

Women's Access to Credit: Asian Women's Double Burden

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Abstract

Access to credit can have significant effects on standards of living. Credit can allow households to optimally select the timing of their purchases and sustain a certain level of consumption when they are struck by unforeseen setbacks. Some households have been credit constrained and others have not. The difference in credit access may lead to disparities in households' empowerment and perpetuate imbalances in terms of economic wellbeing. While the literature on credit has long suggested that racial and gender disparities exist in the credit market, to date, few studies have analyzed credit constraints with attention to racial minority women. This study uses household-level data from the Survey of Consumer Finances to examine women's access to credit. In particular, access to credit of Asian women and that of other groups in the US are compared. This study provides empirical evidence that Asian women are less likely to be constrained in access to credit, while they are more likely to be discouraged by potential lenders than whites even after accounting for proxies for creditworthiness.

Key words

Access to credit, credit constraint, Asian women's credit

Introduction

The Asian population in the United States far outpaces the growth rate for the overall U.S. population (USATODAY, 2004). The influence of Asians on U.S. society has been partly enabled by their above average household income and educational attainment, as well as their geographic concentration (Lee, 1998). Despite Asians' demographic growth and increasing influence, it has been demonstrated that Asians in the U.S. experience racial prejudice in various forms (e.g., Saxton, 1971; Lee, 1998; Gee et al., 2009). Asians in the U.S. have not reached economic

parity with whites yet. In particular, Asian women's wages are below the median for whites, and Asian women are more likely to hold jobs incommensurate with their qualifications. A lack of positive role models, media reinforcement of prevailing attitudes, stereotypes of Asian women, and the double burden of racism and sexism has led to the negative experiences of Asian women (Gloria, 1978).

Access to credit can have significant effects on standards of living. Credit can allow households to optimally select the timing of their purchases and sustain a certain level of consumption when they are struck by unforeseen setbacks, such as a temporary decrease in income. Therefore, households can improve their utility using credit to smooth the path of consumption over time (Bergstresser, 2010). Households increase their risk-bearing ability and manage the ex-post risk of financial adversity with credit (Baiyegunhi et al., 2010). On the other hand, the potential negative effects of credit are a concern since consumer credit may influence other aspects of household finances negatively. Late debt payment is recorded on credit reports, often resulting in lower credit scores. These credit reports are then used to determine the level of risk associated with most loans or insurance. These debt payment problems can affect access to credit or homeownership.

The U.S. government has developed a credit program aimed at increasing households' access to credit. Diverse innovations in consumer credit markets have allowed households to finance their expenditures with credit easily since the late 1980s (Canner et al., 1988). More flexible underwriting standards and automated credit-scoring schemes encouraged greater competition among lenders to supply credit during the 1990s. Households have been offered lower interest rates and smaller down payments to make credit more accessible to a wider segment of the population (Lyons, 2003).

Regardless of efforts by the U.S. government and diverse innovations in the consumer credit market, some households are still credit constrained. A wide range of empirical studies (e.g., Buttner & Rosen, 1992; Cox & Jappelli, 1993; Fabowale et al., 1995; Bostic & Lampani, 1999) have shown the disparities in outcomes in the credit market such as credit rejection rates or loan interest rates across lines of race and gender. Race and ethnicity are considered indicative factors of hindered access to financial markets (Yao et al., 2005). Women are often thought

to face difficulties in applying for credit (Coleman, 2000).

While the literature on credit has long suggested that there exists racial and gender disparities in the credit market, few studies to date have analyzed credit constraints with attention to racial minority women. Furthermore, whether or not Asian women - who may carry the double burden of race and gender stereotyping - have different experiences in access to credit or a binding credit constraint compared to other racial and gender groups has not been studied. This study develops an understanding of the racial and gender barriers that prevent racial minority women from benefiting from access to credit. This study aims to: (1) account for household characteristics related to credit constraints and (2) examine whether there is any difference in credit constraints between Asians and their white counterparts, after controlling proxies for credit applicants' creditworthiness and demographics.

Theoretical Framework

Consumer Borrowing and its Implications

Credit in any form comes with pros and cons for households. Households benefit from using credit. They can use credit to pay for an education or durable consumer goods such as a home or a car with financing and mortgage loans. Credit increases households' risk bearing ability. It helps households deal with risks of unexpected drops in income, perhaps due to a job loss or a divorce and smooth their income and consumption during the aftermath (Rosenzweig, 2001). The provision of giving credit to households has been widely perceived as an effective strategy to help alleviate poverty (Sharma, 2000). In developing countries, increased access to credit not only alleviates the liquidity constraints that households might experience but it also helps them achieve economic growth (Baiyegunhi et al., 2010).

Using credit also has some potential downsides. Some households spend more with credit than they can afford (Zywicki, 2005). Such irresponsible use of credit has led to enormous debt even though Evans and Wright (2010) argued that, by and large, most households borrow responsibly. This is substantiated by data showing that there were 1,064,927 personal bankruptcy filings in 2008, which corresponds to less

than 1% of US households. Given that household debt is at an all-time high relative to disposable personal income in the US, this unprecedented level of credit might pose a risk to the financial health of American households (Maki, 2000). Using targeted marketing and promises of “easy credit,” predatory lenders can trap borrowers in many ways. These “traps” may include charging excessive interest rates and conducting abusive lending practices that can lead to home foreclosures. Ultimately, credit from predatory lenders can devastate borrowers’ financial futures (Dickstein et al., 2006).

Regardless of these pros and cons, it is important to understand credit constraints for consumers. This need for understanding is relevant to various issues, including government debt policy. For example, policy makers might need to understand the conditions under which credit is constrained in order to implement more effective policies such as those for home mortgages, education loans, and loan guarantee programs (Ferri & Simon, 2002). Given that wealth accumulation is highly correlated with home ownership and educational attainment, differences in the access to credit will have an impact on wealth disparities overall. In addition, having a better understanding of how specific races or genders face credit constraints is important for regulators and legal authorities (Ferri & Simon, 2002). Women’s economic empowerment allows them to experience considerable life changes (Espen & Brody, 2007). Specifically, it becomes apparent that access to financial services can make fundamental changes to the economic productivity and social well being of women and their households. Even this, though, does not guarantee women’s empowerment, as there have been other government interventions that are designed to make important structural changes to enable women’s true empowerment (Kabeer, 2005).

The Rationale for Credit Access

Households’ access to credit is determined jointly by the level of demand for credit by applicants and the availability of credit from lenders. The foundational understanding of demand for credit begins with the Life Cycle-Permanent Income model. This model has become the dominant conceptual framework for understanding the nature of the consumption or borrowing of the household under certain circumstances

since Modigliani (1966) (Betti et al., 2007). This model posits that consumers intend to borrow more against future earnings during the early stages of life when their income is typically low, save more during their most productive period, and finally spend accumulated assets after retirement, subject to an inter-temporal budget constraint to minimize budget volatility (Bertaut & Haliassos, 2006). The amount of credit acquired tends to be larger in early stages of the life cycle than in later ones. The age-debt profile will be concaved throughout the life cycle. Lyons (2001) provides a detailed rationale behind credit rationing from the supply perspective. Lenders approve larger amounts of credit at lower interest rates for those whose creditworthiness is much higher than the minimum level of creditworthiness. Otherwise, they require higher rates of interest and grant smaller amounts of credit to those whose creditworthiness is close to the minimum level of creditworthiness. When the applicants' level of creditworthiness is equal to or less than a minimum level, the lenders might not approve credit at all due to the applicants' high default risk rate.

Alternatively, individual access to credit can be explained by the cultural aspects of finance. Understanding these cultural aspects may be useful for determining how race and ethnicity effects demands for credit. This is an approach that has been applied to cultural economy studies (e.g., du Gay & Pryke, 2002; Aitken, 2007; Langley, 2008; Allon, 2009). From this perspective, everyday borrowing and investment practices in housing and mortgage markets are not simply affected from "the outside" by global finance capitalism (Allon, 2009). Rather, they involve complex relations of power between lenders and borrowers, spaces/geographies, and institutions of credit.

Several empirical studies suggest that there are differences in the way selected racial and ethnic groups manage money. Among the ethnic and racial groups, differences were noted in use of credit, savings patterns, family money management, and the financial socialization of children (Bowen, Lago, & Furry, 1997). For example, Barajas (2003) demonstrates compelling evidence of significant differences in financial attitudes of Mexican American individuals compared to Anglo individuals. This study identifies ten barriers that are related to the cultural beliefs and an ingrained philosophy about money. Medina et al. (1996) argue that Mexican American participants' money practices can be explained

by the barrier reflecting “The Pain of Procrastination.” From their results, the authors suggest Mexican Americans are more likely to use credit cards and personal debt for their immediate needs at the expense of long term planning. However, a review of the existing literature reveals that there is little documentation of the financial behaviors of Asians in the US.

The Rationale for Credit Constraints

Theoretically, credit supply equates to credit demand if the market is in equilibrium (Stiglitz & Weiss, 1981). If demand should exceed supply, interest rates will rise, thereby decreasing the quantity of demand or increasing supply until demand reaches the new equilibrium price. It, however, has been evidenced that market imperfections and information asymmetry problems create disequilibrium in the form of credit rationing (Baiyegunhi et al., 2010). Becker (1971) describes two types of discrimination that may exist in the marketplace. First, statistical discrimination occurs when lenders impose strict underwriting standards on a specific group (e.g. racial minorities), basing these decisions on a perceived relationship between the characteristic of the group (e.g. racial status) and the level of default risk, which is unobservable at the individual level. Second, prejudicial discrimination occurs when lenders reject some credit applications from a specific group, notwithstanding the fact that it could be reasonably expected that granting such credit would have yielded a profit. The Equal Credit Opportunities Act was enacted in 1974 to protect borrowers from discrimination (Smith, 1977). It prohibits lenders from refusing to extend credit based on certain factors that are not assumed to be related to creditworthiness such as race or gender. However, Crook (1999) demonstrates that some potential applicants might believe that such characteristics are considered and think this Act is not respected by certain lenders. Therefore, they decide not to approach certain possible lenders because they think they would be rejected.

Literature Review

Access to Credit and Racial Minorities

There are several empirical studies that evidence the relationship between race and outcomes in the credit market such as the credit constraint or rejection rate, while most studies have several limitations that weaken the conclusions on the racial disparity of access to credit. First, most studies have focused on access to credit among African Americans or Hispanics, while few studies have examined access to credit among Asians. Munnell et al. (1996) examined mortgage application data collected by the Federal Reserve. Black applicants were less likely than their white counterparts to obtain loans even after controlling for a number of creditworthiness factors of the borrowers, such as credit history. Crook (1999) identified households who are discouraged from applying for credit from certain lenders. He demonstrated that the probability of being discouraged is positively related to being black or Hispanic.

Second, several studies have used an aggregated term of race such as non-white or racial minority without differentiating on the basis of race. K. Cavalluzzo, L. Cavalluzzo, and Wolken (2002) supported racial discrimination in the credit market by showing higher probabilities of being rejected among minority-owned businesses compared to white-owned businesses. Disney and Grant (2006) showed households whose heads are non-white appear to have lower demand for consumer credit than those with white heads of households. The demand of credit by racial/ethnic minorities was expected to be lower than that of white people.

Access to Credit and Women

Women's credit rationing status can be explained by the feminist economics approach. The feminist economics literature shows that gender differences in financial responsibilities or in accessing potential lenders exist, and that lender discrimination against women credit applicants may be at play to explain these differences (Malapit, 2012). A number of studies about women's credit (e.g. Riding & Swift, 1990; Coleman, 2000; Cavalluzzo et al., 2002; Muravyevy et al., 2009) focused on female entrepreneurs' access to credit. It has been found that female-owned

businesses face difficulties in obtaining loans and experience non-economic discrimination in the credit market. Riding and Swift (1990) showed that the financing conditions for women business owners are less favorable than those for their male counterparts. There were apparent gender-related differences in collateral requirements for a line of credit or interest rates on loans. Coleman (2000) provided similar results by showing that female-owned firms were more likely to build collateral for loans than their male counterparts. Cavalluzzo et al. (2002) analyzed loan denials and interest rates levied to small business owners. Significant differences in loan denials and interest rates of business owners were found between male and female owners even after controlling for a variety of business and owner-related characteristics. More recently, Malapit (2012) focused on informal borrowing among urban squatters or slum-dwellers in the Philippines. This study examined men and women's credit rationing status. It was found that women are more likely to be credit constrained than men. These differences were partly explained by factors related with their creditworthiness. Informal lenders tended to depend more on reputation and credit history to decide whether to grant a credit rather than observable characteristics such as wealth. Also, it showed that other unobservable gender-related factors such as gender differences in financial responsibilities influenced men and women's credit rationing status.

Markets and Discrimination

Becker (1971) argued that taste discrimination would not exist in a pure competitive market and that market forces would not allow for discrimination. However, discrimination persists as evidenced by a volume of studies in the areas of labor markets, household markets, and credit market. Figart (1997) provided a wide range of discussion on discrimination in the labor market and provided insight into studies of gender and racial discrimination. This study pointed out that previous studies on wage discrimination included gender and race as simple indicator functions merely to control for demographic differences with a series of independent variables which are assumed to impact on the dependent variable. Jacobsen and Newman (1995) indicated that there was an increasing trend to include a dummy variable to model gender differences,

while including gender interactions with other independent variables, such as race, decreased. They argued that including a dummy variable to model gender differences was useful in measuring discriminatory processes, but it did not give a comprehensive understanding of discriminatory outcomes. Although there were many debates as to which methods should be employed for studies of discrimination, most of the studies showed evidence of discrimination in both the housing market and credit market (Dymski, 2006).

A volume of studies examine discrimination issues, but only a small portion of studies focus on discrimination in the credit market (Lin, 2010). Exceptionally, Bowdish (2010) investigated how women responded to the discrimination. He demonstrated that women experienced irrational or non-economically based discrimination when they applied for credit in US. For example, women credit applicants were required to find male cosigners or faced extra obstacles when they applied for a loan.

Methods

Data

This study uses the Survey of Consumer Finances (SCF). The SCF is a cross-sectional survey sponsored every three years by the Board of Governors of the Federal Reserve System. It is used nationwide for various purposes: from analysis at the branches of government to scholarly work at the major economic research centers (Board of Governors of the Federal Reserve System, 2012). It provides detailed information on the finances of American families. It contains reportage on the demand for credit and transactions (Zinman, 2004) and includes detailed information on a wide range of consumer credit options such as sources or terms (Bertaut & Haliassos, 2006).

Six consecutive household surveys from 1992 to 2007 are used in this study in order to increase the sample size of the Asian group, allowing for a stronger assessment of the effects of race and gender on credit constraints. Since the 1989 survey, missing data in the SCF have been imputed using a multiple imputation model. Each missing value in the survey is imputed five times, resulting in five replicate data sets, referred

to as “implicates” (see Montalto and Sung, 1996 for detailed information on imputation issues). This study pools the five implicates and adjusts descriptive estimates for the multiple imputation, following the procedure described in Kennickell (2000). Also, this study deletes the sample of households that did not have the same racial/ethnic identification in all five implicates for the analysis as the racial variable is critical in this study.

In the 2000 Census, almost 98% of the respondents gave only one answer to the race question. Hispanic was not listed as one of the choices to that question (Grieco & Cassidy, 2001). Of those who gave one race, 77.0% reported white, 12.6% reported African-American, 0.9% reported American Indian, 3.7% reported Asian, 0.1% reported Pacific Islander, and 5.6% listed other. Most of the “other” group is Hispanic, based on the proportion of Hispanics who listed some racial group other than those listed. Therefore, Hanna and Lindamood (2008) estimated that 80% of the “Others” group in the SCF might be Asian or Pacific Islander. They argue that they infer from racial distributions from the 2000 U.S. Census that most households in the combined “Others” category are Asian respondents. The study aims to compare credit constraints between Asian women and other groups, including Asian men, white men, and white women. Finally, 21,742 respondents are used in this study.

Empirical Model

Households’ access to credit is determined jointly by households’ credit demand and lenders’ credit supply. A variety of factors affecting the demand for and supply of credit are demonstrated. This study assumes that the probability of being rejected or being discouraged is a function of four types of independent variables: (1) race and gender, (2) demographics, and (3) economic and (4) creditworthiness factors through the nested logistic regression models (See APPENDIX A). This study also includes set of year dummy variables to control for any time trends. Finally, the Akaike’s Information Criterion (AIC), a measure of the relative goodness of fit of a statistical model (Cleophas & Zwinderman, 2012), is used to compare the nested models and the full model.

Demographics. A typical household has a hump-shaped profile of earnings over a lifetime. Earnings start low, increase until the individual is

in his/her prime age, then begin a slow decline, and finally decrease sharply from the time that he/she retires (Bryant, 1990). However, the debt ceiling tends to be lower for the younger group compared to the other groups due to their lack of credit history (Jappelli, 1990). With this age-earnings profile, it is expected that households' credit constraints will be higher in their early years and lower at the age at which earnings exceed desired consumption.

Credit demand might be aligned with the credit applicant's educational attainment. For example, more highly educated people tend to borrow more than the less educated group, in light of a steady and possibly increasing income stream in the future (Grant, 2003). Educational loans are a type of debt typical of highly educated individuals. In addition, those with higher educational attainment may manage their financial affairs more prudently; therefore they are less likely to have unexpected demands for credit that are rejected. If the higher education attainment by credit applicants is regarded as a predictor of future earnings and the ability to repay, then the supply of credit rises. In sum, those who have higher educational qualification are expected to have less credit constraints and a higher credit capacity.

Married couples tend to have more expenditure than single people since they are generally bound with more responsibilities and therefore tend to demand more mortgages (Fabbri & Padula, 2004). On the other hand, dual earner couples might have an alternative source of income if one spouse stops working compared to single-headed households. Married couples may have lower levels of consumption due to economies of scale of the consumption of durables (Jappelli, 1990). Households with children have more financial needs due to the parents' desire to provide for their children's living and education. When households' financial resources are insufficient, borrowing money allows them to achieve these goals. Compared to households without young children at home, the demand for credit of households with children will generally be higher. From the supply perspective, a married couple might be in an advantageous position in acquiring credit because creditors are more willing to lend to married couples, because they can underwrite their loans jointly (Fabbri & Padula, 2004) and because such couples are less mobile geographically and therefore move less often. Therefore, it is expected that married couple are less likely and households with chil-

dren are more likely to be credit constrained.

Economic and Creditworthiness Variables. A rise in permanent income increases the desire to acquire assets (Cox & Jappelli, 1993). Those who expect higher permanent income (e.g. those who are confident in their job security) are expected to have lower levels of savings and thus a higher demand for borrowing compared with their current creditworthiness. They tend to consume more housing and other durable goods (Bertola et al., 2006). However, in fact, expected future income is rarely requested upon credit applications. Therefore, the supply effect is expected to be minimal. The supply effect is indeterminate and the demand effect on the credit constraints is positive. Therefore, it is expected that the net effect of expected future income is positive.

Household wealth can be used for any expenditure or emergency need. Households with sufficient household wealth, which comes from the surplus between income and consumption over time, could draw on this as another source for consumption instead of borrowing money. Therefore, households who have accumulated more household wealth are less likely to apply for household borrowing, while households who have not accumulated enough wealth are more likely to have demand for household borrowing. From the supply perspective, carrying more household wealth is considered by creditors to be a strong indicator of the borrower's repayment ability. Households with collateral for more borrowing and high-asset households may be granted more credit (Crook, 2006). Therefore, those who have more household wealth are expected to be less likely to be credit constrained.

If an individual is currently working for pay, the expected future income would be higher than if he/she is not currently working (Crook, 1996), but unemployed individuals are pessimistic about their expected future income prospects (Crook, 2006). Therefore, being employed would increase the demand for credit. The employed have the capability and desire to borrow more to finance consumption or investment than those out of the labor force. Lenders also consider credit applicants' employment status to assess their future earnings and ability to repay a loan. Therefore, those who are working for pay increase the debt ceiling (Jappelli, 1990). *Ceteris paribus*, the employed are expected to be less likely to be credit constrained than those who are not.

In a review of characteristics consistently considered in credit scoring

schemes, five categories of predictors such as family status, employment, personal information, financial history, and credit bureau information have been considered (Friedland, 1993). Specifically, factors regarding creditworthiness such as credit bureau information variables help to identify individuals who would like to borrow in excess of their ability to repay. These individuals are not credit constrained since their excess demand for credit violates their lifetime budget constraint. Therefore, such information allows a distinction to be made between individuals who face supply-side credit constraints and individuals who would like to finance consumption beyond their means (Sorokina, 2009).

Variable Specifications

Credit Constraints. Two dependent variables - being rejected for any request for credit and being discouraged by potential lenders - are generated. Rejected credit applicants are measured by the following SCF question, “*In the past five years, has a particular lender or creditor turned down any request you or your (husband/wife/partner) made for credit, or not given you as much credit as you applied for?*” (See APPENDIX B). This binary choice variable takes the value 1 if the respondent answers that he/she was turned down (REJECTED) and 0 if not. This study employs Jappelli’s (1990) definition of “discouraged” applicants in identifying those who expected to be rejected. These discouraged applicants who do not apply for credit are measured by the following question: “*Was there any time in the past five years that you thought of applying for credit at a particular place, but changed your mind because you thought you might be turned down?*” This binary choice variable takes the value 1 if the respondent answers that he/she thought of applying for credit at a particular place, but changed his/her mind because he/she thought he/she might be turned down in five years prior to each survey year (DISCOURAGED) and 0 if not.

Demographics. This study uses the same classification system as racial/ethnic categories of the public release version SCF. Each respondent is asked, “Which of these categories do you feel best describes you?” The respondent is recorded separately for the following six groups: White; Black or African American; Hispanic; Asian or Pacific Islander; Native American/Eskimo/Aleut; and Other. However, in the public data set, the last three groups are combined into one category,

“Others” (Montalto, 1998). This aggregated group has been represented in several ways. Lindamood et al. (2007) scrutinized methodological issues related to using the Survey of Consumer Finances data sets. They summarized recent treatment of racial/ethnic classification in recent articles. Hanna and Lindamood (2008) justified describing households in this combined category as Asian by considering racial/ethnic distributions from the 2000 U.S. Census. DeNavas-Walt et al. (2012) conventionally used the term “Asians” when reporting income, poverty, and health insurance coverage in the United States by the U.S. Census Bureau. According to distributions from the 2010 U.S. Census (U.S. Census, 2012), out of the total U.S. population, 4.8% were Asian, 0.9% were American Indian/Alaska Native and 0.2% were identified as Native Hawaiian and Other Pacific Islander. This current study employs the inference of racial/ethnic status by Hanna and Lindamood (2008). This “others” group is considered “Asians” in this study. The key contribution of this study is to examine access to credit by a category of women that is largely Asian and to compare it with white women, white men, and Asian men.

This study includes a number of demographics in the specification, comprising the respondent’s age (AGE), age squared (AGESQ), education (COLLEGE=1 if the respondent’s highest level of school completed is a college degree or more), marital status (MARRIED=1 if the respondent is married), and children (CHILDREN=1 if the respondent has a child/children under 19). The gender of the respondent is asked (WOMEN=1 if the respondent is a woman). Also, as an environmental variable, the year of the survey (YEAR) is included in order to address a possible year effect.

Economic and Creditworthiness Variables. Total household income (INCOME) and net worth (NETWORTH) are included. Since money-based variables are more prone to give rise to nonlinear relationships than any other variable (Cohen et al., 2003), the log of income and log of net worth are used to allow a non-linear relationship between being credit constrained and both of two variables. The income and net worth used in this study are all expressed in 2007 prices. Employment status (EMPLOYED=1 if the respondent is a salary earner) and homeownership (HOMEOWNER=1 if the respondent owns a home, 0 otherwise) are included. A respondent’s expected future income (FUTURE

INCOME) is measured by the following two questions, “*Over the next five years, do you expect your total (family) income to go up more than prices, less than prices, or about the same as prices?*” and “*At this time, do you have a good idea of what your (family’s) income for the next year will be?*” (SUREGROW=1 if the respondent expects his/her total (family) income to grow higher than prices). It appears that a more ideal data set for assessing credit constraints should include scores from the credit bureau. Although it does not contain information on actual credit score data, the SCF includes important predictors of credit scores (Edelberg, 2007). Specifically, the SCF includes levels of indebtedness and information on credit payment performance. This research model includes whether a respondent has made a scheduled payment on previous borrowing (SCHEDULED).

Results

Descriptive Results

The demographic profile of selected respondents is presented in Table 1 by their racial and gender categories. 16.47% of respondents report that their requests for credit were rejected by a particular lender or creditor in the five years preceding each survey year. 4.75 % of respondents report that they thought of applying for credit at a particular place, but changed their mind because they thought they might be rejected in the five years prior to each survey year. 55.21% are married and 40.61% have a child or children under 19. 37.51% have a bachelor degree, 72.19% own a house, and 58.61% report that they had a scheduled payment on credit.

There are some sizable disparities in credit constraints, demographics, and economic profiles among racial and gender groups. Asian men (18.12%) and Asian women (17.76%) tend to have a higher percentage of being rejected for credit than white men (15.95%) and white women (16.78%) even though it is not statistically significant. Asian women (9.40%) are more likely to be discouraged from applying for credit than any other group. Asian women are more likely to fall into the lowest income (42.13%), are more likely to report that their expected income is not sure (39.63%), are less likely to own a house (53.06%), and are less likely to have a scheduled credit payment (49.61%) than other groups. Asian men have higher rates of having a bachelor degree

(55.84%), fall into the highest income category (38.97 %), and are more likely to be salary earners (67.70%) than other groups. White women have the lowest rate of having a bachelor degree (69.15%), are less likely to be salary earners (52.17%), and report their future income increase (10.38%). White men are more likely to fall into the highest net worth category (36.48%), are more likely to be homeowners (74.70%), and more likely to have a scheduled credit payment (61.95%) than other groups.

Table 1
Summary Statistics

	WHITE WOMEN	ASIAN WOMEN	WHITE MEN	ASIAN MEN	Total
ACCESS TO CREDIT					
REJECTED	16.78	17.76	15.95	18.12	16.47
DISCOURAGED [†]	5.52	9.40	3.57	5.95	4.75
AGE[†]					
AGE < 30	13.34	19.03	12.94	17.73	13.39
30 ≤ AGE < 40	19.31	21.74	18.38	24.29	19.08
40 ≤ AGE < 50	20.90	22.14	22.07	24.59	21.54
50 ≤ AGE < 60	16.00	21.48	17.30	17.57	16.73
60 ≤ AGE	30.45	15.61	29.31	15.83	29.27
MARITAL STRUCTURE[†]					
MARRIED	48.32	44.14	62.97	69.27	55.21
SINGLE/WIDOWED/DIVORCED ^a	51.68	55.86	37.03	30.73	44.79
EXISTENCE OF CHILD[†]					
CHILDREN	43.38	54.49	36.32	47.69	40.61
NO CHILD ^a	56.62	45.51	63.68	52.31	59.39
EDUCATION[†]					
COLLEGE	30.85	39.48	44.15	55.84	37.51
LESS THAN COLLEGE ^a	69.15	60.52	55.85	44.16	62.49
INCOME[†]					
INCOME < \$30,000	36.92	42.13	22.71	22.95	30.42
\$30,000 ≤ INCOME < \$50,000	20.51	16.44	20.52	20.10	20.42
\$50,000 ≤ INCOME < \$75,000	17.86	16.79	19.09	17.89	18.38
\$75,000 ≤ INCOME	24.71	24.64	37.68	38.97	30.78
FUTURE INCOME[†]					
SURESAME ^a	34.04	24.39	33.72	32.25	33.65
SUREGROW	10.38	13.91	17.56	23.19	13.94

	WHITE WOMEN	ASIAN WOMEN	WHITE MEN	ASIAN MEN	Total
SURELESS	24.97	22.07	23.02	14.76	23.79
NOTSURE	30.61	39.63	25.70	29.80	28.82
NETWORK [†]					
NETWORK<\$25,000	21.74	36.18	15.65	22.48	19.38
\$25,000 ≤ NETWORK<\$125,000	25.41	25.52	22.12	25.02	23.96
\$125,000 ≤ NETWORK<\$350,000	29.06	17.87	25.75	20.86	27.16
\$350,000 ≤ NETWORK	23.79	20.43	36.48	31.64	29.50
HOMEOWNERSHIP [†]					
HOMEOWNER	71.49	53.06	74.70	58.58	72.19
NON HOMEOWNER ^a	28.51	46.94	25.30	41.42	27.81
EMPLOYMENT STATUS [†]					
SELF EMPLOYED	7.66	7.82	15.73	13.85	11.37
EMPLOYED ^a	52.17	60.53	57.09	67.70	54.90
NOT WORKING	21.43	23.80	6.84	8.87	14.74
RETIRED	18.75	7.85	20.34	9.58	18.99
CREDIT PERFORMANCE [†]					
SCHEDULED	56.20	49.61	61.95	57.11	58.61
NOT SCHEDULED ^a	43.80	50.39	38.05	42.89	41.39
YEAR [†]					
1992 ^a	14.61	22.60	15.41	15.26	15.15
1995	17.89	16.17	16.00	19.02	17.05
1998	16.83	15.37	17.39	13.86	16.97
2001	16.71	11.53	17.96	13.74	17.08
2004	16.84	17.17	17.10	17.66	16.98
2007	17.12	17.16	16.13	20.46	16.77
Sample Size (weighted)	9,355	388	11,430	569	21,742

[†] For each racial and gender category, statistically significant differences in selected independent variables (Chi-Squared p-value < .001)

^a represents the reference group in the multivariate analyses.

Source: 1992~2007 Survey of Consumer Finances. Descriptive statistics and tests for differences calculated using all five implicates of the 1992-2007 Survey of Consumer

Note. Weights are used in this descriptive analysis to ensure that the results are nationally representative.

Multivariate Results

Table 2 shows the results of separate Logit models for the probability of being rejected for credit request. The dependent variable is measured

by a question asking whether a particular lender or creditor has turned down any request that a respondent or his/her (husband/wife/partner) made for credit. It includes three nested models including race, gender, demographics, economic and creditworthiness variables, and year dummies. It also includes one full model including all of the independent variables.

The first column of Table 2 reports the coefficients from the model estimated with no control variable of any kind except a racial and gender variable. In its simplest reduced form, there appears to be some relation between racial and gender variables and the probability of being rejected. Only white men are less likely to be rejected for their credit requests than Asian women. The second column of Table 2 includes race, gender, and other demographics. White women, white men, and Asian men are more likely to be rejected than Asian women. Those who have a college degree and those who are married are less likely to be rejected than other groups. In the third column, Asian women are found to be less likely to be rejected. In the full model, the results are generally consistent with results from aforementioned three nested models, and a substantial portion of the coefficients is statistically significant. Notably, Asian women are less likely to be rejected for credit requests than any other group. The probability of being rejected for credit requests increases until age 28.1 and then it decreases. Those who have a college degree and those who are married are less likely to be rejected. Income, homeownership, and net worth enter into the equation with the expected - negative - sign. It is found that those who have made scheduled credit payments have a lower probability of being rejected compared with those who have not made scheduled payments. Households are less likely to be rejected in 2007 than households in 1992. The AIC of the full model is 73,093.9 and the AICs of the simpler models are 85,486.8, 75,549.6, and 73,204.6 respectively. This result shows there is more information in the full model compared to other simpler models.

Table 2
Multivariate Results (DV: REJECTED)

Parameter	Model1	Model 2	Model 3	Model 4	Odds Ratio
	Estimate (S.E.)	Estimate (S.E.)	Estimate (S.E.)	Estimate (S.E.)	
RACE AND GENDER[†]					
WHITE WOMEN	0.0997 (0.0663)	0.2476*** (0.0688)	0.4397*** (0.0708)	0.4579*** (0.0709)	1.581
WHITE MEN	-0.2185** (0.0664)	0.2337*** (0.0690)	0.4356*** (0.0713)	0.4504*** (0.0714)	1.569
ASIAN MEN	0.0334 (0.0084)	0.3053*** (0.0874)	0.4233*** (0.0893)	0.4445*** (0.0894)	1.560
DEMOGRAPHICS					
AGE		0.0162*** (0.0042)	0.0498*** (0.0046)	0.0506*** (0.0046)	1.052
AGESQ		-0.0007*** (0.000)	-0.0009*** (0.0000)	-0.0009*** (0.0000)	0.999
COLLEGE		-0.6027*** (0.0197)	-0.4387*** (0.0209)	-0.4414*** (0.0209)	0.643
MARRIED		-0.5161*** (0.0208)	-0.1852*** (0.0228)	-0.1989*** (0.0229)	0.820
CHILDREN		0.1866*** (0.0214)	0.2340*** (0.0219)	0.2384*** (0.0219)	1.269
ECONOMIC VARIABLES					
LOG INCOME			-0.0459*** (0.0051)	-0.0438*** (0.0051)	0.957
SURELESS			0.1556*** (0.0283)	0.1642*** (0.0283)	1.178
SUREGROW			0.1700*** (0.0287)	0.1601*** (0.0287)	1.174
NOTSURE			0.1128*** (0.0250)	0.1166*** (0.0250)	1.124
HOMEOWNER			-0.2760*** (0.0263)	-0.2741*** (0.0263)	0.760
LOGNETWORTH			-0.0628*** (0.0021)	-0.0629*** (0.0020)	0.939
SELFEMPLOYED			0.0736** (0.0262)	0.0681** (0.0263)	1.070
NOTWORK			-0.3458*** (0.0293)	-0.3481*** (0.0293)	0.706
RETIRED			-0.5388*** (0.0573)	-0.5518*** (0.0578)	0.576
SCHEDULED			-0.3272*** (0.0209)	-0.3186*** (0.0210)	0.727
ENVIRONMENTAL VARIABLE					
1995				-0.2414*** (0.0322)	0.786
1998				-0.1117*** (0.0321)	0.894
2001				-0.2714*** (0.0330)	0.762
2004				-0.2477*** (0.0332)	0.781
2007				-0.2978*** (0.0337)	0.742
Intercept	-1.8008*** (0.0651)	-0.6455*** (0.1092)	-0.6713*** (0.1250)	-0.5403*** (0.1265)	0.786
Concordance Percent	31.2	74.8	77.6	77.8	
AIC	85486.8	75549.6	73204.6	73093.9	

[†] A reference group is Asian women.

Note: The data was weighted using all five implicates of the 1992-2007 Survey of Consumer Finances, excluding households with differences in racial identification across implicates.

Note: *, **, *** Significantly different from zero at the 10%, 5%, and 1% levels, respectively.

Table 3 shows the results of Logit models for the probability of being discouraged from applying for credit. In the first nested model including only race and gender, white women, white men, and Asian men are less likely to be discouraged than Asian women. In the second nested model including race, gender, and other demographics, the probability of being discouraged tends to increase until age 35.3 and then it decreases. Having a college degree and being married decrease the probability of being discouraged. In the third nested model including economic variables, those who have a child or children face a higher probability of being discouraged. In each of these specifications, the impact of income, net worth, and homeownership on the share reporting credit constraint is negative. Having made scheduled credit payments negatively influences the probability of being discouraged. In the full model, a large portion of the coefficients is significant. Specifically, a variety of independent variables appear to have ameliorated the relationship between race, gender, and the probability of being discouraged. Nonetheless, the estimated probability of being discouraged for credit requests for Asian women is higher than the reference group, white men. After replacing the reference groups, it is found that Asian women and Asian men are not significantly different.

Table 3
Multivariate Results (DV : DISCOUARAGED)

Parameter	Model 1	Model2	Model 3	Model 4	Odds ratio
	Estimate (S.E.)	Estimate (S.E.)	Estimate (S.E.)	Estimate (S.E.)	
RACE/GENDER					
WHITE WOMEN	-0.4887*** (0.0876)	-0.4080*** (0.0905)	-0.1137 (0.0935)	-0.1370 (0.0946)	0.872
WHITE MEN	-1.1973*** (0.0891)	-0.7548*** (0.0924)	-0.3655*** (0.0961)	-0.3814*** (0.0962)	0.683
ASIAN MEN	-0.5210*** (0.1225)	-0.1370 (0.1264)	0.0815 (0.1300)	0.0609 (0.1300)	1.063
DEMOGRAPHICS					
AGE		0.0359*** (0.0069)	0.0868*** (0.0075)	0.0848*** (0.0075)	1.089
AGESQ		-0.0008*** (0.0000)	-0.0012*** (0.0000)	-0.0012*** (0.0000)	0.999
COLLEGE		-1.1026*** (0.0396)	-0.7838*** (0.0414)	-0.7813*** (0.0414)	0.458
MARRIED		-0.9442*** (0.0364)	-0.4282*** (0.0400)	-0.4122*** (0.0401)	0.662
CHILDREN		0.2510*** (0.0374)	0.3093*** (0.0385)	0.3025*** (0.0385)	1.353

Parameter	Model 1	Model2	Model 3	Model 4	Odds ratio
	Estimate (S.E.)	Estimate (S.E.)	Estimate (S.E.)	Estimate (S.E.)	
ECONOMIC VARIABLES					
LOG INCOME			-0.0658*** (0.0075)	-0.0673*** (0.0074)	0.935
SURELES			0.1880*** (0.0529)	0.1835*** (0.0530)	1.201
SUREGROW			0.0066 (0.0596)	0.0201 (0.0596)	1.020
NOTSURE			0.4403*** (0.0441)	0.4399*** (0.0442)	1.553
HOMEOWNER			-0.7272*** (0.0449)	-0.7291*** (0.0450)	0.482
LOGNETWORTH			-0.0395*** (0.0032)	-0.0395*** (0.0031)	0.961
SELFEMPLOYED			0.1946*** (0.0508)	0.1978*** (0.0509)	1.219
NOTWORK			0.1697*** (0.0436)	0.1735*** (0.0437)	1.189
RETIRED			-0.1886 (0.1018)	-0.1757 (0.1018)	0.839
SCHEDULED			-0.6203*** (0.0368)	-0.6259*** (0.0370)	0.535
ENVIRONMENTAL VARIABLE					
1995				0.3442*** (0.0607)	1.411
1998				0.1699** (0.0639)	1.185
2001				0.2780*** (0.0634)	1.320
2004				0.4336*** (0.0618)	1.543
2007				0.3554*** (0.0631)	1.427
Intercept	-2.4784 (-2.4784)	-1.7047*** (0.1665)	-2.2814*** (0.1917)	-2.4746*** (0.1960)	
Concordance Percent	37.6	77.3	82.0	82.0	
AIC	33667.0	30090.7	28339.9	28285.1	

† A reference group is Asian women.

Note: The data was weighted using all five implicates of the 1992-2007 Survey of Consumer Finances, excluding households with differences in racial identification across implicates.

Note: *, **, *** Significantly different from zero at the 10%, 5%, and 1% levels, respectively.

Conclusions

The limited availability of credit for those that may need it has become a crucial issue for government and academia because credit works both as a development tool and an effective strategy for poverty alleviation. The literature on credit has long suggested that there exist

not only racial but gender disparities in the credit market, while, to date, few studies have analyzed credit access with attention to racial minorities and women. Specifically, little is known about Asian women's credit constraints.

This study examines the credit constraints of Asian women and compares them with their white counterparts in the U.S. in order to examine whether the double burden of racism and sexism lead to the difficulties in credit access for Asian women. In order to measure credit constraints, this study uses self-reports on whether or not respondents' credit applications have been rejected or whether they felt discouraged from applying for credit. This study documents a sizeable disparity in credit constraints.

The descriptive analyses show that Asian men and women tend to experience higher rates of rejection compared with white men and women. The rate of being discouraged by potential lenders is particularly pronounced in Asian women in the descriptive analyses. This is consistent with the results from previous studies that argue racial minorities and women suffer more credit constraints. Demographics such as age and educational attainment, and economic variables such as income and employment are related to the rate of being rejected for credit requests. The relationship between proxies for creditworthiness such as net worth, homeownership, and credit payment performance, and the probability of credit constraint is negative. In the first multivariate analysis, Asian women are less likely to be rejected for their credit requests than the reference group, white men, after controlling for a wide range of independent variables. The probability of being rejected for a credit request is high in the 20s age group and then it decreases. This might be because young people demand more credit in order to balance between desired living standards and scarce resources, compared to other age groups, but the debt ceiling tends to lower for the younger age group compared to the other age groups due to their lack of credit history. College education and marriage decrease the probability of being rejected for credit requests. It can be explained by the fact that higher education levels are considered by potential lenders to be a signal of higher future earnings and the ability to repay a loan. The supply of credit rises and therefore the credit rejection for people with higher education attainment decreases. Married couples might be in an advanta-

geous position in acquiring loans of the maximum amount that they desire. This is due to creditors being more willing to lend to married couples because married couples might be better risk options to suppliers in that they are less mobile geographically, and move less often. Therefore, married couples can be granted as much credit as they request. Income, net worth, and homeownership exert opposing effects on the credit constraints. Those who are affluent are perceived as less risky applicants and so they might be granted as much as they desire. Having high net worth and home ownership can decrease the probability of credit constraints since household assets or a house would provide collateral for more borrowing. For example, for property-secured loans, a property's appraised value is desired to determine the loan amount. Those who have made scheduled credit payments are found to show a lower probability of being rejected than those who have not made scheduled payments. These findings confirm that those who are less creditworthy report being rejected for credit requests more often than those who are more creditworthy.

In the second multivariate analysis, the direction of effects of a variety of independent variables on the probability of being discouraged is consistent with the probability of being rejected for credit requests in the multivariate analyses. The gap between the probability of being discouraged between Asian women and the reference group, white men, is narrowed but not eliminated after controlling a number of variables such as demographics, economic variables, creditworthiness proxies, and a possible year effect. The full model shows that there remain distinct differences in terms of the probability of being discouraged between white and Asian groups. In particular, Asian women and men are more likely to be discouraged from applying for credit than their white counterparts, whereas there is no disparity between two groups based on results from the same statistical procedure with Asian men as the reference group (not shown). Therefore, these findings partially support the claims that the double burden of racism and sexism that might exist in the credit market can lead to some distinct experiences in access to credit for Asian women. Supply-side explanations for this difference are not sufficient in that proxies for creditworthiness are controlled in the research model. This difference is not attributable to differences in demographics such as age and education and economic variables such as

current income and expected future income across the four groups. Therefore, demand-side explanations for this disparity are not apparent in the research model.

Even though this study shows that there are no statistical differences between Asian men and Asian women and between white women and Asian women, it does not mean that these findings eliminate any possibility of gender and race discrimination in the credit market. Asian women as well as Asian men might have been affected by some unobservable factors from the SCF data such as discrimination. For example, some dimension not controlled for in this analysis might induce Asian women to perceive a tighter credit constraint or stricter underwriting standard compared with their white counterparts. Also, today's gender discrimination is expressed in less visible and more subtle ways (Folbre, 2010). Women may suffer from social exclusion, a lack of mentoring, or being excluded from informal networks of communication, not overt discrimination in the market place (Catalyst, 2001). Or, this finding might be related to Asian women's lack of financial literacy. Lusardi and Mitchell (2011) find that women in the U.S. have lower levels of financial knowledge. Women often lack confidence and rate behind men in understanding financial statements and in their perceived ability to make financial decisions (USATODAY, 2012). Those who are discouraged might not have expected to obtain credit or they might have expected a relatively high cost to be granted for loans. They may have been wrong in their expectations and could perhaps have obtained worthwhile credit at reasonable costs. For example, Bucks and Pence (2008) showed that those who were discouraged were less likely to know their mortgage terms or per-period caps compared with those who did not anticipate being rejected.

Implications

This study has implications for Asian women credit applicants, potential lenders, and future researches. First, Asian women credit applicants who do not apply for credit for fear of being rejected should note that there is no sizable difference in the probability of credit rejection between Asian and white applicants and between Asian men and Asian women applicants. Asian women applicants should be aware that credit

approval can be more attributed to factors affecting profitability rather than racial or gender discrimination. Second, lenders may need to do a better job of explaining how credit is granted or what factors they consider. It helps the discouraged applicants evaluate themselves as being creditworthy and qualified for credit. Third, this study mainly focuses on credit access from traditional banking sectors. However, predatory lending, a new form of discriminatory credit, has recently used the aggressive telemarketing and sale of second mortgages based on demographic targeting- especially, the targeting of racial minorities or low income earners that have traditionally been credit-constrained (Dymski, 2007). Therefore, other potential sources of the credit sought by racial minority or women need to be explored in the future studies.

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APPENDIX A

As Jacobsen and Newman (1995) and Figart (1997) suggested, this study tested different research models including race and gender interactions with other independent variables. Interaction terms were generated between race and gender indicators and each independent variable. However, only few interaction terms provided evidence of racial and gender differences of the magnitude of impact of the independent variables on the access to credit. Among all of interaction terms in the logistic regression, an interaction term with a homeownership was significant. With all interaction terms in the logistic regression with white men being treated as the reference group, the interaction terms for homeownership implied that homeownership decreased the probability of being rejected for credit for Asian women than for white men. In the logistic regression having interaction terms with Asian men being treated as the reference group, having homeownership decreased the probability of being rejected for credit for Asian women than Asian men. In the same research model with white women as the reference group, Asian women's homeownership more highly decreased the probability of being rejected for credit than homeownership did for white women.

Interaction terms partly provided evidence of racial and gender differences of the magnitude of impact of the independent variables on being discouraged. Among all of interaction terms in the logistic regression, one interaction term with a scheduled payment was significant. When analyses with the same statistical procedure were performed to examine the probability of being discouraged from applying for credit, the interaction term for Asian women with the scheduled payment implied that making a scheduled payment reduced the chance of being discouraged from applying for credit more for Asian women than for white men, Asian men, and white women.

APPENDIX B

Those who cannot qualify for credit on their own might consider a joint application with a spouse or other family members. Joint applications might be advantageous. When two individuals make a joint application, the creditors will use financial and credit information from both applicants and the credit decisions will be determined upon their overall situation. However, the SCF does not provide information on financial and credit information of a spouse or other family members. Due to data limitation, this study narrows the objective by concentrating on credit access or credit constraints of individual credit applications rather than joint applications.

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