**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 | $β\_{1998} = β\_{2003}$ / $β\_{1998} = β\_{1993}$ / $β\_{1993} = β\_{2003}$ |
| Hispanic | -0.0173(0.0433) | 0.2097(0.0639) | 0.0220(0.0364) |
| Across Comparison | $β\_{1998} = β\_{2003}$ / $β\_{1998} \ne β\_{1993}$\*\*\* / $β\_{1993} = β\_{2003}$ |
| Other (e.g., Pacific Islander, Native American) | 0.0653(0.0514) | 0.2106(0.0620) | 0.0685(0.0380) |
| Across Comparison | $β\_{1998} = β\_{2003}$ / $β\_{1998} \ne β\_{1993}$\* / $β\_{1993} = β\_{2003}$ |
| White Women | 0.0153(0.0317) | -0.0271(0.0415) | 0.0011(0.0181) |
| Across Comparison | $β\_{1998} = β\_{2003}$ / $β\_{1998} = β\_{1993}$ / $β\_{1993} = β\_{2003}$ |
| 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.