**Appendix**

**Table A1.** Variable definitions

|  |  |
| --- | --- |
| **Dependent Variable** |  |
| Denied | Whether the most recent loan application was denied |
|  |  |
| **Credit History** |  |
| Delinquent\_personal | Whether the firm owner had delinquent personal obligations within the past three years |
| Judgement | Whether the firm or owner had any judgements rendered against them within the past three years |
| Owner\_bankrupt | Whether the firm or the owner declared bankruptcy within the past seven years |
|  |  |
| **Firm Characteristics** |  |
| Log\_sales | Log of total sales for current fiscal year |
| Log\_profit | Log of total profit for current fiscal year |
| Log\_networth | Log of total net worth of the firm |
| Firm\_age | The age of the firm |
| Firm\_age\_square | The square of firm\_age |
| Totemp | Total number of workers |
| Totemp\_square | The square of total number of workers |
| Organization type | The firm’s type - three dummy variables (i.e., corporation, partnership, or proprietorship) |
| Business\_delinquent | Whether delinquent on business obligations within the past three years |
| Firm’s industry | Dummies for seven categories (i.e., mining, manufacture, transportation, whole trade, retail trade, finance, or service) |
|  |  |
| **Owner Characteristics** |  |
| Education level | The owner’s education level - dummy variables for five categories (i.e., less than high school, high school graduate, some college, college degree, or postgraduate) |
| Exper | Years of the owner’s experience - how many years of experience the principal owner has had managing or owning a business |
| Owner\_age | Owner’s age |
|  |  |
| **Loan Characteristics** |  |
| Type of loan | The most recent approved or denied loan - dummy variables for six categories (i.e., line of credit, capital, mortgage, vehicle, equipment, other) |
|  |  |
| **Lender Characteristics** |  |
| Type of lender | Financial institution which approved or denied the most recent loan - dummy variables for four categories (i.e., commercial bank, savings bank, finance company, or other) |
| Year\_withlender | Total years with financial institution that approved or denied the most recent loan |
| Type of primary financial institution | The firm’s primary institution for financial services - dummy variables for four categories (i.e., commercial bank, savings bank, finance company, or other) |
|  |  |
| **Geographic Variables** |  |
| MSA | Whether the firm was in a Metropolitan Statistical Area |
| Region | The firm’s location - dummy variables for nine U.S. subregions (i.e., New England, Mid Atlantic, East North Central, West North Central, South Atlantic, East South Central, West South Central, Mountain, Pacific) |
|  |  |
| **Additional Variables** |  |
| Survey-year fixed effects | Dummy variables for years (i.e., the year of 1993, 1998, or 2003) |
| HHI | The Herfindahl-Hirschman Index - the level of concentration in the banking industry at which the firm’s headquarters is located - defined at MSA or county |

**Table A2.** Descriptive statistics for the full sample for the 1993, 1998, and 2003 SSBFs (N = 12,412)

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | **1993 SSBF (N = 4,637)** | | | | | | | **1998 SSBF (N = 3,551)** | | | | | | | | **2003 SSBF (N = 4,224)** | | | | | | |
| **Variables** | Non-Borrower | Discouraged Borrower | | Approved Borrower | | Denied Borrower | | Non-Borrower | | Discouraged Borrower | | Approved Borrower | | Denied Borrower | | Non-Borrower | | Discouraged Borrower | | Approved Borrower | | Denied Borrower |
| Observations  (%) | 1990  (42.91) | 640  (13.80) | | 1695  (36.55) | | 312  (6.72) | | 2099  (59.11) | | 500  (14.08) | | 713  (20.07) | | 239  (6.73) | | 2013  (47.65) | | 330  (7.81) | | 1693  (40.08) | | 188  (4.45) |
| **Credit History** |  |  | |  | |  | |  | |  | |  | |  | |  | |  | |  | |  |
| *Business Delinquency (%)* | 9.83  (0.80)b | 39.00  (2.40) | | 20.24  (1.32) | | 41.59  (3.31) | | 6.69  (0.62) | | 27.09  (2.25) | | 14.85  (1.66) | | 40.41  (3.82) | | 8.49  (0.77) | | 36.36  (3.01) | | 18.80  (1.49) | | 38.02  (4.57) |
| Avg: 19.02  (0.72) | | | | | | | Avg: 13.37  (0.67) | | | | | | | | Avg: 15.78  (0.75) | | | | | | |
| *Across*  *Comparisona* | D2003 ≠ D1993\*\*\* / D2003 ≠ D1998\*\* / D1993 ≠ D1998\*\*\* | | | | | | | | | | | | | | | | | | | | | |
| *Personal Delinquency (%)* | 7.71  (0.73) | 32.19  (2.35) | | 10.05  (1.01) | | 31.22  (3.18) | | 6.01  (0,60) | | 29.43  (2.30) | | 10.67  (1.50) | | 36.15  (3.74) | | 6.46  (0,68) | | 40.38  (3.15) | | 9.39  (1.26) | | 33.50  (4.42) |
| Avg: 13.43  (0.64) | | | | | | | Avg: 12.34  (0.65) | | | | | | | | Avg: 12.10  (0.69) | | | | | | |
| *Across*  *Comparison* | D2003 = D1993 / D2003 = D1998 / D1993 = D1998 | | | | | | | | | | | | | | | | | | | | | |
| *Bankruptcy*  *(%)* | 1.07  (0.26) | 9.03  (1.43) | | 1.54  (0.38) | | 6.00  (1.73) | | 1.01  (0.23) | | 8.08  (1.34) | | 0.11  (1.10) | | 9.22  (2.36) | | 1.41  (0.36) | | 11.19  (2.03) | | 0.77  (0.31) | | 4.87  (1.78) |
| Avg: 2.67  (0.30) | | | | | | | Avg: 2.48  (0.30) | | | | | | | | Avg: 2.40  (0.32) | | | | | | |
| *Across Comparison* | D2003 = D1993 / D2003 = D1998 / D1993 = D1998 | | | | | | | | | | | | | | | | | | | | | |
| *Judgments*  *(%)* | 3.05  (0.46) | 12.67  (1.63) | | 3.37  (0.58) | | 11.28  (2.16) | | 2.41  (0.38) | | 6.34  (1.16) | | 2.71  (0.86) | | 13.73  (2.82) | | 0.79  (0.22) | | 5.93  (1.51) | | 2.74  (0.82) | | 6.67  (2.16) |
| Avg: 5.07  (0.40) | | | | | | | Avg: 3.79  (0.38) | | | | | | | | Avg: 2.17  (0.33) | | | | | | |
| *Across Comparison* | D2003 ≠ D1993\*\*\* / D2003 ≠ D1998\*\*\* / D1993 ≠ D1998\*\* | | | | | | | | | | | | | | | | | | | | | |
| ***Firm Characteristics*** |  |  | |  | |  | |  | |  | |  | |  | |  | |  | |  | |  |
| *Salesc*  *(Millions)* | 0.82  (0.04) | 0.47  (0.03) | | 2.63  (0.12) | | 0.75  (0.07) | | 1.04  (0.08) | | 0.35  (0.03) | | 2.17  (0.25) | | 0.77  (0.09) | | 0.60  (0.03) | | 0.22  (0.01) | | 2.33  (0.12) | | 0.67  (0.08) |
| Avg: 1.27  (0.04) | | | | | | | Avg: 1.11  (0.06) | | | | | | | | Avg: 1.07  (0.04) | | | | | | |
| *Across Comparison* | D2003 ≠ D1993\*\*\* / D2003 = D1998 / D1993 ≠ D1998\*\* | | | | | | | | | | | | | | | | | | | | | |
| *Profitc*  *(Millions)* | 0.08  (0.01) | 0.02  (0.01) | | 0.12  (0.05) | | 0.02  (0.11) | | 0.13  (0.01) | | 0.09  (0.03) | | 0.27  (0.03) | | 0.02  (0.05) | | 0.14  (0.02) | | 0.01  (0.00) | | 0.30  (0.03) | | 0.06  (0.01) |
| Avg: 0.08  (0.01) | | | | | | | Avg: 0.14  (0.01) | | | | | | | | Avg: 0.17  (0.01) | | | | | | |
| *Across Comparison* | D2003 ≠ D1993\*\*\* / D2003 = D1998 / D1993 ≠ D1998\*\*\* | | | | | | | | | | | | | | | | | | | | | |
| *Net Worthc*  *(Millions)* | 0.19  (0.01) | 0.06  (0.01) | | 0.50  (0.04) | | 0.11  (0.02) | | 0.22  (0.02) | | 0.03  (0.02) | | 0.22  (0.04) | | 0.06  (0.07) | | 0.18  (0.02) | | 0.02  (0.02) | | 0.45  (0.03) | | 0.01  (0.10) |
| Avg: 0.26  (0.01) | | | | | | | Avg: 0.18  (0.01) | | | | | | | | Avg: 0.23  (0.02) | | | | | | |
| *Across Comparison* | D2003 = D1993 / D2003 ≠ D1998\* / D1993 ≠ D1998\*\*\* | | | | | | | | | | | | | | | | | | | | | |
| *Total Employment* | 6.20  (0.18) | 4.52  (0.18) | | 14.90  (0.26) | | 7.83  (0.42) | | 8.20  (0.33) | | 5.32  (0.45) | | 13.10  (0.75) | | 8.19  (0.66) | | 5.80  (0.16) | | 4.58  (0.29) | | 15.25  (0.43) | | 8.83  (0.92). |
| Avg: 8.49  (0.12) | | | | | | | Avg: 8.57  (0.25) | | | | | | | | Avg: 8.57  (0.16) | | | | | | |
| *Across Comparison* | D2003 = D1993 / D2003 = D1998 / D1993 = D1998 | | | | | | | | | | | | | | | | | | | | | |
| *Firm Age*  *(Years)* | 15.69  (0.34) | 11.33  (0.41) | | 14.16  (0.34) | | 10.22  (0.56) | | 14.67  (0.30) | | 11.04  (0.47) | | 12.15  (0.41) | | 9.46  (0.56) | | 15.01  (0.31) | | 9.17 (0.45) | | 15.39  (0.39) | | 10.91  (0.81) |
| Avg: 14.28  (0.21) | | | | | | | Avg: 13.36  (0.21) | | | | | | | | Avg: 14.32  (0.22) | | | | | | |
| *Across Comparison* | D2003 = D1993 / D2003 ≠ D1998\*\*\* / D1993 ≠ D1998\*\*\* | | | | | | | | | | | | | | | | | | | | | |
| *Sole Proprietorship (%)* | 48.84  (1.31) | 48.10  (2.41) | | 31.21  (1.57) | | 39.60  (3.46) | | 52.21  (1.26) | | 50.66  (2.51) | | 37.97  (2.36) | | 49.19  (3.84) | | 50.52  (1.35) | | 56.88  (3.20) | | 30.50  (1.78) | | 34.46  (4.56) |
| Avg: 43.21  (0.91) | | | | | | | Avg: 49.40  (0.98) | | | | | | | | Avg: 44.58  (1.00) | | | | | | |
| *Across Comparison* | D2003 = D1993 / D2003 ≠ D1998\*\*\* / D1993 ≠ D1998\*\*\* | | | | | | | | | | | | | | | | | | | | | |
| *Partnership*  *(%)* | 8.58  (0.75) | 6.57  (1.26) | | 8.55  (0.95) | | 4.24  (1.38) | | 6.50  (0.65) | | 6.99  (1.34) | | 8.46  (1.44) | | 7.46  (1.86) | | 9.18  (0.85) | | 7.07  (1.77) | | 8.67  (1.08) | | 6.67  (2.06) |
| Avg: 8.00  (0.50) | | | | | | | Avg: 6.97  (0.52) | | | | | | | | Avg: 8.70  (0.60) | | | | | | |
| *Across Comparison* | D2003 = D1993 / D2003 ≠ D1998\*\* / D1993 = D1998 | | | | | | | | | | | | | | | | | | | | | |
| *Corporation*  *(%)* | 42.56  (1.28) | 45.31  (2.36) | | 60.22  (1.63) | | 56.15  (3.47) | | 41.27  (1.23) | | 42.33  (2.48) | | 53.55  (2.39) | | 43.33  (3.78) | | 40.28  (1.30) | | 36.03  (3.04) | | 60.81  (1.84) | | 58.86  (4.61) |
| Avg: 48.77  (0.90) | | | | | | | Avg: 43.62  (0.97) | | | | | | | | Avg: 46.72  (0.99) | | | | | | |
| *Across Comparison* | D2003 = D1993 / D2003 ≠ D1998\*\* / D1993 ≠ D1998\*\*\* | | | | | | | | | | | | | | | | | | | | | |
| *Firm Mining or Construction*  *(%)* | 13.56  (0.94) | 13.71  (1.77) | | 15.08  (1.23) | | 16.24  (2.74) | | 11.41  (0.87) | | 12.16  (1.77) | | 13.23  (1.66) | | 12.07  (2.48) | | 9.91  (0.86) | | 11.09  (2.07) | | 15.80  (1.57) | | 11.72  (3.03) |
| Avg: 14.18  (0.67) | | | | | | | Avg: 11.87  (0.68) | | | | | | | | Avg: 11.84  (0.71) | | | | | | |
| *Across Comparison* | D2003 ≠ D1993\*\* / D2003 = D1998 / D1993 ≠ D1998\*\* | | | | | | | | | | | | | | | | | | | | | |
| *Firm Manufacturing*  *(%)* | 7.64  (0.67) | 5.98  (1.05) | | 9.48  (0.87) | | 9.88  (2.05) | | 7.19  (0.63) | | 9.72  (1.52) | | 9.42  (1.35) | | 12.85  (2.70) | | 6.11  (0.61) | | 4.73  (1.16) | | 9.49  (0.95) | | 9.15  (2.64) |
| Avg: 8.05  (0.46) | | | | | | | Avg: 8.32  (0.53) | | | | | | | | Avg: 7.10  (0.47) | | | | | | |
| *Across Comparison* | D2003 = D1993 / D2003 ≠ D1998\* / D1993 = D1998 | | | | | | | | | | | | | | | | | | | | | |
| *Firm Transportation, Communications, Electric, Gas, or Sanitation*  *(%)* | 2.13  (0.34) | 3.78  (0.90) | | 3.05  (0.49) | | 4.21  (1.49) | | 3.08  (0.45) | | 4.64  (1.12) | | 5.39  (1.04) | | 3.00  (1.49) | | 3.41  (0.59) | | 2.94  (1.24) | | 4.22  (0.72) | | 4.60  (2.05) |
| Avg: 2.76  (0.27) | | | | | | | Avg: 3.70  (0.38) | | | | | | | | Avg: 3.65  (0.42) | | | | | | |
| *Across Comparison* | D2003 ≠ D1993\* / D2003 = D1998 / D1993 ≠ D1998\*\* | | | | | | | | | | | | | | | | | | | | | |
| *Firm*  *Wholesale Trade*  *(%)* | 6.36  (0.61) | 10.76  (1.50) | | 10.60  (0.99) | | 10.62  (2.24) | | 7.16  (0.67) | | 6.39  (1.26) | | 9.13  (1.47) | | 3.96  (1.47) | | 5.28  (0.58) | | 4.67  (1.41) | | 7.88  (0.87) | | 3.39  (1.36) |
| Avg: 8.46  (0.49) | | | | | | | Avg: 7.16  (0.53) | | | | | | | | Avg: 5.88  (0.44) | | | | | | |
| *Across Comparison* | D2003 ≠ D1993\*\*\* / D2003 ≠ D1998\* / D1993 ≠ D1998\* | | | | | | | | | | | | | | | | | | | | | |
| *Firm*  *Retail Trade*  *(%)* | 21.71  (1.08) | 19.99  (1.97) | | 21.85  (1.38) | | 24.79  (3.12) | | 18.95  (0.99) | | 20.07  (2.03) | | 18.93  (1.87) | | 16.77  (2.81) | | 18.38  (1.02) | | 18.65  (2.44) | | 17.21  (1.42) | | 25.27  (4.08) |
| Avg: 21.70  (0.76) | | | | | | | Avg: 18.98  (0.77) | | | | | | | | Avg: 18.40  (0.77) | | | | | | |
| *Across Comparison* | D2003 ≠ D1993\*\*\* / D2003 = D1998 / D1993 ≠ D1998\*\* | | | | | | | | | | | | | | | | | | | | | |
| *Firm Finance, Insurance, or Real Estate*  *(%)* | 8.11  (0.67) | 5.24  (1.06) | | 7.01  (0.81) | | 3.46  (1.07) | | 6.92  (0.63) | | 4.39  (1.04) | | 7.62  (1.35) | | 4.52  (1.59) | | 8.59  (0.83) | | 3.71  (1.15) | | 6.31  (0.84) | | 3.94  (1.66) |
| Avg: 7.09  (0.45) | | | | | | | Avg: 6.49  (0.48) | | | | | | | | Avg: 7.20  (0.54) | | | | | | |
| *Across Comparison* | D2003 = D1993 / D2003 = D1998 / D1993 = D1998 | | | | | | | | | | | | | | | | | | | | | |
| *Firm Service*  *(%)* | 40.47  (1.32) | 40.50  (2.43) | | 32.89  (1.60) | | 30.77  (3.35) | | 45.24  (1.27) | | 42.60  (2.47) | | 36.24  (2.32) | | 46.79  (3.83) | | 48.29  (1.36) | | 54.18  (3.24) | | 39.07  (1.83) | | 41.89  (4.57) |
| Avg: 37.73  (0.91) | | | | | | | Avg: 43.43  (0.98) | | | | | | | | Avg: 45.90  (1.01) | | | | | | |
| *Across Comparison* | D2003 ≠ D1993\*\*\* / D2003 ≠ D1998\* / D1993 ≠ D1998\*\*\* | | | | | | | | | | | | | | | | | | | | | |
| ***Owner***  ***Characteristics*** |  |  | |  | |  | |  | |  | |  | |  | |  | |  | |  | |  |
| *High school Dropout*  *(%)* | 5.62  (0.61) | 5.07  (1.04) | | 2.55  (0.52) | | 4.73  (1.56) | | 2.56  (0.42) | | 5.31  (1.34) | | 3.79  (0.94) | | 4.73  (1.52) | | 1.56  (0.33) | | 1.36  (0.65) | | 2.69  (0.67) | | 0.00 |
| Avg: 4.62  (0.38) | | | | | | | Avg: 3.33  (0.38) | | | | | | | | Avg: 1.79  (0.27) | | | | | | |
| *Across Comparison* | D2003 ≠ D1993\*\*\* / D2003 ≠ D1998\*\*\* / D1993 ≠ D1998\*\* | | | | | | | | | | | | | | | | | | | | | |
| *High School Graduate*  *(%)* | 25.62  (1.16) | 24.78  (2.17) | | 20.12  (1.35) | | 17.55  (2.84) | | 19.49  (1.02) | | 21.04  (2.06) | | 21.15  (2.03) | | 21.56  (3.19) | | 18.14  (1.08) | | 21.57  (2.71) | | 19.24  (1.53) | | 24.35  (4.26) |
| Avg: 23.44  (0.79) | | | | | | | Avg: 20.14  (0.80) | | | | | | | | Avg: 19.11  (0.82) | | | | | | |
| *Across Comparison* | D2003 ≠ D1993\*\*\* / D2003 = D1998 / D1993 ≠ D1998\*\*\* | | | | | | | | | | | | | | | | | | | | | |
| *Some College (%)* | 23.50  (1.13) | 25.37  (2.11) | | 26.63  (1.49) | | 33.96  (3.39) | | 28.15  (1.15) | | 30.64  (2.31) | | 26.00  (2.12) | | 27.52  (3.46) | | 29.69  (1.24) | | 41.17  (3.28) | | 33.22  (1.80) | | 39.45  (4.39) |
| Avg: 25.32  (0.81) | | | | | | | Avg: 28.13  (0.89) | | | | | | | | Avg: 32.36  (0.95) | | | | | | |
| *Across Comparison* | D2003 ≠ D1993\*\*\* / D2003 ≠ D1998\*\*\* / D1993 ≠ D1998\*\* | | | | | | | | | | | | | | | | | | | | | |
| *College Degree (%)* | 24.58  (1.14) | 25.58  (2.16) | | 29.95  (1.49) | | 25.72  (3.04) | | 30.73  (1.17) | | 27.15  (2.23) | | 31.00  (2.21) | | 29.74  (3.49) | | 28.14  (1.24) | | 20.71  (2.67) | | 25.10  (1.57) | | 24.30  (3.85) |
| Avg: 26.30  (0.81) | | | | | | | Avg: 30.16  (0.90) | | | | | | | | Avg: 26.31  (0.89) | | | | | | |
| *Across Comparison* | D2003 = D1993 / D2003 ≠ D1998\*\*\* / D1993 ≠ D1998\*\*\* | | | | | | | | | | | | | | | | | | | | | |
| *Postgraduate Degree*  *(%)* | 20.66  (1.09) | 19.17  (1.98) | | 20.73  (1.33) | | 18.02  (2.67) | | 19.05  (0.99) | | 15.83  (1.82) | | 18.04  (1.83) | | 16.42  (2.76) | | 22.44  (1.11) | | 15.17  (2.21) | | 19.72  (1.46) | | 11.88  (3.18) |
| Avg: 20.29  (0.75) | | | | | | | Avg: 18.22  (0.75) | | | | | | | | Avg: 20.40  (0.80) | | | | | | |
| *Across Comparison* | D2003 = D1993 / D2003 ≠ D1998\*\* / D1993 ≠ D1998\* | | | | | | | | | | | | | | | | | | | | | |
| *Owner Age* | 51.16  (0.32) | 47.18  (0.50) | | 48.12  (0.33) | | 45.96  (0.70) | | 51.49  (0.29) | | 48.82  (0.47) | | 48.04  (0.48) | | 45.68  (0.75) | | 52.97  (0.32) | | 46.91  (0.68) | | 50.99  (0.38) | | 47.86  (1.05) |
| Avg: 49.40  (0.21) | | | | | | | Avg: 50.13  (0.22) | | | | | | | | Avg: 51.52  (0.23) | | | | | | |
| *Across Comparison* | D2003 ≠ D1993\*\*\* / D2003 ≠ D1998\*\*\* / D1993 ≠ D1998\*\* | | | | | | | | | | | | | | | | | | | | | |
| *Business Experience*  *(Years)* | 19.95  (0.31) | 16.42  (0.48) | | 18.80  (0.33) | | 16.32  (0.62) | | 19.30  (0.31) | | 16.07  (0.48) | | 17.32  (0.45) | | 14.93  (0.65) | | 19.95  (0.32) | | 14.91  (0.64) | | 20.03  (0.40) | | 16.66  (0.97) |
| Avg: 18.88  (0.20) | | | | | | | Avg: 18.19  (0.22) | | | | | | | | Avg: 19.30  (0.23) | | | | | | |
| *Across Comparison* | D2003 = D1993 / D2003 ≠ D1998\*\*\* / D1993 ≠ D1998\*\* | | | | | | | | | | | | | | | | | | | | | |
| ***Loan***  ***Characteristics*** |  |  | |  | |  | |  | |  | |  | |  | |  | |  | |  | |  |
| *Loan*  *New Line of Credit*  *(%)* | N/A | N/A | | 52.44  (1.66) | | 40.96  (3.57) | | N/A | | N/A | | 30.11  (2.21) | | 56.23  (3.73) | | N/A | | N/A | | 59.85  (1.83) | | 34.23  (8.78) |
| Avg: 50.30  (1.51) | | | | | | | Avg: 37.36  (1.97) | | | | | | | | Avg: 58.79  (1.80) | | | | | | |
| *Across Comparison* | D2003 ≠ D1993\*\*\* / D2003 ≠ D1998\*\*\* / D1993 ≠ D1998\*\*\* | | | | | | | | | | | | | | | | | | | | | |
| *Loan*  *Capital Lease (%)* | N/A | N/A | | 2.51  (0.51) | | 2.22  (0.80) | | N/A | | N/A | | 5.37  (1.08) | | 8.23  (2.19) | | N/A | | N/A | | 1.39  (0.51) | | 0.14  (0.01) |
| Avg: 2.46  (0.44) | | | | | | | Avg: 6.17  (0.99) | | | | | | | | Avg: 1.33  (0.49) | | | | | | |
| *Across Comparison* | D2003 ≠ D1993\* / D2003 ≠ D1998\*\*\* / D1993 ≠ D1998\*\*\* | | | | | | | | | | | | | | | | | | | | | |
| *Loan*  *Mortgage*  *(%)* | N/A | N/A | | 11.27  (1.06) | | 10.80  (2.35) | | N/A | | N/A | | 12.30  (1.61) | | 6.58  (1.79) | | N/A | | N/A | | 10.07  (1.09) | | 20.56  (7.40) |
| Avg: 11.19  (0.97) | | | | | | | Avg: 10.71  (1.27) | | | | | | | | Avg: 10.50  (1.09) | | | | | | |
| *Across Comparison* | D2003 = D1993 / D2003 = D1998 / D1993 = D1998 | | | | | | | | | | | | | | | | | | | | | |
| *Loan*  *Vehicle*  *(%)* | N/A | N/A | | 9.58  (1.01) | | 4.79  (1.58) | | N/A | | N/A | | 19.69  (1.96) | | 4.11  (1.54) | | N/A | | N/A | | 11.70  (1.21) | | 19.80  (9.75) |
| Avg: 8.69  (0.88) | | | | | | | Avg: 15.37  (1.50) | | | | | | | | Avg: 12.03  (1.23) | | | | | | |
| *Across Comparison* | D2003 ≠ D1993\*\* / D2003 ≠ D1998\* / D1993 ≠ D1998\*\*\* | | | | | | | | | | | | | | | | | | | | | |
| *Loan*  *Equipment*  *(%)* | N/A | N/A | | 10.06  (1.00) | | 11.40  (2.26) | | N/A | | N/A | | 15.58  (1.64) | | 7.77  (1.79) | | N/A | | N/A | | 9.40  (1.05) | | 14.81  (5.29) |
| Avg: 10.31  (0.91) | | | | | | | Avg: 13.41  (1.29) | | | | | | | | Avg: 9.63  (1.04) | | | | | | |
| *Across Comparison* | D2003 = D1993 / D2003 ≠ D1998\*\* / D1993 ≠ D1998\* | | | | | | | | | | | | | | | | | | | | | |
| *Loan*  *Other*  *(%)* | N/A | N/A | | 14.10  (1.17) | | 29.80  (3.40) | | N/A | | N/A | | 16.92  (1.86) | | 17.05  (2.89) | | N/A | | N/A | | 7.56  (1.17) | | 10.42  (4.34) |
| Avg: 17.03  (1.15) | | | | | | | Avg: 16.95  (1.56) | | | | | | | | Avg: 7.68  (1.14) | | | | | | |
| *Across Comparison* | D2003 ≠ D1993\*\*\* / D2003 ≠ D1998\*\*\* / D1993 = D1998 | | | | | | | | | | | | | | | | | | | | | |
| ***Lender***  ***Characteristics*** |  |  | |  | |  | |  | |  | |  | |  | |  | |  | |  | |  |
| *Lender Commercial Bank*  *(%)* | N/A | N/A | | 80.33  (1.35) | | 81.22  (2.93) | | N/A | | N/A | | 68.15  (2.28) | | 71.34  (3.52) | | N/A | | N/A | | 74.16  (1.70) | | 82.01  (3.24) |
| Avg: 80.49  (1.22) | | | | | | | Avg: 69.03  (1.91) | | | | | | | | Avg: 75.27  (1.55) | | | | | | |
| *Across Comparison* | D2003 ≠ D1993\*\*\* / D2003 ≠ D1998\*\* / D1993 ≠ D1998\*\*\* | | | | | | | | | | | | | | | | | | | | | |
| *Lender*  *Savings Bank, Loan Association or Credit Union (%)* | N/A | N/A | | 7.02  (0.92) | | 5.80  (1.85) | | N/A | | N/A | | 9.03  (1.46) | | 6.98  (1.93) | | N/A | | N/A | | 11.84  (1.23) | | 8.00  (2.32) |
| Avg: 6.78  (0.82) | | | | | | | Avg: 8.46  (1.18) | | | | | | | | Avg: 11.30  (1.11) | | | | | | |
| *Across Comparison* | D2003 ≠ D1993\*\*\* / D2003 ≠ D1998\* / D1993 = D1998 | | | | | | | | | | | | | | | | | | | | | |
| *Lender*  *Finance Company*  *(%)* | N/A | N/A | | 5.25  (0.73) | | 3.36  (1.18) | | N/A | | N/A | | 12.30  (1.58) | | 6.33  (1.77) | | N/A | | N/A | | 8.47  (1.04) | | 5.81  (2.00) |
| Avg: 4.90  (0.64) | | | | | | | Avg: 10.65  (1.25) | | | | | | | | Avg: 8.09  (0.94) | | | | | | |
| *Across Comparison* | D2003 ≠ D1993\*\*\* / D2003 = D1998 / D1993 ≠ D1998\*\*\* | | | | | | | | | | | | | | | | | | | | | |
| *Lender*  *Other*  *(%)* | N/A | N/A | | 7.39  (0.90) | | 9.55  (2.22) | | N/A | | N/A | | 10.51  (1.51) | | 15.34  (2.92) | | N/A | | N/A | | 5.51  (1.07) | | 4.16  (1.45) |
| Avg: 7.79  (0.83) | | | | | | | Avg: 11.85  (1.37) | | | | | | | | Avg: 5.32  (0.94) | | | | | | |
| *Across Comparison* | D2003 ≠ D1993\*\* / D2003 ≠ D1998\*\*\* / D1993 ≠ D1998\*\* | | | | | | | | | | | | | | | | | | | | | |
| *Lender’s Relation with the Firm*  *(Year)* | N/A | N/A | | 7.79  (0.25) | | 5.54  (0.46) | | N/A | | N/A | | 5.55  (0.36) | | 3.98  (0.38) | | N/A | | N/A | | 8.18  (0.32) | | 4.79  (0.59) |
| Avg: 7.37  (0.22) | | | | | | | Avg: 5.11  (0.28) | | | | | | | | Avg: 7.70  (0.29) | | | | | | |
| *Across Comparison* | D2003 = D1993 / D2003 ≠ D1998\*\*\* / D1993 ≠ D1998\*\*\* | | | | | | | | | | | | | | | | | | | | | |
| *Primary Lender*  *Commercial Bank*  *(%)* | 81.91  (1.03) | 75.40  (2.21) | | 86.28  (1.19) | | 79.30  (2.92) | | 81.24  (0.99) | | 78.67  (1.98) | | 85.45  (1.73) | | 77.43  (3.22) | | 93.53  (0.68) | | 92.19  (1.63) | | 90.47  (1.05) | | 82.48  (4.14) |
| Avg: 82.02  (0.72) | | | | | | | Avg: 81.30  (0.77) | | | | | | | | Avg: 91.92  (0.56) | | | | | | |
| *Across Comparison* | D2003 ≠ D1993\*\*\* / D2003 ≠ D1998\*\*\* / D1993 = D1998 | | | | | | | | | | | | | | | | | | | | | |
| *Primary Lender*  *Savings Bank, Loan Association or Credit Union*  *(%)* | 9.49  (0.79) | 12.10  (1.58) | | 8.86  (1.01) | | 6.08  (1.71) | | 10.75  (0.80) | | 9.24  (1.41) | | 6.79  (1.22) | | 9.29  (2.28) | | 6.10  (0.64) | | 7.02  (1.53) | | 9.00  (1.02) | | 14.38  (3.78) |
| Avg: 9.47  (0.56) | | | | | | | Avg: 9.76  (0.59) | | | | | | | | Avg: 7.44  (0.52) | | | | | | |
| *Across Comparison* | D2003 ≠ D1993\*\*\* / D2003 = D1998 / D1993 = D1998 | | | | | | | | | | | | | | | | | | | | | |
| *Primary Lender*  *Finance Company*  *(%)* | 0.67  (0.20) | 2.51  (0.77) | | 2.17  (0.45) | | 2.32  (1.16) | | 1.06  (0.24) | | 2.58  (0.76) | | 2.96  (0.81) | | 4.07  (1.55) | | 0.00 | | 0.00d  (0.02) | | 0.39  (0.21) | | 1.64  (1.63) |
| Avg: 1.47  (0.21) | | | | | | | Avg: 1.81  (0.25) | | | | | | | | Avg: 0.19  (0.10) | | | | | | |
| *Across Comparison* | D2003 ≠ D1993\*\*\* / D2003 ≠ D1998\*\*\* / D1993 = D1998 | | | | | | | | | | | | | | | | | | | | | |
| *Primary Lender*  *Other*  *(%)* | 3.74  (0.51) | 5.28  (1.08) | | 2.66  (0.55) | | 10.16  (2.1) | | 2.22  (0.35) | | 5.34  (1.06) | | 4.78  (1.08) | | 9.19  (2.16) | | 0.00 | | 0.43  (0.34) | | 0.12  (0.11) | | 1.48  (1.39) |
| Avg: 4.08  (0.37) | | | | | | | Avg: 3.58  (0.35) | | | | | | | | Avg: 0.15  (0.08) | | | | | | |
| *Across Comparison* | D2003 ≠ D1993\*\*\* / D2003 ≠ D1998\*\*\* / D1993 = D1998 | | | | | | | | | | | | | | | | | | | | | |
| ***Geographic Characteristics*** |  | |  | |  | |  | |  | |  | |  | |  | |  | |  | |  |  |
| *MSA*  *(%)* | 78.40  (0.17) | | 88.60  (0.36) | | 73.38  (0.29) | | 84.45  (0.59) | | 80.34  (1.03) | | 82.87  (1.91) | | 74.65  (2.12) | | 81.42  (3.10) | | 80.58  (0.64) | | 84.99  (1.39) | | 74.13  (1.05) | 85.84  (1.94) |
| Avg: 78.87  (0.14) | | | | | | | | Avg: 79.85  (0.81) | | | | | | | | Avg: 79.41  (0.50) | | | | | |
| *Across Comparison* | D2003 = D1993 / D2003 = D1998 / D1993 = D1998 | | | | | | | | | | | | | | | | | | | | | |
| *East North Central*  *(%)* | 15.68  (0.20) | | 12.71  (0.64) | | 19.14  (0.35) | | 11.70  (0.83) | | 15.65  (0.91) | | 13.83  (1.74) | | 12.84  (1.59) | | 9.26  (2.30) | | 13.63  (0.39) | | 10.69  (0.78) | | 17.30  (0.71) | 9.57  (0.86) |
| Avg: 15.96  (0.18) | | | | | | | | Avg: 14.49  (0.69) | | | | | | | | Avg: 14.20  (0.31) | | | | | |
| *Across Comparison* | D2003 ≠ D1993\*\*\* / D2003 = D1998 / D1993 ≠ D1998\*\* | | | | | | | | | | | | | | | | | | | | | |
| *East South Central*  *(%)* | 3.84  (0.11) | | 3.80  (0.34) | | 6.75  (0.20) | | 2.25  (0.37) | | 5.74  (0.60) | | 4.44  (1.11) | | 6.62  (1.20) | | 2.56  (1.32) | | 5.29  (0.26) | | 5.47  (0.57) | | 5.02  (0.24) | 6.03  (0.53) |
| Avg: 4.55  (0.09) | | | | | | | | Avg: 5.48  (0.46) | | | | | | | | Avg: 5.27  (0.17) | | | | | |
| *Across Comparison* | D2003 ≠ D1993\* / D2003 = D1998 / D1993 ≠ D1998\* | | | | | | | | | | | | | | | | | | | | | |
| *Middle Atlantic*  *(%)* | 15.53  (0.27) | | 18.96  (0.69) | | 12.36  (0.34) | | 19.03  (0.88) | | 14.28  (0.95) | | 14.44  (1.89) | | 10.08  (1.50) | | 15.77  (2.81) | | 14.08  (0.43) | | 17.44  (0.88) | | 11.36  (0.49) | 15.65  (1.07) |
| Avg: 15.37  (0.20) | | | | | | | | Avg: 13.70  (0.72) | | | | | | | | Avg: 13.71  (0.30) | | | | | |
| *Across Comparison* | D2003 ≠ D1993\*\* / D2003 = D1998 / D1993 ≠ D1998\*\* | | | | | | | | | | | | | | | | | | | | | |
| *Mountain*  *(%)* | 5.82  (0.13) | | 4.18  (0.29) | | 6.38  (0.21) | | 6.87  (0.45) | | 6.36  (0.63) | | 5.03  (1.02) | | 7.83  (1.29) | | 10.24  (2.23) | | 7.51  (0.31) | | 6.37  (0.78) | | 8.44  (0.46) | 7.93  (0.51) |
| Avg: 5.80  (0.10) | | | | | | | | Avg: 6.64  (0.49) | | | | | | | | Avg: 7.69  (0.23) | | | | | |
| *Across Comparison* | D2003 ≠ D1993\*\*\* / D2003 ≠ D1998\*/ D1993 = D1998 | | | | | | | | | | | | | | | | | | | | | |
| *New England*  *(%)* | 7.23  (0.10) | | 8.48  (0.49) | | 5.56  (0.24) | | 7.10  (0.77) | | 5.21  (0.60) | | 5.14  (1.15) | | 5.68  (1.17) | | 4.41  (1.51) | | 6.42  (0.23) | | 5.71  (0.51) | | 5.57  (0.39) | 3.78  (0.48) |
| Avg: 6.94  (0.12) | | | | | | | | Avg: 5.22  (0.46) | | | | | | | | Avg: 5.97  (0.18) | | | | | |
| *Across Comparison* | D2003 ≠ D1993\*\* / D2003 = D1998 / D1993 ≠ D1998\*\*\* | | | | | | | | | | | | | | | | | | | | | |
| *Pacific*  *(%)* | 19.22  (0.28) | | 22.32  (0.71) | | 14.27  (0.39) | | 18.81  (0.71) | | 18.92  (0.97) | | 24.88  (2.16) | | 17.85  (1.88) | | 24.11  (3.37) | | 18.77  (0.41) | | 17.70  (0.81) | | 12.83  (0.60) | 14.76  (1.50) |
| Avg: 18.26  (0.21) | | | | | | | | Avg: 20.00  (0.78) | | | | | | | | Avg: 16.74  (0.31) | | | | | |
| *Across Comparison* | D2003 ≠ D1993\*\*\* / D2003 ≠ D1998\*\*\* / D1993 ≠ D1998\*\* | | | | | | | | | | | | | | | | | | | | | |
| *South Atlantic*  *(%)* | 14.94  (0.22) | | 13.93  (0.66) | | 14.64  (0.35) | | 16.86  (0.58) | | 16.43  (0.91) | | 18.21  (1.88) | | 16.74  (1.77) | | 17.49  (2.87) | | 18.56  (0.42) | | 19.72  (0.96) | | 17.63  (0.61) | 30.63  (1.79) |
| Avg: 14.83  (0.19) | | | | | | | | Avg: 16.83  (0.72) | | | | | | | | Avg: 18.99  (0.32) | | | | | |
| *Across Comparison* | D2003 ≠ D1993\*\*\* / D2003 ≠ D1998\*\* / D1993 ≠ D1998\*\* | | | | | | | | | | | | | | | | | | | | | |
| West North Central  *(%)* | 7.96  (0.12) | | 5.52  (0.27) | | 10.27  (0.23) | | 6.55  (0.26) | | 7.32  (0.66) | | 5.22  (1.19) | | 9.67  (1.47) | | 4.72  (1.76) | | 6.06  (0.24) | | 4.65  (0.26) | | 9.82  (0.45) | 3.19  (0.84) |
| Avg: 8.16  (0.10) | | | | | | | | Avg: 7.22  (0.52) | | | | | | | | Avg: 6.88  (0.20) | | | | | |
| *Across Comparison* | D2003 ≠ D1993\*\*\* / D2003 = D1998 / D1993 = D1998 | | | | | | | | | | | | | | | | | | | | | |
| West South Central  *(%)* | 9.74  (0.19) | | 10.04  (0.56) | | 10.59  (0.26) | | 10.77  (0.86) | | 10.05  (0.74) | | 8.77  (1.37) | | 12.65  (1.53) | | 11.41  (2.18) | | 9.62  (0.31) | | 12.21  (0.99) | | 11.98  (0.59) | 8.40  (0.67) |
| Avg: 10.09  (0.15) | | | | | | | | Avg: 10.37  (0.58) | | | | | | | | Avg: 10.52  (0.26) | | | | | |
| *Across Comparison* | D2003 = D1993 / D2003 = D1998 / D1993 = D1998 | | | | | | | | | | | | | | | | | | | | | |

*Notes*. There are a few variables (e.g., Exper) that have missing values, but their ratios are less than 1%.

a This is calculated based on a linear regression in which each variable in Table A.1 is used as the dependent variable and the survey year dummy variables are used as the independent variables.

b Numbers in parenthesis are standard deviations for variables.

c These nominal variables are converted to real variables, based on the year of 2003 as a base year.

d They are not equal to zero, but virtually close to it.

\* 10% significance level.

\*\* 5% significance level.

\*\*\*1% significance level.

**Table A3.** Estimated results for the full model of loan denial based on a standard probit approach

|  |  |  |  |
| --- | --- | --- | --- |
| **Independent variable** | **Marginal effect** | **Standard error** | **P value** |
| African American | 0.1552 | 0.0451 | 0.001 |
| Hispanic | 0.0495 | 0.0257 | 0.054 |
| Other (e.g., Pacific Islander, Native American) | 0.0977 | 0.0315 | 0.002 |
| White women | -0.0097 | 0.0177 | 0.582 |
| Delinquent\_personal | 0.0979 | 0.0229 | 0.000 |
| Judgement | 0.0736 | 0.0328 | 0.025 |
| Owner\_bankrupt | 0.2906 | 0.0554 | 0.000 |
| Log\_sales | -0.0776 | 0.0161 | 0.000 |
| Log\_profit | -0.0672 | 0.0241 | 0.005 |
| Log\_networth | -0.1406 | 0.0640 | 0.028 |
| Firm\_age | -0.0037 | 0.0014 | 0.010 |
| Firm\_age\_square | 0.0000 | 0.0000 | 0.012 |
| Totemp | 1.2176 | 0.5079 | 0.017 |
| Totemp\_square | -2.9001 | 1.6177 | 0.073 |
| Proprietorship | 0.0200 | 0.0154 | 0.195 |
| Partnership | -0.0427 | 0.0211 | 0.043 |
| Business\_delinquent | 0.0746 | 0.0178 | 0.000 |
| Mining | -0.0055 | 0.0204 | 0.786 |
| Manufacture | 0.0138 | 0.0223 | 0.536 |
| Transportation | -0.0358 | 0.0247 | 0.148 |
| Whole\_trade | 0.0035 | 0.0246 | 0.885 |
| Retail\_trade | 0.0226 | 0.0187 | 0.226 |
| Finance | -0.0311 | 0.0252 | 0.218 |
| Lessthanhigh | 0.0194 | 0.0372 | 0.602 |
| Highschool | -0.0086 | 0.0192 | 0.653 |
| Somecollege | 0.0152 | 0.0174 | 0.381 |
| Postgraduate | -0.0151 | 0.0174 | 0.386 |
| Exper | 0.0008 | 0.0009 | 0.384 |
| Owner\_age | -0.0013 | 0.0008 | 0.099 |
| Loan\_captial | 0.0119 | 0.0341 | 0.727 |
| Loan\_mortgage | -0.0002 | 0.0211 | 0.727 |
| Loan\_vehicle | -0.0571 | 0.0212 | 0.007 |
| Loan\_equipment | -0.0090 | 0.0203 | 0.657 |
| Loan\_other | 0.0333 | 0.0191 | 0.081 |
| Lender\_commercial | 0.0562 | 0.0233 | 0.016 |
| Lender\_finance | -0.0349 | 0.0326 | 0.284 |
| Lender\_other | 0.0348 | 0.0381 | 0.362 |
| Year\_withlender | -0.0015 | 0.0011 | 0.172 |
| Primary\_savings | 0.0478 | 0.0309 | 0.122 |
| Primary\_finance | 0.0959 | 0.0464 | 0.039 |
| Primary\_other | 0.0965 | 0.0436 | 0.027 |
| MSA | 0.0489 | 0.0144 | 0.001 |
| East\_Ncentral | -0.0488 | 0.0189 | 0.010 |
| East\_Scentral | -0.0567 | 0.0236 | 0.017 |
| Mid\_Atlan | 0.0190 | 0.0227 | 0.402 |
| Mountain | 0.0059 | 0.0248 | 0.811 |
| New\_England | -0.0155 | 0.0281 | 0.581 |
| South\_Atlan | 0.0314 | 0.0228 | 0.169 |
| West\_Ncentral | -0.0623 | 0.0197 | 0.002 |
| West\_Scentral | -0.0113 | 0.0227 | 0.617 |
| Survey\_2003 | -0.1242 | 0.0134 | 0.000 |
| Survey\_1998 | 0.0452 | 0.0150 | 0.003 |
| HHI | 0.0276 | 0.0135 | 0.041 |
| N = 4,644 | | | |
| F-statistic = 9.90 | | | |
| Pseudo R squared = 0.27 | | | |

**Table A4.** Coefficients of race dummy variables across the survey years: comparisons

|  |  |  |  |
| --- | --- | --- | --- |
| **Independent variable** | **1993** | **1998** | **2003** |
| African American | 0.1409  (0.0435) | 0.1908  (0.0658) | 0.0994  (0.0662) |
| Across Comparisona | / / | | |
| Hispanic | -0.0173  (0.0433) | 0.2097  (0.0639) | 0.0220  (0.0364) |
| Across Comparison | / \*\*\* / | | |
| Other  (e.g., Pacific Islander, Native American) | 0.0653  (0.0514) | 0.2106  (0.0620) | 0.0685  (0.0380) |
| Across Comparison | / \* / | | |
| White Women | 0.0153  (0.0317) | -0.0271  (0.0415) | 0.0011  (0.0181) |
| Across Comparison | / / | | |
| Firm Characteristics | X | X | X |
| Owner Characteristics | X | X | X |
| Geographic Characteristics | X | X | X |
| SIC Codes | X | X | X |
| Loan Characteristics | X | X | X |
| Lender Characteristics | X | X | X |
| N (Number of Observations) | 1,987 | 952 | 1,673 |
| F-statistic | 4.75 | 4.80 | 3.16 |
| Pseudo R squared | 0.2089 | 0.3209 | 0.3564 |

*Notes*. The coefficients of race dummy variables are based on model 8 in Table 1.

a This shows that the coefficients of African American are within sampling errors.

b Numbers in parenthesis are standard errors for variables.

\* 10% significance level.

\*\* 5% significance level.

\*\*\*1% significance level.