

Robb, Alicia M.; Fairlie, Robert W.

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Alicia M. Robb
Robert W. Fairlie

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Alicia M. Robb

University of California, Santa Cruz

Robert W. Fairlie

*University of California, Santa Cruz,
RAND and IZA*

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IZA

P.O. Box 7240
53072 Bonn
Germany

Phone: +49-228-3894-0
Fax: +49-228-3894-180
E-mail: iza@iza.org

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ABSTRACT

Determinants of Business Success: An Examination of Asian-Owned Businesses in the United States^{*}

Using confidential and restricted-access microdata from the U.S. Census Bureau, we find that Asian-owned businesses are 16.9 percent less likely to close, 20.6 percent more likely to have profits of at least \$10,000, and 27.2 percent more likely to hire employees than white-owned businesses in the United States. Asian firms also have mean annual sales that are roughly 60 percent higher than the mean sales of white firms. Using regression estimates and a special non-linear decomposition technique, we explore the role that class resources, such as financial capital and human capital, play in contributing to the relative success of Asian businesses. We find that Asian-owned businesses are more successful than white-owned businesses for two main reasons – Asian owners have high levels of human capital and their businesses have substantial startup capital. Startup capital and education alone explain from 65 percent to the entire gap in business outcomes between Asians and whites. Using the detailed information on both the owner and the firm available in the CBO, we estimate the explanatory power of several additional factors.

JEL Classification: J15, L26

Keywords: Asians, entrepreneurship, startup capital, self-employment

Corresponding author:

Robert W. Fairlie
Department of Economics
University of California
Engineering 2 Building
Santa Cruz, CA 95064
USA
E-mail: rfairlie@ucsc.edu

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1. Introduction

The success of Asians in business ownership in the United States is well documented and has been used as an example of how disadvantaged groups utilize business ownership as a route for economic advancement. It has been argued, for example, that the economic success of Chinese and Japanese immigrants is in part due to their ownership of small businesses (See Loewen 1971, Light 1972, and Bonacich and Modell 1980). More recently, Koreans have also purportedly used business ownership for economic mobility (Min 1989, 1993).

Most prior research on Asian business ownership relies on household survey data, such as the Public Use Microdata Samples (PUMS) from the decennial census, and focuses on explaining the relatively high rates of self-employment among Asians (see Min 1986-87; Bonacich and Light 1988; Kim, Hurh, and Fernandez 1989; Hout and Rosen 2000; Mar 2005 for some recent examples). These studies find that Asians, especially immigrants, have self employment rates that are higher than other minority groups and typically on par with that of whites in the United States. Evidence from Canada and the United Kingdom also indicates that Asians have relatively high rates of business ownership (Clark and Drinkwater 1998, 2000 and Fairlie 2006). Studies that examine self-employment outcomes, such as Boyd (1991), Fratoe (1986) and Borjas (1986), focus on self employment earnings. In general they find that Asians have higher mean annual incomes on average than other minority groups.¹

Although research on Asian business ownership is extensive, only a handful of previous studies use business-level data to study the outcomes of Asian-owned firms.

¹ There is some debate in the literature, however, over the appropriate measure of earnings with results being sensitive to this choice (Portes and Zhou 1996).

The lack of research of Asian firms and their outcomes is primarily due to the limited availability of data with large enough samples of Asian-owned businesses and detailed information on business outcomes. This lack of research is unfortunate given such dramatic differences in outcomes across racial groups. The few studies using business-level data to explore why Asian-owned businesses are more likely to survive find that high levels of investment of human and financial capital are important factors (Bates 1989b, 1994b, 1997; Robb 2000).

In this paper, we use confidential and restricted-access microdata from the Characteristics of Business Owners (CBO) to explore the role that human capital, financial capital and other factors play in contributing to the relative success of Asian-owned businesses.² The CBO contains a large sample of Asian-owned businesses and detailed information on the characteristics of both the business and the owner, but has been used by only a handful of researchers primarily because of difficulties obtaining access, using and reporting results from the data.³ Estimates from the CBO indicate that Asian firms have higher survival rates, profits, employment and sales than white firms. To identify the underlying causes of these differences in business outcomes, we first explore the determinants of business success. We estimate logit and linear regression models for several business outcomes to identify the owner and firm characteristics that predict business success. Next, we employ a decomposition technique that identifies whether a particular factor is important, as well as how much of the gap the factor explains in a particular outcome. This allows one to compare the relative contributions of

² See Appendix 1 for a detailed explanation of our focus on Asian-owned businesses in general, rather than on Asian immigrants or specific Asian subgroups.

³ All research using the CBO must be conducted in a Census Research Data Center or at the Center for Economic Studies (CES) after approval by the CES and IRS, and all output must pass strict disclosure regulations.

racial differences in startup capital, human capital, and other factors in explaining why Asian-owned businesses have better average outcomes than white-owned businesses.

2. Data

The 1992 Characteristics of Business Owners (CBO) survey was conducted by the U.S. Bureau of the Census to provide economic, demographic and sociological data on business owners and their business activities (see U.S. Census Bureau 1997, Bates 1990a, Headd 1999, and Robb 2000 for more details on the CBO). It includes oversamples of black-, Hispanic-, other minority- (which is primarily Asian), and female-owned businesses. The survey was sent to more than 75,000 firms and 115,000 owners who filed an IRS form 1040 Schedule C (individual proprietorship or self-employed person), 1065 (partnership), or 1120S (subchapter S corporation). Only firms with \$500 or more in sales were included. The universe from which the CBO sample was drawn represents nearly 90 percent of all businesses in the United States (U.S. Census Bureau, 1996). Response rates for the firm and owners surveys were approximately 60 percent. All estimates reported below use sample weights that adjust for survey non-response (Headd, 1999).

The CBO is unique in that it contains detailed information on both the characteristics of business owners and the characteristics of their businesses. For example, owner characteristics include education, detailed work experience, hours worked in the business, marital status, age, weeks and hours worked, personal income, and how the business was acquired. Business characteristics include closure, profits, sales, employment, industry, startup capital, types of customers, health plans, and

exports. Most business characteristics refer to 1992, with the main exception being closure which is measured over the period 1992 to 1996. Additional advantages of the CBO over other nationally representative datasets for this analysis are the availability of measures of financing at startup and the large oversample of Asian-owned businesses. In particular, very few datasets have large enough samples of Asian-owned businesses to allow for a separate analysis. Finally, the CBO allows one to explore the causes of racial differences in several business outcomes, such as closure rates, sales, profits, and employment size, instead of focusing solely on self-employment earnings.

The sample used for our analysis includes firms that meet a minimum weeks and hours restriction. Specifically, at least one owner must report working for the business at least 12 weeks in 1992 and at least 10 hours per week. This restriction excludes 22.1 percent of firms in the original sample. The weeks and hours restrictions are imposed to rule out very small-scale business activities such as casual or side-businesses owned by wage/salary workers. We also impose tighter restrictions on weeks and hours worked to check the sensitivity of our main results and comment on these below.

3. Racial Differences in Small Business Outcomes

Asians differ from other minority groups in that they have high rates of business ownership. Estimates from the Current Population Survey (CPS) indicate that 11.0 percent of Asians are self-employed business owners, which is nearly identical to the 11.2 percent rate of whites who are self-employed. This compares with 7.4 percent of Hispanics and 5.1 percent of Blacks. In addition to having relatively high rates of self

employment, Asian businesses also have better business outcomes, relative to other groups.

Table 1 reports estimates of closure rates between 1992 and 1996, and 1992 profits, employment size, and sales from the CBO. The magnitude of these differences in business outcomes is striking. For example, 38 percent of Asian-owned firms have annual profits of \$10,000 or more, compared with 30 percent of white-owned firms. Asian-owned firms also have higher survival rates than white-owned firms. The average probability of a business closure between 1992 and 1996 is 18 percent for Asian-owned firms, compared with 23 percent for white-owned firms.

Asian-owned firms are substantially larger on average than are white-owned firms. The mean of log sales among Asian-owned firms was 10.7 in 1992, compared with 10.1 for firms owned by whites. Asian-owned firms are also more likely to have employees than firms owned by whites. Less than 21 percent of white-owned firms hire employees, compared with 30 percent of Asian-owned firms.

In summary, estimates from the CBO indicate that Asian-owned businesses are 16.9 percent less likely to close, 20.6 percent more likely to have profits of at least \$10,000, and 27.2 percent more likely to hire employees than businesses owned by whites. Asian firms also have mean annual sales that are roughly 60 percent higher than the mean sales of white-owned firms. The relative success of Asian-owned businesses is even more striking when compared to the performance of businesses owned by African-Americans (see Fairlie and Robb 2006b).

4. Social/Ethnic Resources

Both the economics and sociology literatures offer various explanations for the determinants of self employment and the observed self-employment rates of Asians. Excellent reviews of the literature can be found in Aldrich and Waldinger (1990), Boyd (1991), and Bates (1997). Zhou (2004) and Light (2004) provide more recent reviews of the ethnic entrepreneurship literature.⁴ High rates of business ownership among Asians have been linked to having substantial class resources, such as human and financial capital, and social or ethnic resources, such networks, rotating credit associations, and access to co-ethnic labor.

Much of previous literature on Asian business owners focuses on the prevalence of social resources. These lines of research deal with the special social capital resources available to ethnic groups, mainly Asians, and more specifically to Asian immigrants. Networks of co-ethnics may provide valuable resources such as customers, labor, and information (technical assistance/ advice) for would be entrepreneurs (Zhou 2004, Waldinger, Adrich, and Ward 1990, Light 1972, Kalnins and Cheung 2006). Few studies are able to test these theories empirically, however, due to a lack of data.⁵ However, this literature sheds some light on the resources available to Asian business owners that may affect business outcomes.

There are many instances of ethnic communities throughout the United States and a rich literature details their existence and they factor into business creation and outcomes for ethnic entrepreneurs. For example, Light (1972) and Bonacich and Model (1980)

⁴ See Parker (2004) for a review of the more general literature on self-employment and entrepreneurship.

⁵ A recent study by Kalnins and Chung (2006) provides empirical evidence that Gujarati immigrant entrepreneurs in the hotel industry rely on help from social networks to operate their businesses.

study Japanese Americans in California. Zhou (1992, 1995) examines Chinese immigrants in New York. Koreans have been studied in Atlanta (Min 1984, 1988), Los Angeles (Bonacich and Light 1988), and Chicago (Kim and Hurh 1985, Yoon 1995). Portes and Bach (1985) examine the Cuban community in Florida. Some researchers assert that these ethnic enclaves create opportunities for would be entrepreneurs (Aldrich et al., 1985; Borjas, 1990) by providing markets, labor, and information. The protected-market hypotheses put forth by Light (1972), Aldrich et al. (1985), and Waldinger et al. (1990) maintains that ethnic enterprises often better serve the market of ethnic minorities best by offering transactions in their own language and more efficiently responding to a group's tastes and demands. Ethnic groups often concentrate in a given area, which can result in the decision of non-minority business owners to leave and correspondingly open up opportunities that can be taken advantage of by minority groups (Aldrich, et al., 1985). Niche markets arise in some areas due to underserved markets, especially in inner cities (Porter 1995; Yoon 1991, 1997).

Ethnic entrepreneurs often get their start in business by serving a predominantly minority clientele, which typically populate the area where the ethnic businesses are located. While enclaves offer opportunities for market access to ethnic entrepreneurs, relying on the ethnic enclave as the sole source of demand can limit growth potential because of the limited market size (Bates 1997, Waldinger et al 1990). Boyd (1991) finds no benefit of a concentrated ethnic population on ethnic immigrant entrepreneurs, and Clark and Drinkwater (2002) provide evidence of lower self-employment rates among Asians in areas with larger minority concentrations. Enclaves may also affect a business' survival prospects because many individuals from the same enclave could opt

for business ownership for the same reasons and result in excess competition, causing some of the locations to go out of business (Bates 1997, Waldinger et al. 1990, Yoon 1991).

Another line of research is the comparative advantage of ethnic minorities to attract cheap labor from within their own network (Waldinger 1986, Bonacich and Light 1988). Asians can access co-ethnics and family members, which may provide an edge in hiring low-paid and trusted workers (Fratoe 1988; Min 1986-7; Boyd 1991). However, the vast majority of the self-employed do not have any employees (besides themselves), so that this argument cannot explain much of the large differences in self-employment rates and outcomes.

Greater reliance on social or ethnic resources may be necessary for those with lower levels of class resources, but could result in worse outcomes because they are limited. Chaganti and Greene (2002) find that entrepreneurs with higher levels of involvement in their ethnic community have lower levels of personal resources and are more reliant on their communities. Yoon (1991) finds that Korean immigrant businesses that are more reliant on ethnic resources have lower levels of start up capital and lower levels of gross sales. Bates (1997) finds that Asian Indians are least oriented to serving a minority clientele, least likely to employ a predominantly minority labor force, and hence least likely to utilize resources of ethnic enclaves, yet have the best performance of all Asian-owned firms. The Asian subgroup with the worst performance, the Vietnamese, is very active and reliant on ethnic enclaves to start and operate businesses.

5. The Determinants of Small Business Outcomes

Class resources, such as education and startup capital, have also been found to contribute to the success of Asian-owned businesses (see Bates 1997 and Boyd 1991 for example). To further investigate the potential importance of these factors, we first model the determinants of small business outcomes. Once the owner and firm characteristics that are associated with business success are identified, we can estimate the contributions from racial differences in these factors to Asian/white differences in business outcomes. We focus on the factors that can be measured with the CBO microdata. The models we estimate are relatively parsimonious specifications that include more exogenous owner and firm characteristics that predict business success. These ultimately will be policy relevant factors (e.g. policies addressing social capital are much harder to create than access to financial capital). Our goal is to see how much we can explain with these simpler models.

The CBO data contain information on four major business outcomes -- closure, profits, employment and sales. Although none of these measures alone represents a perfect, universally agreed upon measure of business success, taken together they provide a fairly comprehensive picture of what it means to be successful in business. Logit and linear regression models are estimated for the probability of a business closure from 1992-1996, the probability that the firm has profits of at least \$10,000 per year, the probability of having employees, and log sales.⁶ Table 2 reports estimates of marginal effects for the logit regressions and coefficients for the OLS regression. Because of

⁶ The profit measure available in the CBO is categorical. We estimate a logit model for the cutoff of \$10,000 to make it easier to interpret the coefficients and perform the decomposition described below. We also find similar results in estimating an ordered probit for all categories of profits, which is shown in Specification 5 of Table 2.

concerns regarding potential endogeneity, we follow the approach taken in many previous studies of self-employment reporting estimates from separate sets of regression models that exclude and include startup capital and industry controls.⁷ We discuss the results without startup capital and industry controls first.

After controlling for numerous owner and business characteristics, Asian-owned businesses continue to outperform white-owned businesses. In all specifications except the profits equation, the coefficient estimate on the Asian-owned business dummy variable is large, positive (negative in the closure equation) and statistically significant. Although these estimates imply that racial differences in the included variables cannot explain all of the Asian/white disparities in outcomes in this specification, the conclusion changes after including additional controls. We discuss these results further in Section 6.

Similar to previous studies, we find that small business outcomes are positively associated with the education level of the business owner (Bates 1997, Astebro and Bernhardt 2003, Robb 2000, and Headd 2003). Estimates from the CBO indicate that owner's education improves all four of the available business outcomes. For example, compared with businesses with owners that have dropped out of high school, businesses with college-educated owners are 5.5 percentage points less likely to close, 11.3 percentage points more likely to have profits of \$10,000 or more, 6.1 percentage points more likely to have employees, and have approximately 25 percent higher sales. Owners who have completed graduate school have even more successful businesses. For example, they are 10.4 percentage points more likely to hire employees and have sales that are roughly 37 percent higher than businesses owned by college graduates. Looking

⁷ The concern is that low levels of startup capital and industry choice may be partly determined by the ability of the entrepreneur.

across education levels we generally see better business outcomes with each higher level of education. If Asian business owners have higher education levels than white business owners, this difference could contribute to the better average outcomes among Asian-owned businesses. We explore this further below.

Female-owned businesses have lower outcomes, on average, than male-owned businesses, which is consistent with previous findings indicating that for firms with employees, those owned by women were less likely to survive over a four year period than were those owned by men (Robb 2000) and that self-employment is associated with higher earnings for men, but lower earnings for women (see Hundley 2000 for example)

Firms located in urban areas are more likely to close and are less likely to have employees, but are more likely to have large profits and have higher sales than firms located in non-urban areas. Previous work experience has mixed effects across outcome measures, although we find some evidence that suggests individuals with 20 or more years or very few years of prior work experience have worse outcomes, on average.

Having a family business background is important for small business outcomes (see Fairlie and Robb 2006a for more details). The main effect, however, appears to be through the informal learning or apprenticeship type training that occurs in working in a family business and not from simply having a self-employed family member. The coefficient estimates on the dummy variable indicating whether the owner had a family member who owned a business are small and statistically insignificant in all of the specifications except for the closure probability equation. In contrast, working at this family member's business has a large positive and statistically significant effect in all specifications. The probability of a business closure is 0.042 lower, the probability of

large profits is 0.032 higher, the probability of employment is 0.055 higher, and sales are roughly 40 percent higher if the business owner had worked for one of his/her self-employed family members prior to starting the business.⁸ The effects on the closure, profit and employment probabilities represent 15.3 to 26.6 percent of the sample mean for the dependent variables.

Perhaps not surprisingly, inherited businesses are more successful and larger than non-inherited businesses. The coefficients are large, positive (negative in the closure equation) and statistically significant in all specifications. Inheritances may represent a form of transferring successful businesses across generations, but their overall importance in determining business outcomes is slight at best. Although the coefficient estimates are large in the outcome equations, the relative absence of inherited businesses (only 1.6 percent of all small businesses) suggests that they play only a minor role in establishing an intergenerational link in self-employment.

The CBO also provides detailed information on other forms of acquiring general and specific business human capital. Available questions include information on prior work experience in a managerial capacity and prior work experience in a business whose goods and services were similar to those provided by the owner's business. Management experience prior to starting or acquiring a business generally improves business outcomes, but does not have a consistent effect across specifications. In contrast, prior work experience in a similar business, which provides specific business human capital, is

⁸ These estimates are not overly sensitive to the exclusion of firms started before 1980 or the inclusion of the age of the firm (with the exception of the inheritance variable). In addition, estimates from the log sales specification are not sensitive to the exclusion of firms with extremely large annual sales.

an important determinant of business success. In all specifications, the coefficient estimates are large (negative in the closure equation), positive and statistically significant.

We estimate a second set of small business outcome regressions that include dummy variables for different levels of startup capital and major industry categories. Estimates are reported in Table 3. As expected, small business outcomes are positively associated with the amount of capital used to start the business. The coefficients on the startup capital dummies are large, positive (negative for the closure probability), and statistically significant in all specifications. In almost every specification outcomes improve with each higher level of startup capital. The strength of the relationship between startup capital and business success is also strong for each type of business outcome. Perhaps the most interesting finding is the relationship between startup capital and closure. Firms with \$100,000 or more in startup capital are 23.0 percentage points less likely to close than are firms with less than \$5,000 in startup capital and are 9.9 percentage points less likely to close than are firms with \$25,000 to \$99,999 in startup capital. These results hold even after controlling for detailed owner and firm characteristics including business human capital and the industry of the firm. Owners who have less access to startup capital appear to start less successful businesses, which is consistent with the findings of previous studies (Bates 1997, Robb 2000 and Headd 2003).

Industry is also linked to business success as many of the dummy variables for industries are large in magnitude and statistically significant (retail trade is the left-out

category). The estimates vary across specifications, however, making it difficult to summarize the association between industries and business outcomes.⁹

6. Racial Differences in the Determinants of Business Success

The regression analysis identifies several owner and firm characteristics that are strongly associated with business outcomes. The next question is whether Asian-owned businesses and white-owned businesses differ in these characteristics. Large differences between Asian and white firms in the key determinants of business success will contribute to differences in business outcomes. The exact contributions are estimated using the decomposition technique discussed in the next section.

To explore differences between Asian- and white-owned businesses, we first examine the owner's education level, which was found to be an important determinant of business outcomes. Asians are the most educated racial group in the United States. Estimates from 2000 Census microdata indicate that nearly half of all Asian adults have at least a college degree. This compares with less than 30 percent of whites. The pattern

⁹ The addition of startup capital and industry does not overly influence the estimated effects of the human capital, business human capital, and family business background variables. We also investigate whether our regression estimates are sensitive to alternative samples. First, we estimate regressions using a sample that excludes firms with less than \$5,000 in startup capital. We do not use this restriction in the original sample because most businesses report requiring very little in startup capital, and, in fact, many large successful businesses started with virtually no capital and because of concerns that the receipt of startup capital may be related to the potential success of the business (see Fairlie and Robb 2006a). Although mean outcomes among businesses that started with \$5,000 or more in startup capital are better than those for all businesses, we find roughly similar estimates for most variables in the regression models. We also check the sensitivity of our results to the removal of part-time business owners. We estimate separate regressions that only include businesses with at least one owner who works 30 hours or more per week and 36 weeks or more per year, which reduces the sample size by roughly 20 percent. Although average business outcomes are also better for this sample, we find similar coefficients on most variables. We also estimate regressions that include even tighter hours and weeks worked restrictions and find roughly similar results. Overall, the regression results are not sensitive to these alternative sample restrictions.

of higher education levels among Asians is also observed when we look at our sample of active business owners. As illustrated in Figure 1, 47 percent of Asian business owners have at least a college degree and 22 percent have gone beyond an undergraduate degree to pursue graduate school. Roughly one third of whites have at least a college degree, but only 14 percent have continued on to pursue a graduate degree.

These differences and the estimated effects of education in the business outcome regressions indicate that higher education levels partially explain why Asian-owned businesses have better outcomes than white-owned businesses. This finding is consistent with previous research on outcomes of Asian-owned businesses (Boyd 1991, Bates 1997, Robb 2000). The decompositions expand on these findings, however, by providing an estimate of how much observed racial differences in education explain of the Asian/white differences in business outcomes.

Asians also have a strong tradition of business ownership. Asian self employment rates have remained relatively consistent since the late 1980's and are similar to white rates. The regression estimates indicate that the owner's family business background and type of prior work experience are important for success in running a business. Family businesses appear to provide an important opportunity for family members to acquire human capital related to operating a business. If Asians have plentiful opportunities to acquire important general and specific business human capital through these avenues then it could partly explain why they tend to have more successful businesses.

Focusing on current business owners, however, we do not find evidence that Asian owners have more advantaged family business backgrounds than whites. Estimates of having a self-employed family member, working in family businesses, and

business inheritances are reported in Table 4. About 44 percent of Asian business owners indicate that they had a self-employed family member prior to starting their firm. This compares with 53 percent of white-owned firms. About 41 percent of owners with a self-employed family member previously worked in that family member's business compared with 44 percent of white business owners. Overall, about 18 percent of Asian business owners previously worked in a family member's business before starting their own, compared with about 23 percent of white business owners. Inheritance was an infrequent source of business ownership, with only 1.3 percent and 1.7 percent of Asian and white business owners respectively citing this as a source of their businesses. These estimates indicate that the current generation of Asian business owners does not have an advantaged family business background relative to white business owners. Instead, Asian owners appear to have less experience, on average, than white owners in working for family businesses prior to starting their own businesses.

Related to the family business background of the owner, marriage is associated with business success. Spouses may provide financial assistance, paid or unpaid labor for the business, health insurance coverage, and other types of assistance useful for running a business. Estimates from the CBO indicate that 82 percent of Asian owners are married compared with 77 percent of white owners (see the Variable Appendix). The difference is not that large, suggesting that differences between Asians and whites in marital status cannot have a large explanatory effect on racial differences in business outcomes.

For other types of business human capital, estimates from CBO microdata indicate that white and Asian business owners have similar business and management experience. As indicated in Table 4, 50 percent of white business owners and 47 percent

of Asian business owners previously worked in a business that provided similar goods or services as the businesses they currently own. This type of work experience undoubtedly provides opportunities for acquiring job- or industry-specific business human capital in addition to more general business human capital. In addition, about 56 percent of owners in both racial categories have previous work experience in a managerial capacity prior to owning their current business, which provides an opportunity to gain professional and management experience useful in running future business ventures. The similarity of these factors across white and Asian owners implies that they cannot explain much, if any, of the observed differences in business outcomes.

The number of years of work experience prior to starting the business may also affect business outcomes. As seen in Table 4, roughly one quarter of Asian business owners had less than two years of work experience before starting their business, compared with just seven percent of white business owners. The opposite is true at the other end of the distribution. More than one quarter of white business owners had 20 or more years of work experience, prior to opening their businesses, compared with 13 percent of Asian business owners. The racial differences in previous work experience are large between the two groups, indicating that this may play a role in the racial differences in business outcomes.

WEALTH DIFFERENCES

The owner's level of wealth may affect future business success. In particular, the owner's wealth may affect access to financial capital because this wealth can be invested

directly in the business or used as collateral to obtain business loans.¹⁰ Entrepreneurs that face limited access to financial capital might start smaller, less successful businesses. Unfortunately, the CBO does not contain a measure of the owner's net worth prior to starting the business, but it does include information on startup capital. As discussed above the amount of startup capital used in the business has a strong positive association with all of the business outcomes.

We first examine wealth differences between the Asian and white population and then, using the CBO data, explore whether financial capital differences explain why Asian-owned businesses outperform white-owned businesses. Estimates from pooling the 1984-2001 SIPP Panels indicate that Asians and whites have similar wealth levels.¹¹ Using households headed by individuals 25-64 years old, we find that the median total net worth in 2000 dollars is about \$59,400 for whites and \$49,300 for Asians. Asians have a slightly higher mean total net worth of about \$129,300, compared with \$123,600 for whites.

These estimates indicate that Asians have wealth levels that are comparable to whites. Do these similar wealth levels translate into similar levels of startup capital or do Asians and whites differ in the types of financing used, potentially resulting in different levels of startup capital? We investigate these questions next.

¹⁰ Business ownership may be an effective method of acquiring wealth and individuals who are adept at accumulating wealth perhaps through wage/salary work may be the same ones who are the most successful at starting businesses. See Bates (1990) for a discussion of endogeneity concerns of startup capital and Bradford (2003) for evidence on wealth accumulation among entrepreneurs.

¹¹ We are thankful to Lingxin Hao for providing these estimates. See Hao (2007) for evidence on wealth differences.

TYPES OF FINANCING

Published estimates from the 1992 CBO combined Asians and Pacific Islanders with American Indians and Alaska Natives (U.S. Census Bureau 1997). Thus, when examining sources of borrowed and equity capital, we are limited to presenting Asians and Native Americans combined. However, nearly 85 percent of this group is in fact Asians and Pacific Islanders.

As shown in Table 5, Asian/Other Minority owners differ from white business owners in the types of financing they used to start their businesses. Nearly 7 percent of Asians/Other Minorities used a personal loan from a home mortgage or equity line of credit, compared with 4.3 percent of whites. They were also more likely than whites to use a personal credit card or a personal loan from a spouse. More significantly however, 12 percent of Asians/Other Minorities used a personal loan from a family member and 9.4 percent used some other type of personal loan. These compare with 4.9 percent and 6.1 percent for whites, respectively. In our subsample of active firms using the CBO microdata, we are able to isolate Asians from Native Americans and find that 11.5 percent of Asians had a loan from family members, compared with 6.2 percent of white owners. Thus, Asians are much more likely than whites to rely on family sources for borrowed startup capital for their businesses.

The story is mixed for non-borrowed startup capital. Published CBO estimates show that whites were more likely to use an owner's personal or family physical assets for the business startup (17.1 percent) than were Asians (12.8 percent). Bates (1997) finds that the majority of Asian start up capital on the equity side comes from family wealth. Asians were slightly more likely to use proceeds from the sale of owner's assets

to finance a business start up, but only 3 percent of Asians did so. Finally, Asians were much more likely to invest personal or family savings in the business (47.2 percent) than were whites (36.4 percent).

In examining the sources of borrowed startup capital for the firm, the story was similar. Asian-owned businesses were more likely to have borrowed capital from each of the different sources than were whites. Business loans from banking or commercial lending institutions were the most common (12.3 percent for Asians and 12.1 for whites), followed by business loans from a previous owner (4.8 percent versus 1.9 respectively) and other business loans (2.7 percent versus 1.6 percent). Very few businesses used loans from the Federal, State, or local governments. Bates (1997), using 1987 CBO data, finds that the majority of debt start up capital came from financial institutions.

One line of research in the sociological literature examines rotating credit associations and other types of financing, which emerged out of ethnic networks. These associations known as *hui* among Chinese entrepreneurs and *gae* among Korean entrepreneurs allow people in the network to pool their savings and lend to individuals, many of whom start up businesses with the borrowed capital. Previous research has noted the role of rotating credit associations in providing financial capital for Asian businesses (see Light, Kwuon and Zhong 1990 and Yoon 1991 for example). Yet, estimates from the CBO indicate that, at most, 13.5 percent of Asian/Other Minority business owners report having a personal or business loan from "other" sources, which is lower than the total incidence for bank loans and credit cards. Using the 1987 CBO, Bates (1997) finds that rotating credit associations were not a major source of credit for Asian businesses and that it was weaker firms that were more apt to make use of these

credit associations. It appears that many rotating credit associations generally provide very short-term capital and that their role as a saving mechanism may be more important than their role in providing loans.¹²

STARTUP CAPITAL

Estimates from the CBO indicate that Asians start their businesses with far more capital than whites. Figure 2 indicates that 12 percent of Asian-owned businesses started with more than \$100,000 in capital, compared with just 5 percent of white-owned firms. Nearly a quarter of Asian-owned businesses started with \$25,000-100,000, compared with just 11 percent of white-owned firms. More than 60 percent of white owned firms were started with less than \$5,000, whereas only 36 percent of Asian-owned firms started with this level of capital.

Bates (1997) finds similar patterns using the 1987 CBO. The total financial capital at start-up was \$32,000 on average for nonminorities, whereas it was nearly \$54,000 for Asian immigrants. He also finds that nearly half of Asians used borrowed funds to finance the business start up (compared with 34 percent of nonminorities). Bates compares active versus discontinued firms owned by Asian immigrants and finds that those that remained active over a five year period averaged more than \$62,000 in start up capital, compared with less than \$16,000 for discontinued firms.

High levels of capitalization among Asian firms may be related to differential selection into business ownership, family and co-ethnic resources, and the types of firms that they create. Differences in types of firms, however, do not appear to explain much

¹² In addition, previous research finds that this unregulated source of funding can come with usurious interest rates that can negatively impact the chance for a business to succeed (Light, Kwuon, and Zhong 1990, Bates 1997).

of the differences. Higher levels of startup capital among Asians and other minorities than among whites are consistent across most industry sectors (U.S. Census Bureau 1997). Even in services and retail, where Asians are disproportionately located, Asians use higher than average levels of start up capital. Asians are more reliant on personal and family equity and borrowed capital than whites. While Asians have similar wealth levels as whites, they turn that wealth into higher levels of start up capital, both equity (non-borrowed) and debt capital (borrowed). Furthermore, they leverage their wealth into higher levels of borrowing by both the owner (through personal loans, credit cards, etc.) and the firm (business loans, etc.). The remaining questions are do higher levels of start up capital result in better business incomes, and, if so, how much do higher levels of startup capital explain of the better average outcomes among Asian-owned businesses.

INDUSTRY DIFFERENCES

Table 6 shows the distribution of firms by industry for white and Asian-owned firms. Interestingly, Asians are much less frequently found in the mining and construction industries than whites, even though their wealth and capital access appear to be on par with whites. Asians are slightly more likely to be found in the wholesale industry, which is also characterized by higher capital requirements for entry. Even within this industry, Asians use higher than average levels of startup capital (U.S. Census Bureau 1996).

Asians are much more likely to be found in the retail trade sector, with one quarter of Asian firms locating in this industry. This compares with just 15 percent of whites. There has been some concern in the literature that the concentration of Asians in the retail industry reflects less than optimal opportunities in salaried employment

(Kassoudji 1988, Borjas 1994, Bates 1997, Mar 2005). Yet, Asians are about equally likely as whites to be in the personal services industry with about 26 percent of each group locating in this industry. They are also about equally likely to be located in professional services, with 19.3 percent of whites and 18.8 percent of Asians locating there. Thus, it appears that the concern that minority firms are limited to certain industries because of capital constraints does not appear to hold for Asians. The apparent dearth of Asian-owned firms in the construction industry is probably due in part to preferences or to industry specific knowledge and experience. Another explanation may be that it is an industry in which there are considerable entry barriers created by existing networks and discrimination against outsiders (Bates 1993b, Feagin and Imani 1994, Bates and Howell 1997).

HOURS WORKED

Are Asian-owned businesses more successful than white-owned businesses because Asian owners typically work long hours? Bates (1997) finds that the relative success of Asian immigrant firms disappears after adjusting for the number of hours worked by the owner. We are concerned about including hours worked in the regression models or using them to create adjusted outcome measures such as firm profits or sales per hour because it assumes away the possibility that limited demand for products and services is responsible for why some business owners work less than full-time. We would be implicitly assuming that all business owners work their desired amount of hours, which is unlikely to be the case.

Even with these concerns, it is useful to examine whether Asian owners work more hours on average than other owners. We are especially interested in focusing on whether Asian owners are more likely to work long hours exceeding 40 hours per week. Published estimates from the CBO indicate that Asian/Other Minority owners are slightly less likely than owners of all firms to report working 41-49 hours per week and are slightly more likely to report working 50-59 hours per week, compared with all firms (see Figure 3). The main difference is that Asian owners are more likely to work 60 hours or more. Twenty-two percent of Asian owners work 60 or more hours per week compared with 15 percent of all owners. However, differences in the other categories are not large and owners working very long hours represent a small fraction of all Asian business owners.

Examining sales by hours worked illustrates that Asian and other minority firms have better sales outcomes than whites-owned firms across all of the categories for hours worked. This implies that long hours are not the driving force behind the better outcomes of Asian-owned businesses. As shown in Figure 4, Asian-owned businesses are more likely to have revenues of \$100,000 or more in every hours worked category, not just at the higher end of the distribution. Previous researchers have noted that business owners have more flexibility in hours worked and are often willing to work more given a certain return (see Portes and Zhou 1996 for example), suggesting that the long hours may be in response to significant demand for their goods or services, and thus an indicator of success. Overall, Asian business owners may be more likely to work very long hours (i.e. 60 or more hours per week), but this represents only a fraction of Asian firms and even for this group, Asian firms perform better than white firms.

7. Identifying the Causes of Racial Differences in Small Business Outcomes

Estimates from the CBO indicate that Asian business owners differ from white owners for many characteristics, such as education and startup capital. The estimates reported in Tables 2 and 3 also indicate that many of these variables are important determinants of small business outcomes. Taken together these results suggest that racial differences in education, startup capital, and previous experience contribute to why Asian-owned businesses have better outcomes on average than white-owned businesses. The impact of each factor, however, is difficult to summarize. In particular, we wish to identify the separate contributions from racial differences in the distributions of all of the variables or subsets of variables included in the regressions.

To explore these issues further, we employ a variant of the familiar technique of decomposing inter-group differences in a dependent variable into those due to different observable characteristics across groups and those due to different "prices" of characteristics of groups (see Blinder 1973 and Oaxaca 1973).¹³ The technique that we describe here takes into account the nonlinearity of the logit regressions used to estimate the closure, profit, and employment probability equations discussed above (see Fairlie 1999, 2005 for more details).¹⁴ The standard Blinder-Oaxaca decomposition is used for the log sales specification. Similar to most recent studies applying the decomposition technique, we focus on estimating the first component of the decomposition that captures

¹³ The standard Blinder-Oaxaca decomposition of the white/minority gap in the average value of the dependent variable, Y , can be expressed as: $\bar{Y}^W - \bar{Y}^M = \left[(\bar{X}^W - \bar{X}^M) \hat{\beta}^W \right] + \left[\bar{X}^M (\hat{\beta}^W - \hat{\beta}^M) \right]$.

¹⁴ SAS programs are available for the non-linear decomposition technique at econ.ucsc.edu/~fairlie/decomposition, and a Stata program and help file is available by entering "ssc install fairlie" in Stata.

contributions from differences in observable characteristics or "endowments." We do not report estimates for the second or "unexplained" component of the decomposition because it partly captures contributions from group differences in unmeasurable characteristics and is sensitive the choice of left-out categories making the results difficult to interpret (see Jones 1983 and Cain 1986 for more discussion).

For a nonlinear equation, such as $Y = F(X \hat{\beta})$, a modification is needed for the decomposition because \bar{Y} does not necessarily equal $F(\bar{X} \hat{\beta})$. Instead, we use the full distribution of X to calculate the average predicted probability. In the case of a logistic model that includes a constant term, the average value of the dependent variable must equal the average value of the predicted probabilities in the sample.¹⁵ Another issue that arises in calculating the decomposition is the choice of coefficients or weights for the first component of the decomposition. The first component can be calculated using either the white or minority coefficients often providing different estimates, which is the familiar index problem with the Blinder-Oaxaca decomposition technique. An alternative method is to weight the first term of the decomposition expression using coefficient estimates from a pooled sample of the two groups (see Oaxaca and Ransom 1994 for example). We follow this approach to calculate the decompositions by using coefficient estimates from a logit regression that includes a sample of all racial groups.

The contribution from racial differences in the characteristics can thus be written as:

¹⁵ In contrast, the predicted probability evaluated at the means of the independent variables is not necessarily equal to the proportion of ones, and in the sample used here it is likely to be smaller because the logit function is convex for values less than 0.5.

$$(5.1) \quad \sum_{i=1}^{N^W} \frac{F(X_i^W \hat{\beta}^*)}{N^W} - \sum_{i=1}^{N^M} \frac{F(X_i^M \hat{\beta}^*)}{N^M},$$

where X_i^j is a row vector of characteristics for firm i of race j , $\hat{\beta}^*$ is a vector of pooled coefficient estimates, and N^j is the sample size for race j . Equation (5.1) provides an estimate of the contribution of racial differences in the entire set of independent variables to the racial gap. An additional calculation, however, is needed to identify the contribution of group differences in specific variables to the gap. For example, assume that X includes two variables, X_1 and X_2 . The independent contribution of X_1 to the racial gap can be expressed as:

$$(5.2) \quad \frac{1}{N^M} \sum_{i=1}^{N^M} F(X_{1i}^W \hat{\beta}_1^* + X_{2i}^W \hat{\beta}_2^*) - F(X_{1i}^M \hat{\beta}_1^* + X_{2i}^W \hat{\beta}_2^*).$$

Next, to calculate the contribution of racial differences in X_2 to the gap, we use the difference between the average predicted probability using the minority distribution for X_1 and the white distribution for X_2 and the average predicted probability using the minority distributions for both X_1 and X_2 . Thus, the contribution from racial differences in each variable to the gap is calculated from the change in average predicted probabilities resulting from sequentially switching white characteristics to minority characteristics one variable or set of variables at a time. The calculation of (5.2), however, is not possible without first matching the white distribution of X_1 and the minority distribution of X_2 . We draw a random subsample of whites with a sample size equal to N_B and randomly match it to the minority sample.

The decomposition estimates obtained from this procedure depend on the randomly chosen subsample of whites. Therefore, to obtain estimates that use the entire

white sample, we draw a large number of random white subsamples. We then calculate the mean value of estimates from all of these samples. In the decompositions reported below, we use 1000 random subsamples of whites to calculate these means.

Table 7 reports estimates from this procedure for decomposing the Asian/white gaps in business outcomes. The separate contributions from racial differences in each set of independent variables are reported. Based on the concerns noted in the previous literature regarding the potential endogeneity of startup capital and industry, we report decomposition results for the main owner and firm characteristics first.

Owner sex plays only a small role in outcomes with the exception of profits, in which case it explains 5.5 percent of the Asian/white gap. Marital status also plays a small role in outcomes, but it explains nearly 4 percent of the gap in employment and 5 percent of the gap in profits. Being married is perhaps indicative of having access to family labor, which can contribute to better business outcomes. In our sample 82 percent of the Asian owners were married, compared with 77 percent of white owners. The means of all of the independent variables not listed in previous tables are located in the Variable Appendix.

Education plays a major role in explaining the Asian/white gap in outcomes. Although it explains just 6.8 percent for sales, it explains 16 percent in both the profits and employer models and more than 24 percent in the closure equation. These results indicate that much of the success of Asian-owned firms can be attributed to their higher education levels relative to whites. More than 22 percent of Asian owners have a post college education, compared with about 14 percent of whites and nearly a quarter of Asian owners have a college degree, compared with 20 percent of whites. High average

levels of human capital contribute significantly to better business outcomes among Asian firms.

Interestingly, regional differences also play a role in explaining the higher profits (35 percent) and sales (10.3 percent) of Asian-owned businesses. Nearly 50 percent of Asian-owned firms are located in the Pacific region. Perhaps many of these firms have a wider market and/or export to Asia. Region explains very little of the other two outcome variables. Urbanicity explains more than 15 percent of the Asian/white gap in profits. It also explains 8.4 percent of the gap in closure rates and 13.1 percent of the employer gap, but just 3.4 percent of the gap in the log of sales. Nearly 95 percent of Asian-owned firms are located in urban areas, compared with about three quarters of white-owned firms. Locating in an urban area might also indicate a broader market area with more growth potential.

Variations in previous work experience explain between 6 and 23 percent of the gaps in business outcomes. As seen previously, the estimated effects of prior work experience vary somewhat across outcome measures, although we find some evidence suggesting that individuals with 20 or more years of prior work experience and owners with very little previous work experience have worse outcomes, on average. Owners with long prior work experience may have moved into business ownership as a response to job loss (Farber 1999, Fairlie and Krashinsky 2005) or for lifestyles changes, while owners with very little experience may encounter difficulties identifying good business opportunities. Nearly 24 percent of Asian owners have one year or less of prior work experience when starting their businesses, compared with 7 percent of whites. Yet white-owned firms are twice as likely (26 percent) as Asians (13 percent) to have 20 or more

years of previous work experience when starting their businesses. It appears that lower incomes by the most experienced outweigh those of the least experienced, as variations in previous work experience explain between 6 and 23 percent of the gaps in business outcomes. It is most important in the profits outcome, which could indicate that very experienced business people are entering business ownership for lifestyle reasons, rather than for profit motives.

Similar business experience and working in a family member's business actually increase the gaps. In other words, Asians have disadvantaged levels of these characteristics compared with whites. From Table 4, recall that Asians are less likely to have work experience in a family member's business prior to starting a firm and are less likely to have previously worked in a business with similar goods and services. If Asians had higher levels or similar levels of these characteristics as whites, then they would have even better outcomes.

Managerial experience does not contribute to the racial differences in outcomes; in all cases it is less than one half of one percent. Likewise, inheritances contribute very little to the gaps. The incidences of inheritances are too infrequent and the racial differences in inheritances are too small to result in inheritances contributing much to differences in business outcomes.

Our next decomposition includes the contributions from racial differences in both startup capital and industry. These results are reported in Table 8. The contributions from the original set of variables are similar to those reported in Table 7. Racial differences in education continue to be important in explaining the Asian/white gaps in business

outcomes. The role of prior work experience also remains strong, explaining between 7.3 and 21.5 percent of the gaps in business outcomes.

Industry has inconsistent signs, but mainly contributes to the gaps. For profits, industry actually increases the gap. In other words, Asian firms, having a greater share in industries such as retail and services, are disproportionately located in industries with lower profit rates. If Asians had more similar industry distributions to whites, they would have even higher profits. However, for sales, employment, and closure, industry explains from 6 percent to 16 percent of the racial gaps in outcomes.

Startup capital plays the most substantial role in explaining the gaps. Group differences in startup capital explain 57 percent of the gap in the log sales equation and 65 percent of the closure equation. Differences in startup capital explain even more the gap in the profit equation (71 percent) and the employer equation (100 percent). As noted above, Asian firms have substantially higher levels of startup capital than white firms.¹⁶

Overall, racial differences in the explanatory variables explain a large percentage of the total Asian/white gaps in business outcomes. They explain from 10 to 90 percent in the first set of specifications and virtually all of the gaps in the second set of specifications. In essence, in the second set of specifications, there is very little unexplained portion of the racial gaps in business outcomes. The gaps in profits and employer status are fully explained and less than 5 percent of the gaps in the closure and sales equations are left unexplained. Startup capital plays the strongest role, followed by

¹⁶ The startup capital results are stronger for immigrants than for those born in the United States. The immigrant estimates are most similar to estimates for all Asians. Businesses owned by Asians that were born in the United States were more likely to start with low levels of startup capital than businesses owned by Asian immigrants (see Appendix 1).

education and prior work experience, followed by the contribution of racial differences in industry location.

8. Conclusions

The evidence on Asian business outcomes is limited because of the lack of available data. Estimates from confidential and restricted-access CBO microdata indicate that Asian-owned businesses have better average outcomes than white-owned businesses. Asian firms are 16.9 percent less likely to close, 20.6 percent more likely to have profits of at least \$10,000, and 27.2 percent more likely to hire employees than white firms. They also have mean annual sales that are roughly 60 percent higher than the mean sales of white-owned firms.

Asian business owners have relatively high levels of education. Forty-six percent of Asian business owners have a college degree, compared with 33 percent of white business owners. Asian business owners are also found to have very high levels of startup capital. Estimates from the CBO indicate that 12 percent of Asian-owned businesses started with more than \$100,000 in capital, compared with only 5 percent of white-owned firms. In contrast to these results, we find that Asian business owners do not have advantaged family business backgrounds when compared with whites. They are slightly less likely to have had a self employed family member prior to starting their business and have prior work experience in a family member's business. Similar to white business owners, a very small percentage of Asian owners inherited their businesses.

We use a nonlinear decomposition technique to measure the contribution of racial differences in firm and owner characteristics to differences in business outcomes between

Asian- and white-owned businesses. Asian-owned businesses are more successful than white-owned businesses largely for two main reasons -- the owners have high levels of human capital and the businesses have substantial startup capital. Startup capital and education alone explain from 65 percent to the entire gap in business outcomes between Asians and whites. Racial differences in prior work experience are also found to be an important factor in explaining the Asian/white gaps in business outcomes. Our results indicate that group differences in prior work experience in family businesses do not contribute to Asian/white differences in closure probabilities, profits, employment, and sales. We also find no explanatory power from Asian/white differences in prior work experience in a similar business in determining racial differences in business outcomes.

Even with the relatively parsimonious models estimated using CBO data, we can explain virtually the entire gap between the outcomes of Asian-owned businesses and white-owned businesses. Admittedly, we do not explore whether other factors such as social capital and additional ethnic resources are important for the success of Asian-owned businesses. It is very difficult to find good exogenous measures of these factors. Although social and ethnic resources may also be important for the success of Asian-owned businesses, they are not easily affected by policy. Policies that increase human capital and access to financial capital, such as entrepreneurial training and loan assistance programs, are easier to implement and expand.

Appendix 1: Asian Analysis and Limitations

Much of the previous research on Asian business ownership delineates immigrants from non-immigrants. U.S. born Asians and Asian immigrants may face different opportunities in the labor market, and thus have different motives for entering business, which may then lead to different business outcomes. While we analyze immigrants separately from non-immigrants, the results reported here are for all Asians rather than for immigrants and nonimmigrants separately. This is due to finding similar business outcomes for the two groups and limitations in the amount of output that we could get released through the disclosure process. Roughly 80 percent of Asian-owned businesses in the United States are owned by Asian immigrants. Therefore, the estimates of Asian business outcomes reported in this paper are being driven primarily by businesses owned by Asian immigrants.

Yet, when comparing businesses owned by Asian immigrants and non-immigrants, we find similar outcome measures. Published estimates from the 1992 CBO indicate that about 23 percent of Asian/Other Minority immigrant firms have employees, compared with 22 percent of Asian/Other Minority owners that were U.S. born.¹⁷ The distribution of sales by immigrant status from published 1992 CBO data also illustrates that the differences in sales' distributions are not large across immigrants and nonimmigrants for the Asian/Other Minority group.

In our subsample of active firms from CBO microdata, business outcomes are remarkably similar between Asian immigrant and nonimmigrant firms. The percentages of firms that have employees or profits of \$10,000 or more are virtually identical. Immigrant firms are slightly less likely to close, but the difference is small. There are, however, some differences in the owner characteristics of immigrants and Asians that were born in the United States. For example, those that were born in the United States are younger and less likely to be married. They are also more likely to start businesses with little or no financial capital, more likely to have a family member that owned a business, and more likely to have worked for that business. Overall, however, Asian immigrant and U.S. born owners are fairly similar, and the mean characteristics for all Asians are roughly similar to the Asian immigrant means.

Previous research using older CBO data yields similar outcomes among businesses owned by Asian immigrants and nonimmigrants. Using 1987 CBO data, Bates (1997) reports four business outcomes by immigrant status for Asians that are comparable to the ones we examine in this chapter. Immigrants are separated into two categories, those with a level of high fluency in English (Asian Indian and Filipino) and those with a low level of fluency (Korean and Chinese), and are compared with nonimmigrant Asian Americans. The survival rates of firms in all three categories are virtually identical, ranging from 81.9% to 82.2%. While sales, employment and profits are also similar, there are some slight variations. Koreans and Chinese average 1.7 employees, while nonimmigrant Asian Americans and high fluency immigrants average 1.2 employees. Koreans and Chinese have the highest levels of sales, but rank in the middle in terms of profits. There are some differences in owner traits. For example, the high fluency immigrants are much more likely to be college graduates than those in the

¹⁷ The Asian/Other Minority group includes Native Americans, which represent 15 percent of all businesses in the category.

other two groups. However, the outcomes are remarkably similar across the three groups. In estimating regressions predicting firm survival, Bates also finds that both Asian immigrants and Asian non-immigrant firms have higher rates of survival than white firms. The difference between Asian immigrants and non-immigrants is relatively small and not statistically significant.

Census data on self employed business owners from the 2000 PUMS provide additional support for grouping Asian immigrants and non-immigrants together. These data show that over 80% of self employed Asians are immigrants. Self-employed immigrants and nonimmigrants have nearly identical earnings at \$53,400 and \$56,600 respectively. Asian immigrants work slightly more hours in a given week, but work nearly identical numbers of weeks during the year. While immigrants are much more likely to have dropped out of high school, the percentage that graduated from college (24.6) is nearly identical to that of nonimmigrants (24.8). About 21 percent of immigrants have post graduate education, compared with 23.5 percent of native born Asians. Interest income, which is often used as a proxy for wealth, is also similar for immigrants and non-immigrants. Thus, while much of the literature delineates immigrants from nonimmigrants, these various data sources indicate that there are more similarities than differences in business outcomes and combining the two groups for our analyses may not be problematic.

There is the similar issue of grouping the heterogeneous racial subgroups that make up the broad Asian class. Much of the previous research on Asians has focused on a specific subgroup of Asians, such as Japanese Americans (Light 1972, Bonacich and Modell 1980), Chinese Americans (Bates 1997), and Koreans (Min 1988, Bates 1994a, Yoon 1991, 1995). While differences in business outcomes exist across Asian subgroups, but the differences are relatively small when compared with differences between Asians and whites or blacks. We examine the differences in outcomes across subgroups of Asians from our active CBO microdata sample. Asian Indian firms have the lowest closure rates and the highest proportion of employer firms, whereas Korean firms have the highest proportion of firms (over half) earning profits of \$10,000 or more. Using the various outcome measures, we find that one subgroup does not outperform the others across all measures. Data from the newly released 2002 SBO indicate similarly positive business outcomes across almost all of the large Asian subgroups.

We also estimate business outcome regressions with Asian subgroup dummies and find that the coefficients on these dummies are not statistically significant for any of the subgroups. This result is consistent with Bates (1997) who includes dummies for Asian Indian, Chinese, Korean, and Vietnamese in his survival regressions—none of which are statistically significant. Providing additional support of our grouping Asian subpopulations, Boyd (1991) finds that there are not statistically significant differences in self-employment earnings between Asian subgroups, such as Chinese, Japanese, Korean, Asian Indian, Filipino, Vietnamese, and Other Asians. Given that the goal of this chapter is to compare the relative performance of Asian-owned businesses with that of whites, combining these subgroups seems reasonable.

In working with confidential data for this paper, we were limited in the number of tabulations and regressions we could get released through the lengthy disclosure process through the Census Bureau. This restriction limited our ability to conduct an extensive analysis delineating Asians by immigrant status or subgroup. Because our focus is on the

outcomes of businesses and not the selection process into business ownership, we are interested in explaining the relative success of Asians as a group, whether they are immigrants or native born and irrespective of their country of origin. Further work examining these subpopulations will make a valuable contribution in better understanding this population, but it is beyond the scope of this paper.

Variable Appendix
Means of Selected Variables
Characteristics of Business Owners, 1992

	White-Owned Firms	Asian-Owned Firms
Female-owned business	0.3268	0.3070
Married	0.7650	0.8200
Never married	0.1020	0.1010
High school graduate	0.2651	0.1590
Some college	0.3123	0.2482
College graduate	0.1962	0.2423
Graduate school	0.1353	0.2219
Northeast	0.0643	0.0221
Midatlantic	0.1469	0.1720
East North Central	0.1666	0.0699
West North Central	0.0847	0.0163
South Atlantic	0.1597	0.1081
East South Central	0.0518	0.0121
West South Central	0.0999	0.0792
Mountain	0.0670	0.0327
Urban	0.7351	0.9467
Startup capital: \$5,000-\$25,000	0.2374	0.2804
Startup capital: \$25,000-\$100,000	0.1095	0.2412
Startup capital: \$100,000+	0.0475	0.1198
Agricultural services	0.0269	0.0207
Mining and construction	0.1261	0.0388
Manufacturing	0.0330	0.0352
Wholesale	0.0360	0.0390
FIRE	0.0987	0.0865
Trans., communications, and public utilities	0.0389	0.0420
Personal services	0.2616	0.2595
Professional services	0.1937	0.1885
Uncoded industry	0.0391	0.0402
Sample size	14,068	6,321

Notes: (1) The sample includes businesses that are classified by the IRS as individual proprietorships or self-employed persons, partnerships and subchapter S corporations, have sales of \$500 or more, and have at least one owner who worked at least 12 weeks and 10 hours per week in the business. (2) All estimates are calculated using sample weights provided by the CBO.

References

- Aldrich, Howard E., and Roger Waldinger. 1990. "Ethnicity and Entrepreneurship." Annual Review of Sociology, 16(1): 111-135.
- Aldrich, Howard, John Carter, Trevor Jones, David McEnvoy, and Paul Vellemen. 1985. "Ethnic Residential Segregation and the Protected Market Hypothesis," Social Forces 63 (4).
- Astebro Thomas and Irwin Bernhardt. 2003. Start-Up Financing, Owner Characteristics and Survival, Journal of Economics and Business, 55(4), 303-320.
- Bates, Timothy. 1989. "The Changing Nature of Minority Business: A Comparative Analysis of Asian, Nonminority, and Black-Owned Businesses." The Review of Black Political Economy, 18, Fall: 25-42.
- Bates, Timothy. 1990. "Entrepreneur Human Capital Inputs and Small Business Longevity," Review of Economics and Statistics 72 (4): 551-59.
- Bates, Timothy. 1993. Assessment of State and Local Government Minority Business Development Programs. Report to the U.S. Department of Commerce Minority Business Development Agency. Washington, D.C.: U.S. Department of Commerce.
- Bates, Timothy. 1994a. "An Analysis of Korean-Immigrant-Owned Small-Business Start-Ups with Comparisons to African-American and Nonminority-Owned Firms," Urban Affairs Quarterly, 30(2): 227-248.
- Bates, Timothy. 1994b. "Social Resources Generated by Group Support Networks May Not Be Beneficial to Asian Immigrant-Owned Small Businesses." Social Forces, 72(3): 671-689.
- Bates, Timothy. 1997. Race, Self-Employment & Upward Mobility: An Illusive American Dream, Washington, D.C.: Woodrow Wilson Center Press and Baltimore: John Hopkins University Press.
- Bates, Timothy, and David Howell. 1997. "The Declining Status of African American Men in the New York City Construction Industry. In *Race, Markets, and Social Outcomes*, edited by Patrick Mason and Rhonda Williams. Boston: Kluwer.
- Blinder, Alan S. 1973. "Wage Discrimination: Reduced Form and Structural Variables." Journal of Human Resources 8: 436-455.
- Bonacich, Edna and Ivan Light. 1988. *Immigrant Entrepreneurs: Koreans in Los Angeles 1965-1982*. Berkeley: University of California Press.

Bonacich, Edna and John Modell. 1980. The Economic Basis of Ethnic Solidarity in the Japanese American Community. Berkeley: University of California Press.

Borjas, George. 1986. "The Self-Employment Experience of Immigrants." Journal of Human Resources, 21, Fall: 487-506.

Borjas, George. 1990. *Friends or Strangers: The Impact of Immigrants on the U.S. Economy*. New York: Basic Books.

Borjas, George. 1994. "The Economics of Migration," Journal of Economic Literature 32 (4).

Boyd, Robert L. 1990. "Black and Asian Self-Employment in Large Metropolitan Areas: A Comparative Analysis," Social Problems, 37(2): 258-274.

Boyd, Robert L. 1991. "Inequality in the Earnings of Self-Employed African and Asian Americans," Sociological Perspectives, 34(4): 447-472.

Bradford, William D. 2003. "The Wealth Dynamics of Entrepreneurship for Black and White Families in the U.S.," Review of Income and Wealth, 49(1): 89-116.

Cain, Glen G. 1986. "The Economic Analysis of Labor Market Discrimination: A Survey," Handbook of Labor Economics, Vol. 1, eds. O. Ashenfelter and R. Laynard, Elsevier Science Publishers BV.

Chaganti, Radh and Patricia Greene. 2002. "Who are Ethnic Entrepreneurs? A study of Entrepreneurs' Ethnic Involvement and Business Characteristics," Journal of Small Business Management.

Clark, Kenneth and Stephen Drinkwater. 1998. "Ethnicity and Self-Employment in Britain." Oxford Bulletin of Economics and Statistics. 60, pp.383-407.

Clark, Kenneth and Stephen Drinkwater. 2000. "Pushed out or pulled in? Self-employment among ethnic minorities in England and Wales." Labour Economics. 7, pp.603-628.

Clark, Kenneth and Stephen Drinkwater. 2002. "Enclaves, Neighbourhood Effects and Employment Outcomes: Ethnic Minorities in England and Wales." Journal of Population Economics, 15: 5-29.

Fairlie, Robert W. 1999. "The Absence of the African-American Owned Business: An Analysis of the Dynamics of Self-Employment." Journal of Labor Economics, 17(1): 80-108.

Fairlie, Robert W. 2005. "An Extension of the Blinder-Oaxaca Decomposition Technique to Logit and Probit Models," *Journal of Economic and Social Measurement*, 30(4): 305-316.

Fairlie, Robert W. 2006. "Entrepreneurship among Disadvantaged Groups: Women, Minorities and the Less Educated," International Handbook Series on Entrepreneurship, Volume 2, eds. Simon C. Parker, Zoltan J. Acs, and David R. Audretsch. New York: Springer.

Fairlie, Robert W., and Alicia Robb. 2006a. "Families, Human Capital, and Small Businesses: Evidence from the Characteristics of Business Owners Survey," *Industrial and Labor Relations Review* (forthcoming).

Fairlie, Robert W., and Alicia M. Robb. 2006b. "Why are Black-Owned Businesses Less Successful than White-Owned Businesses: The Role of Families, Inheritances, and Business Human Capital." *Journal of Labor Economics* (forthcoming).

Fairlie, Robert W., and Harry A. Krashinsky. 2006. "Liquidity Constraints, Household Wealth, and Entrepreneurship Revisited."

Farber, Henry S. "Alternative and Part-Time Employment Arrangements as a Response to Job Loss." *Journal of Labor Economics*, 17(4), Part 2, October, 1999: S142-S169.

Feagin, Joe R., and Nikitah Imani. 1994. "Racial barriers to African American entrepreneurship: an exploratory study," *Social Problems*, November, 41(4): 562-585.

Fratoe, Frank. 1986. "A Sociological Analysis of Minority Business," *Review of Black Political Economy*. 15 (2).

Fratoe, F. (1988). "Social Capital of Black Business Owners," *The Review of Black Political Economy*, Spring, 33-50.

Hao, Lingxin. 2007. *Color Lines, Country Lines: Race, Immigration, and Wealth Stratification in America*. New York: Russell Sage Foundation (forthcoming).

Headd, Brian. 1999. "The Characteristics of Business Owners Database, 1992." U.S. Census Bureau, Center for Economic Studies, Working Paper Series, CES-WP-99-8.

Headd, Brian. 2003. "Redefining Business Success: Distinguishing Between Closure and Failure." *Small Business Economics* 21(1): 51-61.

Hout, Michael and Harvey S. Rosen. 2000. "Self-Employment, Family Background, and Race," *Journal of Human Resources*, 35 (4): 670-692.

Hundley, Greg. 2000. "Male/Female Earnings Differences in Self-Employment: The Effects of Marriage, Children, and the Household Division of Labor." Industrial and Labor Relations Review. 54(1):95-104.

Jones, F.L. 1983. "On Decomposing the Wage Gap: A Critical Comment on Blinder's Method," Journal of Human Resources, 18(1): 126-130.

Kalnins, Arturs, and Wilbur Chung. 2006. Social Capital, Geography, and Survival: Gujarati Immigrant Entrepreneurs in the U.S. Lodging Industry," Management Science, 2006, 52(2): 233-247.

Kassoudji, Sherrie. 1988. "English Language Abilities and the Labor Market Opportunities of Hispanic and East Asian Men," Journal of Labor Economics, 6 (2).

Kim, Kwang Chung and Won Moo Hurh. 1985. "Ethnic Resources Utilization of Korean Immigrant Entrepreneurs in the Chicago Minority Area." International Migration Review 19(1):82-111.

Kim, Kwang, Won Hurh, and Maryilyn Fernandez. 1989. "Intragroup Differences in Business Participation: Three Asian Immigrant Groups," International Migration Review 23(1).

Light, Ivan. 1972. Ethnic Enterprise in America. Berkeley: University of California Press.

Light, Ivan. 1979. "Disadvantaged Minorities in Self Employment." International Journal of Comparative Sociology 20(1-2):31-45.

Light, Ivan. 2004. "The Ethnic Economy." in *Handbook of Economic Sociology*, 2nd edition, edited by Neil Smelser and Richard Swedberg. New York: Russell Sage Foundation.

Light, Ivan, Im Jung Kwuon, and Deng Zhong. 1990. "Korean Rotating Credit Associations in Los Angeles," Amerasia Journal, 16 (2).

Loewen, James W. 1971. The Mississippi Chinese: Between Black and White. * Cambridge: Harvard University Press.

Mar, Don. 2005. "Individual Characteristics vs. City Structural Characteristics: Explaining Self-Employment Differences among Chinese, Japanese, and Filipinos in the United States," Journal of Socio-Economics, 34.

Min, Pyong. 1984. "From White Collar Occupations to Small Business: Korean Immigrants' Occupational Adjustment. Sociological Quarterly 25 (3).

- Min, Pyong. 1986-87. "Filipino and Korean Immigrants in Small Business: A Comparative Analysis," Amerasia Journal, 13 (1).
- Min, Pyong Gap. 1988. *Ethnic Business Enterprises: Korean Small Business in Atlanta*. New York: Center for Migration Studies.
- Min, Pyong Gap. 1989. "Some Positive Functions of Ethnic Business for an Immigrant Community: Koreans in Los Angeles," Final Report Submitted to the National Science Foundation, Washington, D.C.
- Min, Pyong Gap. 1993. "Korean Immigrants in Los Angeles," in Immigration and Entrepreneurship: Culture, Capital, and Ethnic Networks," in eds., Ivan Light and Parminder Bhachu, New Brunswick: Transaction Publishers.
- Min, Pyong Gap. 1996. Caught in the Middle: Korean Merchants in America's Multiethnic Cities. Berkeley: University of California Press.
- Oaxaca, Ronald. 1973. "Male-Female Wage Differentials in Urban Labor Markets," International Economic Review, 14 (October), 693-709.
- Parker, Simon C. 2004. The Economics of Self-Employment and Entrepreneurship. Cambridge: Cambridge University Press.
- Porter, Michael, "The Competitive Advantage of the Inner City," Harvard Business Review vol. 73 (3), 1995.
- Portes, Alejandro. And R.L Bach. 1985. *Latin Journey: Cuban and Mexican Immigrants in the United States*. Berkeley: University of California Press.
- Portes, Alejandro, and Min Zhou. 1996. "Self-Employment and the Earnings of Immigrants.: *American Sociological Review* (61): 219-30.
- Robb, Alicia. 2000. "The Role of Race, Gender, and Discrimination in Business Survival", Doctoral Dissertation, University of Michigan Press.
- U.S. Census Bureau. 1996. 1992 Economic Census: Survey of Minority-Owned Business Enterprises, Asians and Pacific Islanders, American Indians, and Alaska Natives. Washington, D.C.: U.S. Government Printing Office
- U.S. Census Bureau. 1997. 1992 Economic Census: Characteristics of Business Owners. Washington, D.C.: U.S. Government Printing Office.
- Waldinger, Rober, Howard Aldrich, and Robin Ward. 1990. *Ethnic Entrepreneurs*. Newbury Park, California: Sage.

Yoon, In-Jin. 1991. "The Changing Significance of Ethnic and Class Resources in Immigrant Business." International Migration Review 25(2):303-31.

Yoon, In-Jin. 1995. "The Growth of Korean Immigrant Entrepreneurship in Chicago," Ethnic and Racial Studies, 18(2): 315-335.

Yoon, In-Jin. 1997. On My Own: Korean Businesses and Race Relations in America, Chicago: University of Chicago Press.

Zhou, M. 1992. *Chinatown: The Socioeconomic Potential of an Urban Enclave*. Philadelphia: Temple University Press.

Zhou, M. 1995. "Low-Wage Employment and Social Mobility: The Experience of Immigrant Chinese Women in New York City," National Journal of Sociology, 9 (1).

Zhou, M. 2004. "Revisiting Ethnic Entrepreneurship: Convergencies, Controversies, and Conceptual Advancements." International Migration Review, 38 (3): 1040-1074.

Figure 1
Owner's Education Level by Race
Characteristics of Business Owners, 1992

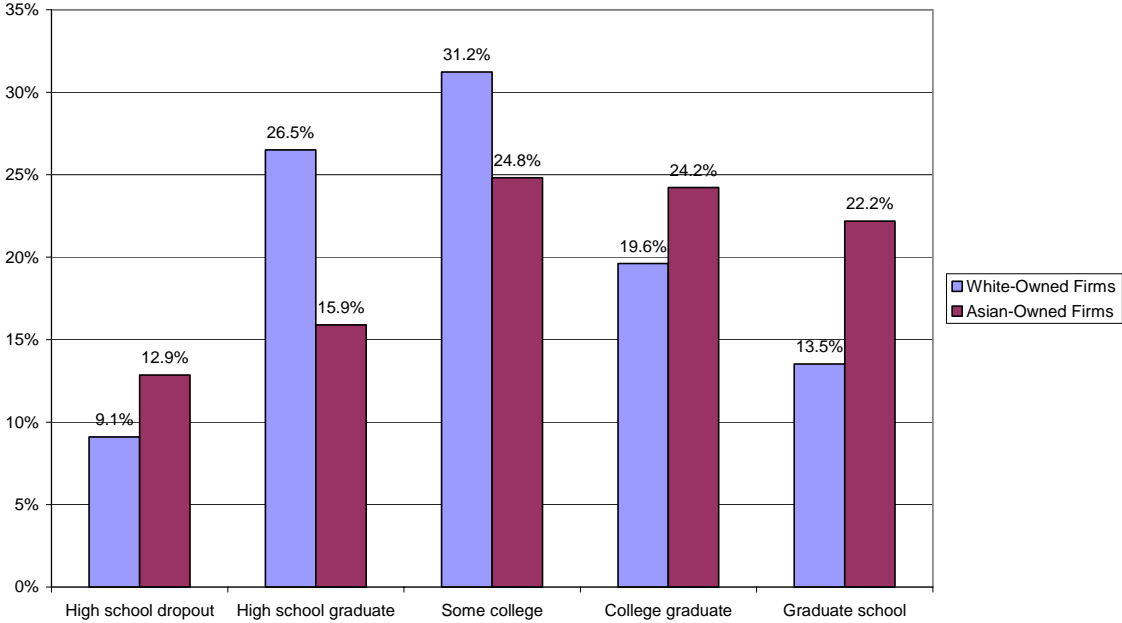


Figure 2
Startup Capital by Race
Characteristics of Business Owners, 1992

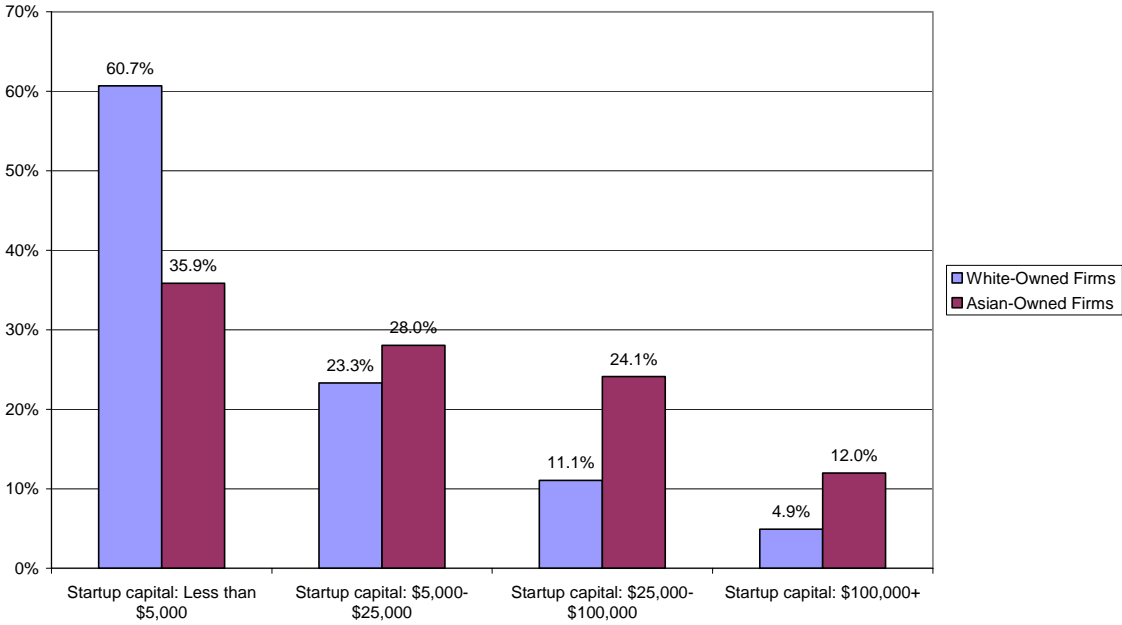


Figure 3
Hours Worked by Owner by Race
Published Estimates from the Characteristics of Business Owners, 1992

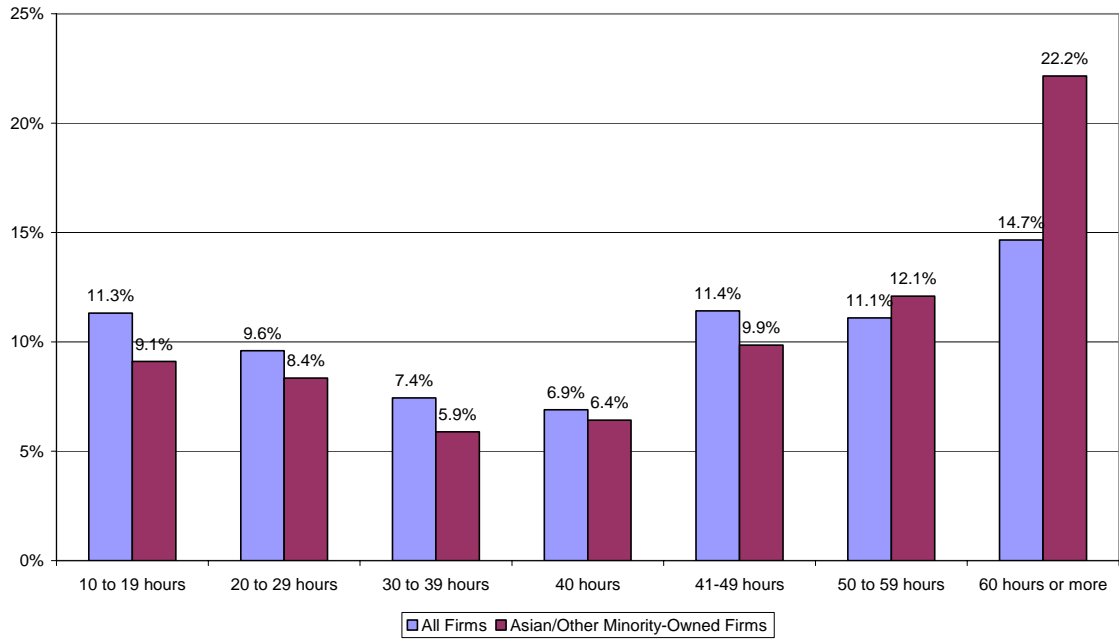


Figure 4
Percentage of Firms with \$100,000 or more in Sales by Race and Hours Worked
Published Estimates from the Characteristics of Business Owners, 1992

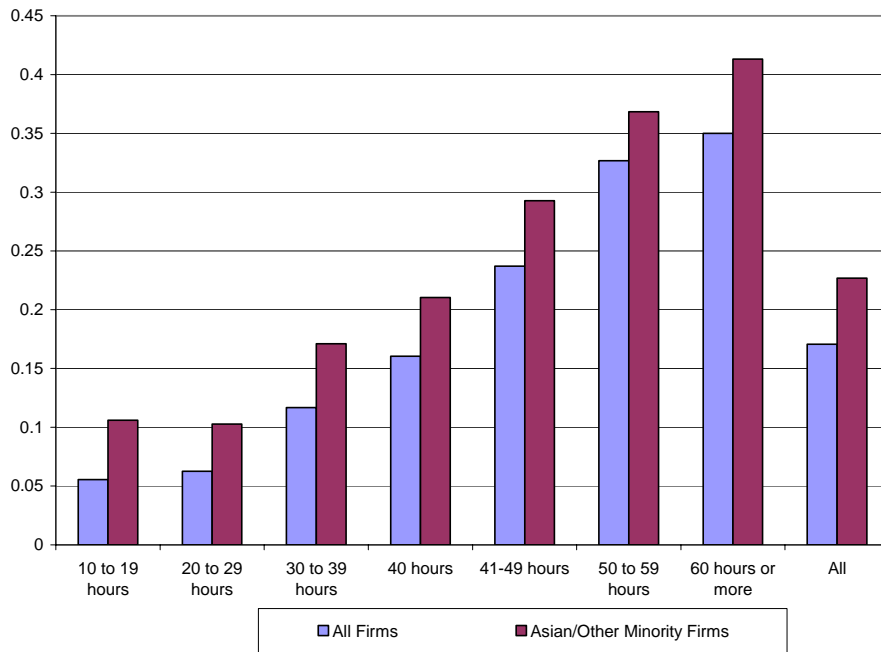


Table 1
Means of Business Outcomes
Characteristics of Business Owners, 1992

	White-Owned Firms	Asian-Owned Firms
Firm no longer operating in 1996 (Closure)	0.2282	0.1785
Net profit of at least \$10,000	0.3004	0.3800
One or more paid employees	0.2067	0.2985
Log sales	10.07	10.71
Sample size	14,068	6,321

Notes: (1) The sample includes businesses that are classified by the IRS as individual proprietorships or self-employed persons, partnerships and subchapter S corporations, have sales of \$500 or more, and have at least one owner who worked at least 12 weeks and 10 hours per week in the business. (2) All estimates are calculated using sample weights provided by the CBO.

Table 2
Logit, Linear and Ordered Probit Regressions for Small Business Outcomes
Characteristics of Business Owners, 1992

Dependent variable	Specification				
	(1)	(2)	(3)	(4)	(5)
	Closure (1992-96)	Profits \$10,000+	Employer Firm	Ln Sales	Profits Ordered
Black-owned business	0.0212 (0.0130)	-0.1786 (0.0207)	-0.0951 (0.0166)	-0.4636 (0.0554)	-0.4160 (0.0376)
Latino-owned business	-0.0138 (0.0121)	-0.0443 (0.0144)	0.0231 (0.0116)	0.0660 (0.0490)	-0.0966 (0.0318)
Native American-owned business	-0.1176 (0.0554)	0.0422 (0.0530)	0.0717 (0.0415)	0.3991 (0.1879)	0.0654 (0.1207)
Asian-owned business	-0.0457 (0.0145)	0.0259 (0.0145)	0.0728 (0.0115)	0.4709 (0.0539)	0.0004 (0.0340)
Female-owned business	0.0247 (0.0050)	-0.2107 (0.0066)	-0.0616 (0.0051)	-0.6941 (0.0206)	-0.3968 (0.0135)
Married	-0.0313 (0.0068)	0.1013 (0.0091)	0.0659 (0.0074)	0.2251 (0.0286)	0.1445 (0.0189)
Never Married	0.0429 (0.0081)	-0.0363 (0.0101)	-0.0379 (0.0085)	-0.3563 (0.0338)	-0.0492 (0.0220)
High school graduate	-0.0209 (0.0085)	0.0624 (0.0112)	0.0447 (0.0092)	0.1534 (0.0351)	0.0209 (0.0234)
Some college	-0.0101 (0.0084)	0.0724 (0.0111)	0.0471 (0.0091)	0.0570 (0.0351)	0.1038 (0.0232)
College graduate	-0.0553 (0.0093)	0.1133 (0.0118)	0.0606 (0.0097)	0.2397 (0.0383)	0.1632 (0.0252)
Graduate school	-0.1491 (0.0107)	0.2127 (0.0122)	0.1650 (0.0097)	0.6115 (0.0404)	0.5130 (0.0267)
Urban	0.0164 (0.0058)	0.0447 (0.0069)	-0.0343 (0.0055)	0.1008 (0.0234)	0.1134 (0.0150)
Prior work experience in a managerial capacity	0.0655 (0.0054)	0.0265 (0.0063)	0.0513 (0.0052)	0.2089 (0.0217)	-0.0055 (0.0141)
Prior work experience in a similar business	-0.0425 (0.0049)	0.1024 (0.0059)	0.0432 (0.0048)	0.4087 (0.0202)	0.2484 (0.0131)
Have a self-employed family member	-0.0200 (0.0055)	0.0113 (0.0067)	-0.0022 (0.0055)	-0.0356 (0.0227)	0.0092 (0.0148)
Prior work experience in a family member's business	-0.0419 (0.0069)	0.0322 (0.0079)	0.0552 (0.0063)	0.3784 (0.0273)	0.0471 (0.0178)
Inherited business	-0.1007 (0.0237)	0.1097 (0.0217)	0.2006 (0.0157)	1.3144 (0.0800)	0.3524 (0.0506)
Mean of dependent variable	0.2280	0.2980	0.2070	10.0725	1.2391
Log likelihood / R-square	-17,466.46	-16,957.14	-16,542.74	0.1119	-40,045.16
Sample size	33,485	30,500	34,179	34,179	30,500

Notes: (1) See notes to Table 1. (2) Logit models are used for Specifications 1-3, OLS is used for Specification 4, and an ordered probit is used for Specification 5. The log likelihood value is reported for the logit and ordered probit regressions and R-squared is reported for the OLS model. (3) Marginal effects and their standard errors (in parenthesis) are reported for the logit regressions. (4) All specifications also include a constant, and dummy variables for region and work experience of the primary owner.

Table 3
Logit and Linear Regressions for Small Business Outcomes
Characteristics of Business Owners, 1992

Dependent variable	Specification			
	(1)	(2)	(3)	(4)
	Closure by 1996	Profits \$10,000+	Employer Firm	Ln Sales
Black-owned business	0.0077 (0.0133)	-0.1684 (0.0213)	-0.0703 (0.0176)	-0.3215 (0.0506)
Latino-owned business	-0.0143 (0.0123)	-0.0444 (0.0149)	0.0277 (0.0126)	0.0735 (0.0447)
Native American-owned business	-0.1270 (0.0564)	0.0322 (0.0548)	0.0696 (0.0454)	0.3468 (0.1706)
Asian-owned business	-0.0091 (0.0149)	-0.0176 (0.0150)	-0.0164 (0.0128)	0.0216 (0.0495)
Female-owned business	0.0150 (0.0053)	-0.1943 (0.0069)	-0.0498 (0.0057)	-0.5708 (0.0193)
Married	-0.0286 (0.0070)	0.1068 (0.0094)	0.0594 (0.0081)	0.1539 (0.0261)
Never Married	0.0344 (0.0083)	-0.0080 (0.0105)	-0.0316 (0.0093)	-0.2853 (0.0309)
High school graduate	-0.0065 (0.0087)	0.0428 (0.0116)	0.0251 (0.0099)	0.0324 (0.0325)
Some college	0.0095 (0.0086)	0.0637 (0.0115)	0.0398 (0.0098)	0.0011 (0.0322)
College graduate	-0.0433 (0.0096)	0.0855 (0.0123)	0.0470 (0.0106)	0.1441 (0.0355)
Graduate school	-0.1617 (0.0117)	0.1573 (0.0137)	0.1674 (0.0115)	0.5567 (0.0397)
Urban	0.0079 (0.0059)	0.0610 (0.0071)	-0.0144 (0.0059)	0.1831 (0.0214)
Prior work experience in a managerial capacity	0.0826 (0.0056)	0.0075 (0.0066)	0.0212 (0.0057)	0.0401 (0.0200)
Prior work experience in a similar business	-0.0505 (0.0052)	0.0962 (0.0061)	0.0426 (0.0053)	0.4081 (0.0187)
Have a self-employed family member	-0.0181 (0.0057)	0.0004 (0.0069)	-0.0057 (0.0060)	-0.0651 (0.0207)
Prior work experience in a family member's business	-0.0323 (0.0071)	0.0210 (0.0081)	0.0344 (0.0069)	0.2300 (0.0250)
Inherited business	-0.0761 (0.0246)	0.1351 (0.0238)	0.2267 (0.0182)	1.3143 (0.0764)

(continued)

Table 3 (continued)
 Logit and Linear Regressions for Small Business Outcomes
 Characteristics of Business Owners, 1992

Explanatory Variables	Specification			
	(1)	(2)	(3)	(4)
Startup capital:	-0.0871	0.1505	0.1487	0.7156
\$5,000-\$24,999	(0.0061)	(0.0068)	(0.0059)	(0.0214)
Startup capital:	-0.1308	0.2312	0.3077	1.4676
\$25,000-\$99,999	(0.0090)	(0.0088)	(0.0070)	(0.0291)
Startup capital:	-0.2295	0.1791	0.3735	2.1520
\$100,000 or more	(0.0166)	(0.0125)	(0.0099)	(0.0422)
Agricultural services	0.0112	-0.0111	-0.1586	-0.9204
	(0.0164)	(0.0184)	(0.0167)	(0.0574)
Mining and construction	0.0438	0.0528	-0.0353	-0.2546
	(0.0096)	(0.0111)	(0.0090)	(0.0350)
Manufacturing	-0.0625	0.0358	0.0035	-0.1055
	(0.0171)	(0.0166)	(0.0129)	(0.0532)
Wholesale	0.0057	0.1305	-0.0006	0.6082
	(0.0148)	(0.0153)	(0.0127)	(0.0518)
FIRE	-0.0609	0.0771	-0.1856	-0.4926
	(0.0109)	(0.0122)	(0.0109)	(0.0367)
Trans., communications, and public utilities	0.0600	0.1205	-0.1523	-0.3300
	(0.0130)	(0.0147)	(0.0139)	(0.0486)
Personal services	0.0195	-0.0488	-0.1161	-0.7430
	(0.0079)	(0.0096)	(0.0077)	(0.0286)
Professional services	0.0973	0.0650	-0.1191	-0.7021
	(0.0089)	(0.0110)	(0.0092)	(0.0328)
Uncoded industry	0.0198	-0.1020	-0.5054	-0.9842
	(0.0132)	(0.0183)	(0.0334)	(0.0490)
Mean of dependent variable	0.2280	0.2975	0.2066	10.0668
Sample size	33,116	30,271	33,701	33,701

Notes: (1) See notes to Table 2. (2) Logit models are used for Specifications 1-3 and OLS is used for Specification 4. (3) Marginal effects and their standard errors (in parenthesis) are reported. (4) All specifications also include a constant, and dummy variables for region, and work experience of the primary owner.

Table 4
Previous Business Experience and Family Business Background by Race
Characteristics of Business Owners, 1992

	White-Owned Firms	Asian-Owned Firms
Percent of owners that had a self-employed family member prior to starting firm	53.1%	44.3%
Percent of owners that previously worked in that family member's business (conditional)	43.9%	40.5%
Percent of owners that previously worked in a family member's business (unconditional)	23.3%	18.0%
Percent of owners that inherited their businesses	1.7%	1.3%
Percent of owners that previously worked in a business with similar goods/services	50.4%	46.8%
Percent of owners that have previous work experience in a managerial capacity	55.6%	56.4%
Prior work experience: less than 2 years	7.1%	23.5%
Prior work experience: 2-5 years	16.4%	22.6%
Prior work experience: 6-9 years	15.1%	16.1%
Prior work experience: 10-19 years	29.7%	24.7%
Prior work experience: 20 years or more	25.8%	13.1%
Sample size	15,872	6,321

Notes: (1) The sample includes businesses that are classified by the IRS as individual proprietorships or self-employed persons, partnerships and subchapter S corporations, have sales of \$500 or more, and have at least one owner who worked at least 12 weeks and 10 hours per week in the business. (2) All estimates are calculated using sample weights provided by the CBO.

Table 5
Sources of Borrowed and Equity Capital by Race
Characteristics of Business Owners, 1992

	All Firms	White-Owned Firms	Asian & Other Minority-Owned Firms
SOURCES OF BORROWED CAPITAL FOR OWNER			
Personal loan using home mortgage/equity line of credit	5.0%	5.0%	7.8%
Personal credit card	3.0%	2.9%	4.7%
Personal loan from spouse	1.2%	1.1%	1.6%
Personal loan from family	6.1%	5.8%	13.8%
Other personal loan	7.1%	7.1%	10.8%
	0.0%	0.0%	0.0%
SOURCES OF NONBORROWED CAPITAL FOR OWNER			
None-100 percent borrowed capital	6.6%	6.8%	5.0%
Use of owner's personal/family physical assets (building, motor vehicle, equipment, etc.)	18.5%	19.1%	14.4%
Proceeds from the sale of owner's personal assets	2.5%	2.4%	3.4%
Owner's personal/family savings	40.7%	40.5%	53.2%
Other source	3.9%	3.7%	3.8%
	0.0%	0.0%	0.0%
SOURCES OF BORROWED CAPITAL FOR FIRM			
	0.0%	0.0%	0.0%
Business loan from banking or commercial lending institution	11.7%	12.1%	12.3%
Government-guaranteed business loan from banking or commercial lending institution	0.4%	0.4%	0.7%
Business loan from Federal, State or local government	0.3%	0.3%	0.4%
Business loan from investment company/profit or nonprofit private source	0.6%	0.6%	1.1%
Business loan from previous owner	1.9%	1.9%	4.8%
Business trade credit from supplier	0.9%	0.9%	1.4%
Other business loan	1.6%	1.6%	2.7%

Source: Characteristics of Business Owners (1992) are reported in U.S. Census Bureau (1997). Notes: (1) The sample includes businesses that are classified by the IRS as individual proprietorships or self-employed persons, partnerships and subchapter S corporations and have sales of \$500 or more. (2) White category is equal to the total minus all minority groups.

Table 6
Industry Distribution by Race
Characteristics of Business Owners, 1992

	White-Owned Firms	Asian-Owned Firms
Agricultural services	2.7%	2.1%
Mining and construction	12.5%	3.9%
Manufacturing	3.4%	3.5%
Wholesale	3.6%	3.9%
Retail	14.7%	25.0%
Finance, insurance and real estate	10.1%	8.7%
Trans., communications, and public utilities	3.9%	4.2%
Personal services	25.9%	25.9%
Professional services	19.3%	18.8%
Uncoded industry	3.9%	4.0%
Sample size	15,872	6,321

Notes: (1) The sample includes businesses that are classified by the IRS as individual proprietorships or self-employed persons, partnerships and subchapter S corporations, have sales of \$500 or more, and have at least one owner who worked at least 12 weeks and 10 hours per week in the business. (2) All estimates are calculated using sample weights provided by the CBO.

Table 7
Decompositions of Asian/White Gaps in Small Business Outcomes
Characteristics of Business, 1992

	Specification			
	(1)	(2)	(3)	(4)
Dependent variable	Closure	Profits	Employer	Ln Sales
Asian mean	0.1896	0.3627	0.2628	10.6963
White mean	0.2282	0.3008	0.2065	10.0680
Asian/white gap	0.0386	-0.0619	-0.0562	-0.6283
Contributions from racial differences in:				
Sex	0.0006 1.6%	-0.0034 5.5%	-0.0004 0.8%	-0.0141 2.2%
Marital status	0.0003 0.9%	-0.0029 4.7%	-0.0022 3.9%	-0.0107 1.7%
Education	0.0093 24.2%	-0.0099 16.0%	-0.0091 16.2%	-0.0429 6.8%
Region	0.0005 1.4%	-0.0217 35.0%	0.0019 -3.3%	-0.0647 10.3%
Urban	-0.0032 -8.4%	-0.0096 15.5%	0.0074 -13.1%	-0.0213 3.4%
Prior work experience	0.0028 7.2%	-0.0144 23.2%	-0.0084 14.9%	-0.0377 6.0%
Prior work experience in a managerial capacity	0.0000 0.0%	0.0003 -0.4%	0.0002 -0.4%	-0.0009 0.1%
Prior work experience in a similar business	-0.0013 -3.5%	0.0023 -3.8%	0.0010 -1.8%	0.0128 -2.0%
Have a self-employed family member	-0.0014 -3.7%	0.0010 -1.7%	-0.0002 0.4%	-0.0032 0.5%
Prior work experience in a family member's business	-0.0022 -5.8%	0.0018 -2.9%	0.0032 -5.8%	0.0204 -3.2%
Inherited business	-0.0002 -0.6%	0.0009 -1.5%	0.0009 -1.5%	0.0048 -0.8%
All included variables	0.0052 13.4%	-0.0555 89.7%	-0.0058 10.3%	-0.1574 25.1%

Notes: (1) The samples and regression specifications are the same as those used in Chapter 4, Table 5. (2) Contribution estimates are mean values of the decomposition using 1000 subsamples of whites. See text for more details

Table 8
Decompositions of Asian/White Gaps in Small Business Outcomes
Characteristics of Business Owners, 1992

	Specification			
	(1)	(2)	(3)	(4)
Dependent variable	Closure	Profits	Employer	Ln Sales
Asian mean	0.1890	0.3637	0.2651	10.7037
White mean	0.2281	0.3003	0.2066	10.0615
Asian/white gap	0.0391	-0.0635	-0.0585	-0.6422
Contributions from racial differences in:				
Sex	0.0004 1.1%	-0.0020 3.1%	0.0002 -0.3%	-0.0127 2.0%
Marital status	0.0005 1.2%	-0.0027 4.3%	-0.0012 2.1%	-0.0084 1.3%
Education	0.0103 26.3%	-0.0061 9.6%	-0.0097 16.6%	-0.0506 7.9%
Region	-0.0001 -0.2%	-0.0235 37.0%	-0.0014 2.4%	-0.0861 13.4%
Urban	-0.0015 -3.8%	-0.0126 19.8%	0.0028 -4.8%	-0.0385 6.0%
Prior work experience	0.0035 8.9%	-0.0137 21.5%	-0.0090 15.5%	-0.0472 7.3%
Prior work experience in a managerial capacity	-0.0010 -2.5%	0.0001 -0.2%	0.0003 -0.5%	-0.0001 0.0%
Prior work experience in a similar business	-0.0018 -4.5%	0.0028 -4.4%	0.0015 -2.5%	0.0132 -2.1%
Have a self-employed family member	-0.0011 -2.9%	0.0000 -0.1%	-0.0005 0.9%	-0.0058 0.9%
Prior work experience in a family member's business	-0.0014 -3.5%	0.0012 -1.9%	0.0020 -3.4%	0.0123 -1.9%
Inherited business	0.0000 0.0%	0.0008 -1.3%	0.0004 -0.8%	0.0028 -0.4%
Startup capital	0.0255 65.3%	-0.0452 71.1%	-0.0697 119.2%	-0.3637 56.6%
Industry	0.0039 10.0%	0.0061 -9.6%	-0.0096 16.4%	-0.0357 5.6%
All included variables	0.0373 95.5%	-0.0946 149.0%	-0.0941 160.9%	-0.6206 96.6%

Notes: (1) The sample and regression specifications are the same as those used in Chapter 4, Table 9. (2) Contribution estimates are mean values of the decomposition using 1000 subsamples of whites. See text for more details.