

Online Appendix

for

Credit Market Conditions and Mental Health

October 2023

Table OA1. Bank Branching Deregulation and Total Score of CES-Depression Scale

This table reports the coefficients of all control variables in Table 2.

	Depression Index					
	Full Sample	Low Income	High Income	Full Sample	Low Income	High Income
	(1)	(2)	(3)	(4)	(5)	(6)
IBBEA Index	-0.110 (0.079)	-0.269** (0.114)	-0.019 (0.075)	-0.285*** (0.101)	-0.602*** (0.157)	-0.112 (0.100)
Education	-0.080*** (0.023)	-0.041 (0.031)	-0.093*** (0.028)			
Age	-0.020 (0.017)	0.002 (0.036)	-0.028 (0.020)			
Family Income	-0.258*** (0.062)	-0.398*** (0.094)	-0.053 (0.072)			
Mother's Edu.	0.01 (0.020)	0.018 (0.035)	0.001 (0.021)			
Father's Edu.	0.018 (0.021)	0.027 (0.038)	0.015 (0.018)			
D-Both Parents	-0.361** (0.149)	-0.498** (0.245)	-0.233 (0.160)			
AFQT	-0.989*** (0.195)	-1.083*** (0.293)	-0.635*** (0.234)			
Ability Test	-0.093*** (0.012)	-0.119*** (0.022)	-0.058*** (0.017)			
Rosenberg	-0.235*** (0.020)	-0.302*** (0.033)	-0.180*** (0.019)			
Self-Esteem						
Pearlin Sense of Control	0.241** (0.102)	0.340** (0.165)	0.143 (0.107)			
D-Risk Attitude						
Per-capita GSP	-1.746 (2.522)	-3.473 (4.232)	-1.01 (3.184)	-1.686 (2.796)	-6.952 (5.724)	1.949 (3.626)
Growth	1.199 (1.197)	2.366 (1.698)	0.235 (1.412)	-5.199 (9.494)	-29.251 (19.886)	11.17 (13.572)
Log Population	0.053 (0.073)	0.164* (0.097)	-0.024 (0.098)	0.108 (0.088)	0.352* (0.180)	0.007 (0.123)
Poverty Rate	-0.041 (0.070)	-0.042 (0.096)	-0.031 (0.082)	-0.044 (0.090)	-0.155 (0.156)	0.052 (0.130)
Unemployment Rate	0.141** (0.058)	0.214** (0.099)	0.103 (0.076)	0.192*** (0.069)	0.350** (0.132)	0.067 (0.080)
Labor Force Participation	-0.459 (0.789)	-1.13 (1.389)	-0.356 (0.803)	2.219** (0.873)	3.172* (1.805)	1.991 (1.429)
Log House Price Index						
Individual Controls	Yes	Yes	Yes			
Individual FE				Yes	Yes	Yes
State FE	Yes	Yes	Yes			
State Linear Trends				Yes	Yes	Yes
State-Year Controls	Yes	Yes	Yes	Yes	Yes	Yes
Gender-Race-Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Survey Month and Day FE	Yes	Yes	Yes	Yes	Yes	Yes
Observation	14,225	6,545	7,680	14,202	6,478	7,608
R-Squared	0.141	0.146	0.112	0.605	0.620	0.573
Wald Test (P-Value)		0.012			0.008	

Table OA2. Bank Branching Deregulation and CES-Depression Scale-Robustness Checks

This table reports robustness checks of the Table 2 analyses. In Columns (1)-(6), we examine the effect of interstate branching deregulation on the respondent's *Depression Index*. Column (1) presents baseline results without macro controls. Column (2) presents baseline results without sample weights. Column (3) presents baseline results with only individual and year-fixed effects. Column (4) presents baseline results with additional age and cohort fixed effects. Column (5) presents baseline results using standardized values of the *Depression Index* and *IBBEA Index* (mean of zero and a standard deviation of one). In Column (6), we include individuals who change states. In Column (7), the dependent variable, *Depression Index* ≥ 16 , is a dummy variable that equals one if the *Depression Index* is greater than or equal to 16 and zero otherwise. The key independent variable is *IBBEA Index*, ranging from 0 (most restrictive) to 4 (most deregulated). Appendix 1 provides detailed variable definitions. Heteroskedasticity-robust standard errors clustered at the state level are in parentheses. *, **, and *** indicate significance at 10%, 5%, and 1%.

	Depression Index					Depression Index ≥ 16	
	No State-Year Controls	Unweighted Regressions	Basic FEs	Age & Cohort FE	Standardized Variables	Including Movers	Main Specification
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
IBBEA Index	-0.555*** (0.145)	-0.557*** (0.165)	-0.556*** (0.180)	-0.614*** (0.156)	-0.216*** (0.056)	-0.281** (0.122)	-0.020*** (0.007)
Individual FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes
State Linear Trends	Yes	Yes	Yes	Yes	Yes	Yes	Yes
State-Year Controls	No	Yes	Yes	Yes	Yes	Yes	Yes
Gender-Race-Year FE	Yes	Yes	No	Yes	Yes	Yes	Yes
Year FE	No	No	Yes	No	No	No	No
Age FE	No	No	No	Yes	No	No	No
Cohort FE	No	No	No	Yes	No	No	No
Survey Month and Day FE	Yes	Yes	No	Yes	Yes	Yes	Yes
Observation	6,478	6,478	6,478	6,475	6,478	7,820	6,478
R-Squared	0.618	0.616	0.609	0.621	0.620	0.619	0.470

Table OA3. Suicide as an alternative measure of mental health problem

This table reports OLS regression results of suicide rates on bank branch deregulation. The dependent variable is the log change of suicide counts per thousand population for a given demographic group in a given state at a given year. The demographic group is based on gender, race, and age group (20-24, 25-34, 35-44, 45-54). All regressions control for state-level time-varying macroeconomic factors, including the growth of real per-capita GSP, log population, poverty rate, unemployment rate, labor force participation rate, as well as the log house price index. We also control for the state-demographic group and gender-race-year fixed effects, and the state linear trends. Column (1) report the results in the full sample, and columns (2) and (3) report results in the low- and high-income states, respectively. Heteroskedasticity-robust standard errors clustered at the state level are in parentheses. In the last row, p-value for the t-test comparing the effect of IBBEA on the two subgroups are reported. *, **, and *** indicate significance at 10%, 5%, and 1%.

	Suicide		
	Full Sample	Low Income	High Income
	(1)	(2)	(3)
IBBEA Index	-0.002 (0.001)	-0.005*** (0.002)	0.000 (0.002)
State-Demographic-Group FE	Yes	Yes	Yes
State Linear Trends	Yes	Yes	Yes
State-Year Controls	Yes	Yes	Yes
Gender-Race-Year FE	Yes	Yes	Yes
Observation	4,982	2,575	2,395
R-Squared	0.344	0.340	0.393
Wald Test (P-Value)			0.077

Table OA4.**Individual Characteristics: Baseline Sample vs. the Channel Test Sample**

This table compares the characteristics of low-income individuals in the baseline sample (as in Table 2) to the characteristics of those in the channel tests sample (as in Column 1 of Table 7). We report the number of individuals in each sample (*No. Indiv.*), the mean and standard deviation (*S.D.*) for each characteristic. *Depression Index* and *Age* are based on the 1992 values.

	Baseline Sample			Channel Test Sample		
	No. Indiv.	Mean	S.D.	No. Indiv.	Mean	S.D.
Depression Index	2,302	4.671	4.363	1,616	4.704	4.404
Female	2,321	0.707	0.455	1,632	0.713	0.453
Black	2,321	0.148	0.355	1,632	0.160	0.367
Years of Education	2,321	12.984	2.265	1,632	12.761	2.186
Age	2,321	31.486	2.256	1,632	31.536	2.253

Table OA5. Baseline Regression using the Channel Test Sample

This table replicates the tests in Columns 4-6 of Table 2 but uses the smaller channel-test sample. All regressions control for State-Year Controls (*Per-capita GSP Growth*, *Log Population*, *Poverty Rate*, *Unemployment Rate*, *Labor Force Participation Rate*, and *Log House Price Index*), an array of fixed effects (*Individual*, *Gender-Race-Year* and *Survey Month and Day*), as well as the state linear time trends. Column (1) reports results for the full sample, Column (2) for low-income respondents, and (3) for high-income individuals, respectively. All regressions use sample weights provided by NLSY79. Heteroskedasticity-robust standard errors clustered at the state level are in parentheses. *, **, and *** indicate significance at 10%, 5%, and 1%. The last row reports the p-values for the Wald test comparing the effect of the *IBBEA Index* on the *Depression Index* in the low- and high-income groups.

	Depression Index		
	Full Sample	Low Income	High Income
	(1)	(2)	(3)
IBBEA Index	-0.322*** (0.116)	-0.685*** (0.190)	-0.123 (0.139)
Individual FE	Yes	Yes	Yes
State Linear Trends	Yes	Yes	Yes
State-Year Controls	Yes	Yes	Yes
Gender-Race-Year FE	Yes	Yes	Yes
Survey Month and Day FE	Yes	Yes	Yes
Observation	9,811	4,515	5,214
R-Squared	0.610	0.627	0.581
Wald Test (P-Value)			0.021

Table OA6. IV Analyses with Income

This table reports the second stage regression results of the IV-style 2SLS analyses for the low-income respondents. Columns (1), (3) and (4) are copied from Columns (1), (2), and (3) in Table 7. Column (2) is similar to Column (1), but uses *Log Wage Income* instead of *Log Work Weeks* as the intermediary variable. And the first-stage result for this column is reported in Column (9) of Table 4. For each test, the first-stage F statistic is reported in the last row. The regressions control for State-Year Controls (*Per-capita GSP Growth, Log Population, Poverty Rate, Unemployment Rate, Labor Force Participation Rate, and Log House Price Index*), state linear time trends, and an array of fixed effects (*Individual, Gender-Race-Year, and Survey Month and Day*). All regressions use sample weights provided by NLSY79. Bootstrapped standard errors clustered at the state level are in parentheses. *, **, and *** indicate significance at 10%, 5%, and 1%.

	Depression Index			
	Labor market Channel: Log Work Weeks	Labor market Channel: Log Wage Income	HH Credit Channel	Banking Service Channel
	(1)	(2)	(3)	(4)
Log Work Weeks	-10.526** (5.139)			
Log Wage Income		-15.128 (62.326)		
Log Mortgage Debt			-14.941 (21.631)	
Has Savings Account				1.484 (185.600)
Individual FE	Yes	Yes	Yes	Yes
State Linear Trends	Yes	Yes	Yes	Yes
State-Year Controls	Yes	Yes	Yes	Yes
Gender-Race-Year FE	Yes	Yes	Yes	Yes
Survey Month and Day FE	Yes	Yes	Yes	Yes
Observation	4,515	4,515	3,789	797
R-Squared	0.628	0.629	0.677	0.805
First-stage F	13.80	4.45	4.16	6.44

Table OA7. Additional Summary Statistics

This table provides descriptive statistics for variables used in the PSID analyses using small business loans. The sample period ranges from 2001 to 2017. Appendix 1 defines the variables.

Variable	N	Mean	S.D.	P10	Median	P90
<i>K6 Distress Scale</i>						
K6 Distress Scale	17,217	3.415	3.987	0	2	9
D-K6 Scale Above 5	17,217	0.272	0.445	0	0	1
D-K6 Top Quartile	17,217	0.223	0.416	0	0	1
% of Answers "0"	17,217	0.685	0.302	0.167	0.667	1
<i>Small Business Loans</i>						
Small Business Loans-Number	54,299	1.854	4.641	0.064	0.386	4.077
Small Business Loans-Amount	54,299	65.453	159.293	1.207	11.624	157.42
Loan Number [<\$100,000]	54,299	1.730	4.365	0.061	0.362	3.752
Loan Amount [<\$100,000]	54,299	21.993	53.786	0.662	4.652	49.533
Loan Number [\$100,000, \$250,000]	54,299	0.062	0.137	0.001	0.012	0.162
Loan Amount [\$100,000, \$250,000]	54,299	10.795	24.339	0.120	2.072	28.109
Loan Number [\$250,000, \$1,000,000]	54,299	0.061	0.150	0.000	0.009	0.151
Loan Amount [\$250,000, \$1,000,000]	54,299	32.225	81.025	0.000	4.732	79.412

Table OA8. Bank Branch Closures and K6-Distress Scale, High-Income Group

This table repeats Table 12 and reports OLS regression results for the sample of high-income individuals. *K6 Distress Scale* denotes the K6 non-specific psychological distress scale, ranging from 0 (least distressed) to 24 (most distressed). *K6 Distress Scale* comprises six items concerning the level of distress in the past 30 days; the answers range from 0 (None of the time) to 4 (All of the time). *D-K6 Scale Above 5* measures the incidence of moderate distress; it equals one if the *K6 Distress Scale* is above 5 and zero otherwise. *D-K6 Top Quartile* measures the incidence of severe distress and equals one if the *K6 Distress Scale* falls in the top quartile, and zero otherwise. *% of Answers "0"* denotes the percentage of the six questions the respondent answers "0," least distressed. *Treat* is a dummy variable that equals one if the county has branches from both the acquirer and target banks in the year before the merger and zero otherwise. *Post* is a dummy variable that equals one after the large banks merge and zero otherwise. We include individual, gender-race-year, and state-year fixed effects in all columns. All regressions use sample weights provided by PSID. Heteroskedasticity-robust standard errors clustered at the county level are in parentheses. *, **, and *** indicate significance at 10%, 5%, and 1%.

	K6 Distress Scale	D-K6 Scale Above 5	D-K6 Top Quartile	% of Answers "0"
	(1)	(2)	(3)	(4)
Treat × Post	0.126 (0.251)	-0.046 (0.037)	-0.022 (0.028)	-0.012 (0.019)
Individual FE	Yes	Yes	Yes	Yes
Gender-Race-Year FE	Yes	Yes	Yes	Yes
State-Year FE	Yes	Yes	Yes	Yes
Observation	9,035	9,035	9,035	9,035
R-Squared	0.650	0.544	0.532	0.646