscedastic Probit Parameter Estimates

Minority owned Business Status and Home Equity Start-up Financing In The Maryland Private Sector

	Coefficient	Standard Error	t-Value
Regressand: Start-up			
Loan (Binary)			
Regressors:			
Constant	-1.60	.035	45.71[a]
Minority owned	-.127	.046	2.76[a]
Business			
Number of	11394		
Observations			
χ^2_k	7.62[a]		

Notes:

[a] Significant at the .01 level

[b] Significant at the .05 level

[c] Significant at the .10 level

Table 80: Heteroscedastic Probit Parameter Estimates:

Minority owned Business Status and Home Equity

Start-up Financing In The Maryland Private Sector

	Coefficient	Standard Error	t-Value
Regressand: Start-up			
Loan (Binary)			
Regressors:			
Constant	-1.59	.035	45.43 [a]
Asian owned	-.218	.212	1.03
Business			
Female owned	-.065	.048	1.35
Business			
Disabled Veteran	-4.25	.142	29.93 [a]
Business			
Hispanic owned	.024	.134	.179
Business			
African American	-.112	.297	.377
Business			
Native American	-.498	.166	3.0 [a]
Business			
Number of	11394		
Observations			
χ^2	909.99 [a]		

Notes:

[a] Significant at the .01 level

[b] Significant at the .05 level

[c] Significant at the .10 level

5. Minority owned Firm Status and Venture Capital Start-up Financing

Tables 90-91 report parameter estimates of the effects of minority owned firm status and financing firm start-up with venture capital in the Maryland private sector. For the specifications in Tables 90-91, the dependent binary variable is whether or not the firm started-up with venture capital. The statistically significant and negative sign on the aggregate minority owned firm status indicator for the parameter estimates in Table 90 suggest that in general, minority owned firms are less likely relative to Non-Minority owned firms to have venture as a source of start-up financing. The parameter estimates reported in Table 91 suggest that the reduced likelihood of minority owned firms having venture capital as a source of start-up financing is driven by the reduced likelihood of Female owned businesses having such financing, as it is only significant and negative in those instances when disaggregated minority owned firm status is considered. Relative to Non-Minority owned businesses, African American owned businesses are more likely to have venture capital as a source of start-up financing, as the coefficient for the African American owned business indicator is positive and significant in the disaggregated minority owned firm status specification.

Table 81: Heteroscedastic Probit Parameter Estimates

Minority owned Business Status and Venture Capital

Start-up Financing In The Maryland Private Sector

	Coefficient	Standard Error	t-Value
Regressand: Start-up			
Venture Capital			
Regressors:			
Constant	-2.70	.097	27.83 [a]
Minority owned	-.317	.140	2.26 [b]
Business			
Number of	11394		
Observations			
χ^2	5.12 [b]		

Notes:

[a] Significant at the .01 level

[b] Significant at the .05 level

[c] Significant at the .10 level

Table 82: Heteroscedastic Probit Parameter Estimates

Minority owned Business Status and Venture Capital

Start-up Financing In The Maryland Private Sector

	Coefficient	Standard Error	t-Value
Regressand: Start-up Financed by			
Venture Capital (Binary)			
Regressors:			
Constant	-2.73	.101	27.03 [a]
Asian owned	.336	.344	.976
Business			
Female owned	-.389	.147	2.56 [b]
Business			
Disabled Veteran	.145	.370	.392
Business			
Hispanic owned	.081	.316	.256
Business			
African American	.747	.430	1.74 [b]
Business			
Native American	.046	.357	.129
Business			
Number of	11394		
Observations			
χ^2_k	27.20 [a]		

Notes:

[a] Significant at the .01 level

[b] Significant at the .05 level

[c] Significant at the .10 level

6. Minority owned Firm Status and Bank Loan Business Expansion Financing

Tables 83-84 report parameter estimates of the effects of minority owned firm status and bank loan business expansion financing in the Maryland private sector. For the specifications in Tables 83-84, the dependent binary variable is whether or not the business financed its expansion with a bank loan. The statistically significant and negative sign on the aggregate minority owned firm status indicator for the parameter estimates in Table 83 suggest that in general, relative to Non-Minority owned firms minority owned firms are less likely to finance the expansion of their business with a bank loan. The parameter estimates reported in Table 84 suggest that the reduced relative likelihood of minority owned firms having bank loans as a source of financing the expansion of their business is similar for all minority owned businesses under consideration except for Hispanic owned businesses, as the indicator coefficient for Hispanic owned businesses is negative but insignificant.

Table 83: : Heteroscedastic Probit Parameter Estimates

Minority owned Business Status and Bank Loan

Expansion Financing In The Maryland Private Sector

	Coefficient	Standard Error	t-Value
Regressand:			
Bank Loan (Binary)			
Regressors:			
Constant	-1.24	.038	32.63 [a]
Minority owned	-.355	.044	8.07 [a]
Business			
Number of	11394		
Observations			
χ^2_k	66.13 [a]		

Notes:

[a] Significant at the .01 level

[b] Significant at the .05 level

[c] Significant at the .10 level

Table 84: : Heteroscedastic Probit Parameter Estimates:

Minority owned Business Status and Bank Loan

Expansion Financing In The Maryland Private Sector

	Coefficient	Standard Error	t-Value
Regressand:			
Bank Loan (Binary)			
Regressors:			
Constant	-1.25	.038	32.89[a]
Asian owned	-.386	.215	1.79[c]
Business			
Female owned	-.309	.046	6.72[a]
Business			
Disabled Veteran	-.571	.230	2.48[b]
Business			
Hispanic owned	-.065	.122	.533
Business			
African American	-.598	.313	1.91[c]
Business			
Native American	-.325	.129	2.52[b]
Business			
Number of	11394		
Observations			
χ^2_k	62.76[a]		

Notes:

[a] Significant at the .01 level

[b] Significant at the .05 level

[c] Significant at the .10 level

7. Minority owned Firm Status and Government Guaranteed Bank Loan Business Expansion Financing

Tables 85-86 report parameter estimates of the effects of minority owned firm status and government guaranteed bank loan business expansion financing in the Maryland private sector. For the specifications in Tables 85-86, the dependent binary variable is whether or not the business financed its expansion with a government guaranteed bank loan. For the single minority status indicator parameter estimates reported in Table 85, the chi-square test for the joint zero significance of the covariates cannot be rejected. As such, the specification in Table 85 has no apparent explanatory power. This is not the case for the disaggregated minority owned firm specification in Table 86. The parameter estimates reported in Table 86 suggest that relative to Non-Minority owned businesses, Asian owned businesses, Disabled Veteran owned businesses, and African American owned businesses have a reduced likelihood of financing the expansion of their business with a government guaranteed bank loan.

Table 85: Heteroscedastic Probit Parameter Estimates

Minority owned Business Status and Government Guaranteed Bank Loan

Expansion Financing In The Maryland Private Sector

	Coefficient	Standard Error	t-Value
Regressand:			
Guaranteed			
Regressors:			
Constant	-2.48	.078	31.79[a]
Minority owned	-.087	.099	.879
Business			
Number of	11394		
Observations			
χ^2_k	.780		

Notes:

[a] Significant at the .01 level

[b] Significant at the .05 level

[c] Significant at the .10 level

Table 86: Heteroscedastic Probit Parameter Estimates:

Minority owned Business Status and Government Guaranteed Bank Loan

Expansion Financing In The Maryland Private Sector

	Coefficient	Standard Error	t-Value
Regressand:			
Guaranteed			
Regressors:			
Constant	-2.49	.078	31.92[a]
Asian owned	-3.27	.103	31.75[a]
Business			
Female owned	-.094	.104	.904
Business			
Disabled Veteran	-3.36	.067	50.15[a]
Business			
Hispanic owned	.171	.257	.665
Business			
African American	-3.22	.071	45.35[a]
Business			
Native American	.189	.218	.867
Business			
Number of	11394		
Observations			
χ^2	4549.89[a]		

Notes:

[a] Significant at the .01 level

[b] Significant at the .05 level

[c] Significant at the .10 level

8. Minority owned Firm Status and Home Equity Loan Business Expansion Financing

Tables 87-88 report parameter estimates of the effects of minority owned firm status and home equity loan business expansion financing in the Maryland private sector. For the specifications in Tables 87-88 the dependent binary variable is whether or not the business financed its expansion with a home equity loan. The statistically significant and negative sign on the aggregate minority owned firm status indicator for the parameter estimates in Table 87 suggest that in general, relative to Non-Minority owned firms minority owned firms are less likely to finance the expansion of their business with a home equity loan. The parameter estimates reported in Table 88 suggest that the reduced likelihood of minority owned firms utilizing home equity loans as a source of financing the expansion of their business is driven the relative lower likelihood of Female owned and Disabled Veteran owned businesses of using such financing.

Table 87: Heteroscedastic Probit Parameter Estimates

Minority owned Business Status and Home Equity Loan Expansion Financing In The Maryland Private Sector

	Coefficient	Standard Error	t-Value
Regressand: Expansion			
Equity Loan (Binary)			
Regressors:			
Constant	-1.69	.038	44.47[a]
Minority owned	-.141	.049	2.88[a]
Business			
Number of	11394		
Observations			
χ^2	7.97[a]		

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Notes:

[a] Significant at the .01 level

[b] Significant at the .05 level

[c] Significant at the .10 level

Table 88: Heteroscedastic Probit Parameter Estimates:

Minority owned Business Status and Home Equity Loan

Expansion Financing In The Maryland Private Sector

	Coefficient	Standard Error	t-Value
Regressand: Expansion			
Equity Loan (Binary)			
Regressors:			
Constant	-1.69	.038	44.47 [a]
Asian owned	-.219	.234	.936
Business			
Female owned	-.136	.053	2.57 [b]
Business			
Disabled Veteran	-.795	.353	2.25 [b]
Business			
Hispanic owned	.175	.129	1.36
Business			
African American	.112	.304	.368
Business			
Native American	-.182	.146	1.24
Business			
Number of	11394		
Observations			
χ^2	19.04 [a]		

Notes:

[a] Significant at the .01 level

[b] Significant at the .05 level

[c] Significant at the .10 level

9. Minority owned Firm Status and Venture Capital Business Expansion Financing

Last but not least, Tables 89-90 report parameter estimates of the effects of minority owned firm status and venture capital business expansion financing in the Maryland private sector. For the specifications in Tables 89-90, the dependent binary variable is whether or not the business financed its expansion with venture capital. The statistically significant and negative sign on the aggregate minority owned firm status indicator for the parameter estimates in Table 89 suggest that in general, relative to Non-Minority owned firms minority owned firms are less likely to finance the expansion of their business with venture capital. The parameter estimates reported in Table 90 suggest that the reduced likelihood of minority owned firms utilizing venture capital as a source of financing the expansion of their businesses is true for all minority owned firms except Native American owned businesses for which the estimated coefficient is positive but statistically insignificant.

Table 89: Heteroscedastic Probit Parameter Estimates

Minority owned Business Status and Venture Capital Expansion Financing In The Maryland Private Sector

	Coefficient	Standard Error	t-Value
Regressand:			
Venture Capital			
Regressors:			
Constant	-3.01	.154	19.54 [a]
Minority owned	-.565	.305	1.85 [c]
Business			
Number of	11394		
Observations			
χ^2	3.42 [c]		

Notes:

[a] Significant at the .01 level

[b] Significant at the .05 level

[c] Significant at the .10 level

Table 90: Heteroscedastic Probit Parameter Estimates

Minority owned Business Status and Venture Capital

Expansion Financing In The Maryland Private Sector

	Coefficient	Standard Error	t-Value
Regressand:			
Venture Capital			
Regressors:			
Constant	-3.04	.162	18.76[a]
Asian owned	-3.43	.269	12.75[a]
Business			
Female owned	-.538	.268	2.01[b]
Business			
Disabled Veteran	-3.49	.219	15.94[a]
Business			
Hispanic owned	-3.45	.266	12.97[a]
Business			
African American	-3.33	.242	13.76[a]
Business			
Native American	.427	.332	1.29
Business			
Number of	11394		
Observations			
χ^2	334.59[a]		

Notes:

[a] Significant at the .01 level

[b] Significant at the .05 level

[c] Significant at the .10 level

E. Implications For The Existence of Discrimination Against Minority owned Firms In the Maryland Private Sector

GSPC's private sector analysis of minority owned businesses in the State of Maryland is motivated by the idea that if business firm access to private equity, loans and venture capital is conditioned on minority ownership status, this would be suggestive of, and consistent with discrimination against minority owned businesses in the private sector. Discrimination against minority owned businesses in private sector markets for business financing would result in those businesses having a reduced likelihood, relative to Non-Minority owned businesses, of receiving start-up and expansion financing from private sector sources. GSPC's analysis finds that relative to Non-Minority owned businesses, minority owned businesses in the State of Maryland are less likely to have utilized bank loans, home equity and venture capital to finance business start-up and expansion. The parameter estimates reported in Tables 73 - 90 reveal that the probability and likelihood of minority owned businesses utilizing start-up and expansion finance capital from the private sector in Maryland is smaller relative to Non-MFD business owners. Such relative probabilities and likelihoods are consistent with discriminatory behavior by private lenders against minority owned businesses in the Maryland private sector which constrains their ability to enter the market, and once in the arket, to expand their capabilities.

These findings, while consistent with private sector discrimination against minority owned firms in Maryland, are not necessarily proof of actual private sector discrimination. While our analysis considers minority-group based disparities in accessing and using certain types of business financing, a shortcoming of using disparity in group outcomes to infer discrimination is that statistical/econometric specifications based on disparate group outcomes could omit variables that are unobserved, but important to the group outcomes under consideration.[165] For example, our analysis does not control for a business firm's and/or its principal owners' credit history, which is not included in the SPUMS. As such, our parameter estimate could be biased if relative to Non-Minority owned firms, minority owned firms have inferior credit histories, resulting in them being less likely to secure financing from the private sector because they are riskier, and not because they are minority owned. However, GSPC is confident that its parameter estimates identify a causal effect of minority status because they are based on an estimator that controls for the bias associated with omitted variables that may condition the outcome under consideration. Indeed, our heteroscedastic probit estimator controls for unobserved heterogeneity in the form of omitted variables and

[165] See: Pager, Devah, and Hana Shepard. "The sociology of discrimination: Racial discrimination in employment, housing, credit, and consumer markets." *Annual review of sociology* 34 (2008): 181 - 209.

selection into the SBOPUMS sample associated with business firm size, the owner's education and prior self-employment status. That the sign and significance on the minority owned firm indicators in our parameter estimates correspond to what they would if business financing suppliers discriminated against minority owned businesses, suggest that our parameter estimates identify the effects of private sector discrimination against inority owned firms in the private sector of Maryland.