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DISCUSSION PAPER

Determinants of Business Success:
An Examination of Asian-Owned Businesses in the
United States

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Abstract

Using confidential microdata from the U.S. Census Bureau, we investigate the performance of Asian-owned businesses. 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. Using detailed information on both the owner and the firm, we estimate the explanatory power of several additional factors.

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 Census of Population, 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, Fairlie 2006, Fairlie, Zissimopoulos, and Krashinsky 2008). Previous research also finds that self-employed Asians have relatively high earnings.[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. The few studies using business-level data to explore why Asian-owned businesses are more likely to survive and are more profitable than businesses owned by other racial groups, find that high levels of investment of human and financial capital are the most important factors (Bates 1989, 1997; Robb 2000). The lack of research on the outcomes of Asian firms 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 especially unfortunate given such dramatic differences in outcomes across racial groups.

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 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 1990, 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.[4] 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).[5]

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.

[Insert Table 1 here]

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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 2007b).

4. Social/Ethnic Resources

The previous literature offers various explanations for high rates of Asian self-employment, including high levels of human and financial capital (sometimes referred to as class resources) and extensive social or ethnic resources (such networks, rotating credit associations, and access to co-ethnic labor and customers).[6] Several studies focus on the importance of social resources, especially for Asian immigrants.[7] Networks of co-ethnics may provide valuable resources such as customers, labor, and technical assistance to assist in starting and running businesses (Light 1972, Waldinger, Aldrich and Ward 1990, Saxenian 2002, Zhou 2004, Kalnins and Cheung 2006, and Gil and Hartmann 2007). Co-ethnic networks may also be useful for providing access to financial capital for entrepreneurs through rotating credit associations, direct loans, and equity investments in the business.

Ethnic enclaves facilitate the transmission of social and ethnic resources. In particular, enclaves create opportunities for would-be entrepreneurs by providing access to markets, labor and information (Aldrich et al., 1985, and Borjas 1990). For example, the protected-market hypotheses maintains that ethnic enterprises often better serve the market of ethnic minorities by offering transactions in their own language and more efficiently responding to a group's tastes and demands (Light 1972, Aldrich et al. 1985, and Waldinger et al. 1990). 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). Enclaves may also reduce 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). Consistent with these arguments, Boyd (1991) finds no benefit of a concentrated ethnic population on ethnic immigrant entrepreneurs.

Some ethnic minorities have a comparative advantage in attracting 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 1986-87; Boyd 1991). Ethnic immigrant workers may have restricted job opportunities because of limited English skills but fit in well working for ethnic business owners who understand their own language and culture (Yoon 1991, 1993 and Min 1988). However, the vast majority of the self-employed do not have any employees, so this argument alone may not be able to explain much of the large racial differences in self-employment rates and outcomes.

Relying heavily on social or ethnic resources may be necessary for those with lower levels of class resources, but could result in worse outcomes. 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 Indian businesses are the least oriented to serving a minority clientele, least likely to employ a predominantly minority labor force, and hence least likely to utilize resources of ethic enclaves, yet have the best average performance of all Asian-owned firms. The Asian subgroup that he examined with the lowest average outcomes, the Vietnamese, is very active and reliant on ethnic enclaves to start and operate businesses.

5. The Determinants of Small Business Outcomes

For the purpose of this study, we focus on the factors that we can measure with CBO microdata, such as human capital, business human capital, and financial capital. The standard economic model predicts that these factors are important inputs in the firm's production process. In the ethnic entrepreneurship literature, these owner

characteristics are often referred to as class resources. The models we estimate are relatively parsimonious specifications that focus on the more exogenous owner and firm characteristics that predict business success. A detailed analysis of the effects of social resources is not possible with the CBO data and is very difficult with any dataset because of measurement issues and identification problems (e.g. does the social network cause business success or do successful entrepreneurs create larger social networks). But, many of the factors that we examine may result from ethnic resources (e.g. startup capital and prior similar industry work experience) or are related to them (e.g. family business backgrounds). We now examine each of the factors that can be measured using the CBO data. 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.

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.[8] Table 2 reports estimates of marginal effects for the logit regressions and coefficients for the OLS regression. Because of 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.[9] We discuss the results without startup capital and industry controls first.

[Insert Table 2 here]

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 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

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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 2007a 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.[10]   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 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

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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).

[Insert Table 3 here]

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.[11]

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. For example, 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.[12] The pattern of higher education levels among Asians is also observed when we look at our sample of active business owners. As illustrated in Figure 1, 46 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.

[Insert Figure 1 here]

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.

[Insert Table 4 here]

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 Appendix 2). 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.

Although not reported, the regression models also included a measure of the number of years of work experience prior to starting the business. We find mixed effects across outcome measures for this variable, but we find some evidence that individuals with twenty or more years or very few years of prior work experience have worse outcomes, on average. A larger share of Asian business owners had less than six years of work experience than white owners before starting their business.

The opposite is true at the other end of the distribution. More than one quarter of white business owners had twenty 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 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.[13] 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.[14] For households headed by individuals 25-64 years old, 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.

TYPES OF FINANCING

Asian and other minority owners differ from white business owners in the types of financing they used to start their businesses. Table 5 reports published estimates of sources of capital from the CBO for whites and the combined group of Asians and Pacific Islanders, and American Indians and Alaska Natives (U.S. Census Bureau 1997). Thus, when examining sources of borrowed and equity capital, we are limited to presenting estimates for Asians and Native Americans combined. However, nearly 85 percent of this group is in fact Asians and Pacific Islanders. Nearly 8 percent of Asian/Other Minority owners used a personal loan through a home mortgage or equity line of credit for startup capital, compared with 5 percent of whites. Asian firms were also more likely than white firms to use a personal credit card or a personal loan from a spouse. More significantly however, 13.8 percent of Asians and other minorities used a personal loan from a family member and 10.8 percent used some other type of personal loan. These compare with 5.8 percent and 7.1 percent for whites, respectively.[15] Thus, Asian owners are much more likely than white owners to rely on family sources for borrowed startup capital for their businesses.

[Insert Table 5 here]

The story is mixed for non-borrowed startup capital. Published CBO estimates show that white firms were more likely to use an owner's personal or family physical assets for the business startup (19.1 percent) than were Asians (14.4 percent). Bates (1997) finds that the majority of Asian startup 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 venture, but only 3 percent of Asians did so. Finally, Asians were much more likely to invest personal or family savings in the business (53.2 percent) than were whites (40.5 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, followed by business loans from a previous owner, and other business loans. Very few businesses used loans from the Federal, State, or local governments.

Estimates from the 1998 Survey of Small Business Finances (SSBF) for more established businesses indicate that less than 47 percent of Asian-owned firms have an outstanding loan compared with nearly 56 percent of white-owned firms. Asians are less likely to have credit lines, mortgages, vehicle loans, equipment loans, or capital leases. Asians are more likely than whites to have owner loans and to borrow through the use of credit cards (Bitler, Robb, and Wolken 2002). These findings could mean that Asian owners are necessarily more reliant on friends and family or on owner equity than are white owners.

One line of research in the sociological literature examines rotating credit associations and other types of financing, which emerge out of ethnic networks. Rotating credit associations 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, 14.6 percent of

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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. 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.[16]

STARTUP CAPITAL

Estimates from the CBO indicate that Asians start their businesses with far more capital than whites and other groups. 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 just 36 percent of Asian-owned firms were started with comparable levels of startup capital.

[Insert Figure 2 here]

Bates (1997) finds similar patterns using the 1987 CBO. The total financial capital at start-up was about $14,000 on average for blacks and $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 29 percent of blacks and 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 startup 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 of the differences. Higher levels of startup capital among Asian/Other Minority firms than among white firms 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 startup 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.). This leads to the question of how much higher levels of startup capital explain of the better average outcomes among Asian-owned businesses than white-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).

[Insert Table 6 here]

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.

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 white 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 14 percent of white 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.

[Insert Figure 3 here]

Examining sales by hours worked illustrates that Asian and other minority firms have better sales outcomes than whites-owned firms for each level of hours worked in the business. 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.

[Insert Figure 4 here]

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).[17] 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).[18] 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 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 $\overline{Y}$ does not necessarily equal $F(\overline{X}\hat{\beta})$. 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.[19] 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:

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

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 (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:

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

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 predicated probabilities resulting from sequentially switching white characteristics to minority characteristics one variable or set of variables at a time. The calculation of (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 potential endogeneity, we report decomposition results for the main owner and firm characteristics first and

decomposition results that include startup capital and industry second. The means of all independent variables are reported in Appendix 2.

Racial differences in the male/female composition of firms plays only a small role in explaining differences in outcomes with the exception of profits, in which case it explains 5.5 percent of the Asian/white gap. Marital status differences explain 3.9 percent of the gap in employment and 4.7 percent of the gap in profits, but little of the other outcomes. In our sample, 82 percent of the Asian owners were married, compared with 77 percent of white owners.

[Insert Table 7 here]

Education plays a major role in explaining the Asian/white gap in outcomes. It explains 16 percent in both the profits and employer specifications, 24.2 percent in the closure specification, and 6.8 percent in the sales specification. These results indicate that a large part 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. This holds true for both U.S. born Asians and Asian immigrants.

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 or trade relations with Asian countries. Region explains very little of the other two outcome variables, however. 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 greater growth potential.

As noted above, the estimated effects of prior work experience vary somewhat across outcome measures, although we find some evidence suggesting that individuals with twenty 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. Asian owners are more likely to have low levels of prior work experience and are less likely to have very high levels of prior work experience than white owners. 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 was 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. Estimates from Table 4 indicate 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 Asian owners had similar levels of theses characteristics as white owners then their businesses would be predicted to perform even better.

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 of

businesses contribute very little to the gaps, which is consistent with previous findings for black firms (Fairlie and Robb 2007b). The incidences of inheritances are too infrequent and the racial differences in inheritances are too small to result in inheritances of businesses 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 of the variables in the previous decomposition are similar to those in this decomposition. Racial differences in education continue to be important in explaining the Asian/white gaps in business outcomes. The inclusion of controls for startup capital and industry does not change the conclusion that Asian businesses are more successful partly because of higher education levels. The role of prior work experience also remains strong, explaining between 7.3 and 21.5 percent of the gaps in business outcomes.

[Insert Table 8 here]

Asian/white differences in business performance do not appear to be due to industry differences. Although racial differences in industry concentrations contribute to the gaps in closure, employment and sales, it works in the other direction for profits. The industry distribution of Asian firms is less favorable for this outcome. Given the inconsistency of results across different outcomes, industry differences do not appear to contribute substantially to why Asian firms perform better on average than white firms.

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, 65 percent of the closure equation, 71 percent of the gap in the profit equation, and 100 percent of the gap in the employer equation. Less than 5 percent of white owned

firms were started with more than $100,000 in capital, compared with 12 percent of Asian-owned firms. Also, nearly a quarter of Asian-owned firms were started with $25,000-100,000, compared with just 11 percent of firms owned by whites. Although more than 60 percent of white owned firms were started with less than $5,000 in capital, only 36 percent of Asians did so. Clearly, firms with higher levels of startup capital are associated with more successful business outcomes. The contribution of higher levels of startup capital among Asian-owned businesses to their relative success is even larger than the contribution of lower levels of startup capital among black-owned businesses to their lower average outcomes.

Overall, racial differences in owner and business characteristics explain a large percentage of the total Asian/white gaps in business outcomes, especially when startup capital is included. In the second set of specifications, 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 education and prior work experience.

8. Conclusions

Estimates from the CBO 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. These differences imply that Asian firms are also substantially more successful on average than are firms owned by other major minority groups.

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. These high levels of education among business owners follow from the high levels of education in the general Asian population. 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 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. Furthermore, although social and ethnic resources may 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.

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Appendix 1
Asian Subgroups

Many previous studies of Asian business ownership delineate 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 U.S.-born Asians, the results reported here are for all Asians. This is due to finding similar business outcomes for the two groups and limitations of releasing detailed tables through the Census Bureau's strict disclosure process for confidential and restricted-access data. 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.

Interestingly, 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.[20] 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 business outcomes by immigrant status for Asians. 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. 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. Self-employed immigrants and non-immigrants 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.

A similar issue is grouping Asians from different countries of origin. Many previous studies of Asian self-employment have 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, the differences are relatively small when compared with differences between Asians and whites. 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 experimented with business outcome regressions with detailed 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 paper 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 Census Bureau's lengthy disclosure process. 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.

Appendix 2
Means of Selected Variables
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
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
Prior work experience: 1 year	0.0707	0.0946
Prior work experience: 2-5 years	0.1641	0.2255
Prior work experience: 6-9 years	0.1507	0.1607
Prior work experience: 10-19 years	0.2973	0.2474
Prior work experience: 20 years or more	0.2578	0.1313
Prior work experience in a managerial capacity	0.5552	0.5643
Prior work experience in a similar business	0.5030	0.4685
Have a self-employed family member	0.5231	0.4434
Prior work experience in a family member's business	0.2352	0.1796
Inherited business	0.0148	0.0132
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.

Figure 1
Owner's Education Level by Race
Characteristics of Business Owners, 1992
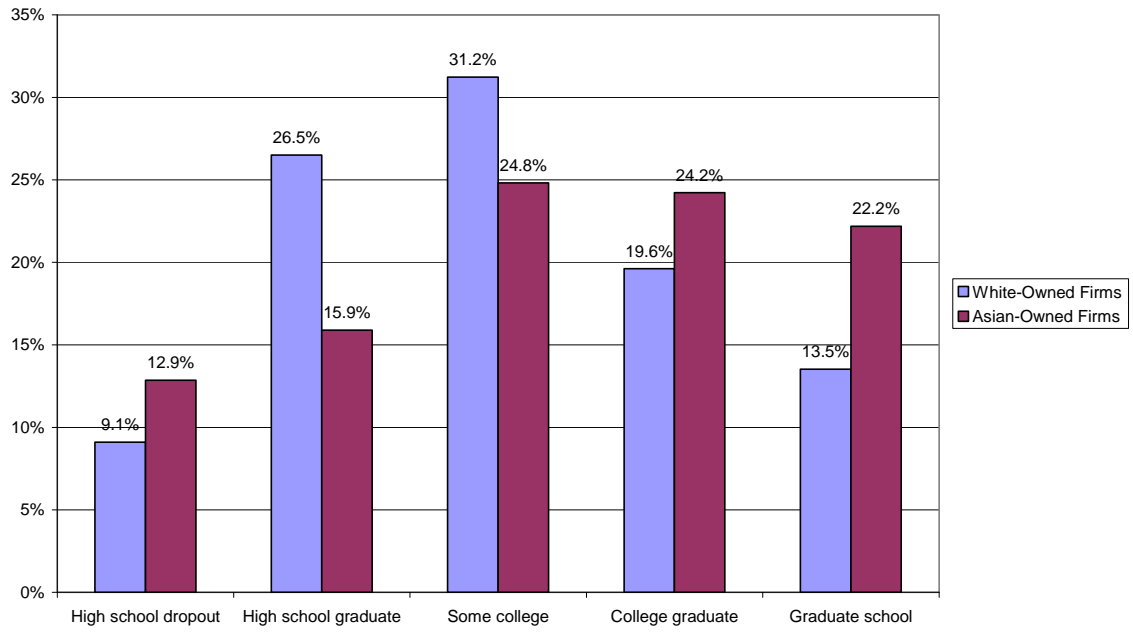
Figure 2
Startup Capital by Race
Characteristics of Business Owners, 1992
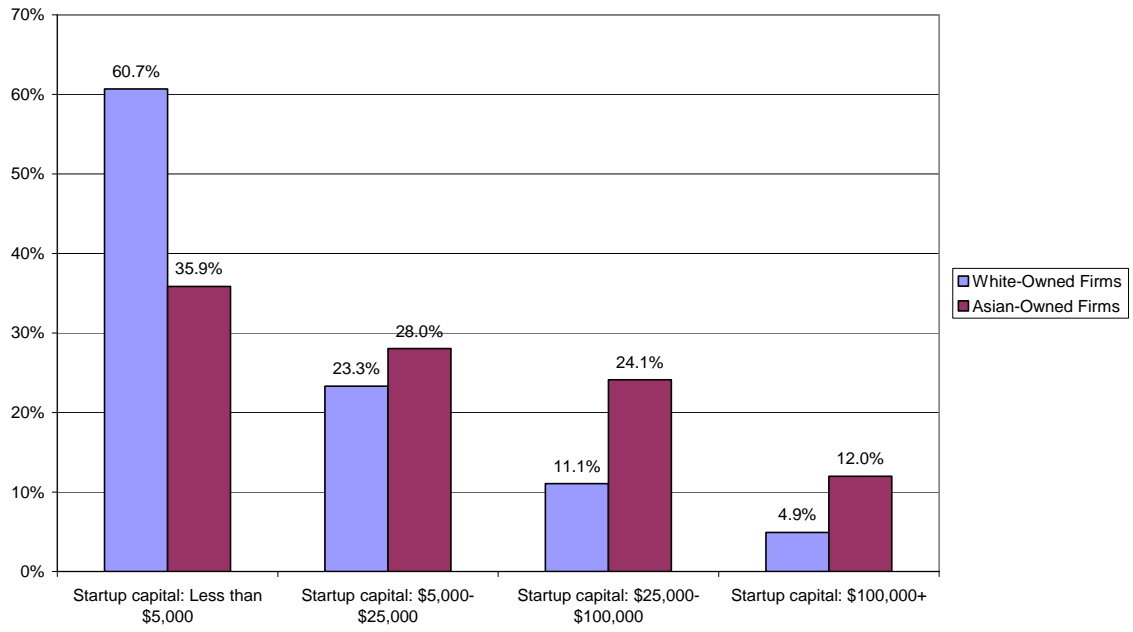
Figure 3
Hours Worked by Owner by Race
Published Estimates from the Characteristics of Business Owners, 1992

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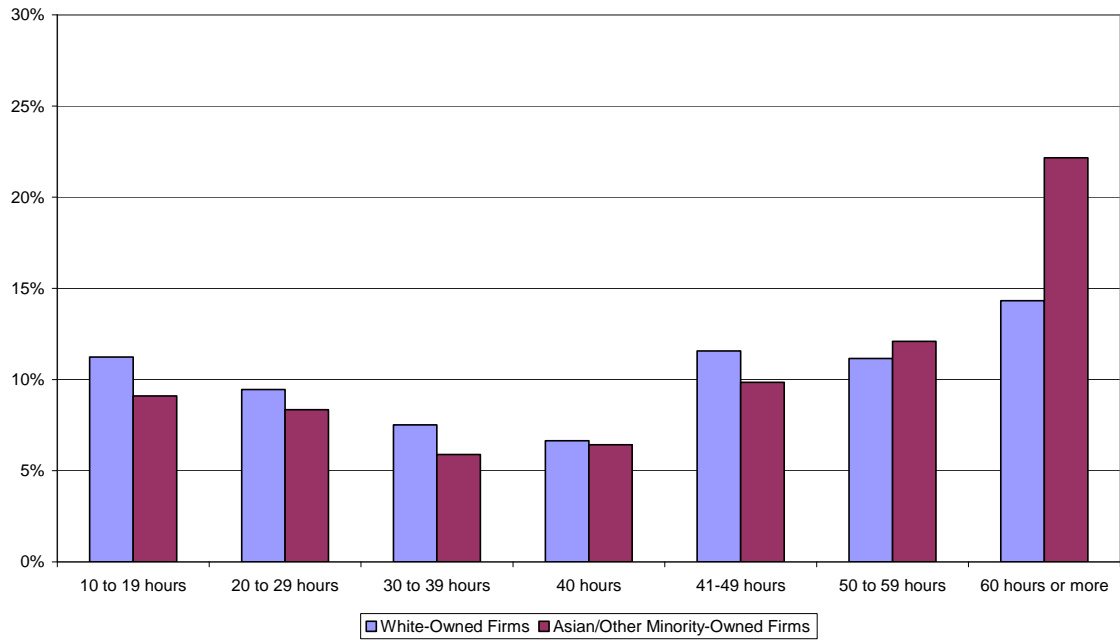
Figure 4
Percentage of Firms with $100,000 or more in Sales by Race and Hours Worked
Published Estimates from the Characteristics of Business Owners, 1992
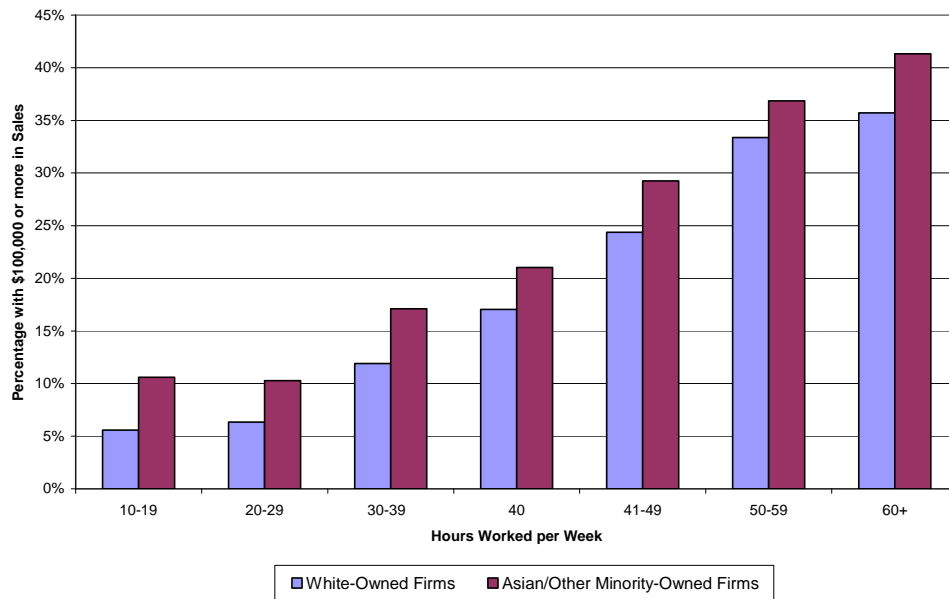
Table 1
Means of Business Outcomes
Characteristics of Business Owners, 1992

	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

	Specification									
	(1)		(2)		(3)		(4)		(5)	
Dependent variable	Closure (1992-96)		Profits $10,000+		Employer Firm		Ln Sales		Profits Ordered	
Black-owned business	0.0212		-0.1786	*	-0.0951	*	-0.4636	*	-0.4160	*
	(0.0130)		(0.0207)		(0.0166)		(0.0554)		(0.0376)	
Latino-owned business	-0.0138		-0.0443	*	0.0231	*	0.0660		-0.0966	*
	(0.0121)		(0.0144)		(0.0116)		(0.0490)		(0.0318)	
Native American-owned business	-0.1176	*	0.0422		0.0717		0.3991	*	0.0654	
	(0.0554)		(0.0530)		(0.0415)		(0.1879)		(0.1207)	
Asian-owned business	-0.0457	*	0.0259		0.0728	*	0.4709	*	0.0004	
	(0.0145)		(0.0145)		(0.0115)		(0.0539)		(0.0340)	
Female-owned business	0.0247	*	-0.2107	*	-0.0616	*	-0.6941	*	-0.3968	*
	(0.0050)		(0.0066)		(0.0051)		(0.0206)		(0.0135)	
High school graduate	-0.0209	*	0.0624	*	0.0447	*	0.1534	*	0.0209	
	(0.0085)		(0.0112)		(0.0092)		(0.0351)		(0.0234)	
Some college	-0.0101		0.0724	*	0.0471	*	0.0570		0.1038	*
	(0.0084)		(0.0111)		(0.0091)		(0.0351)		(0.0232)	
College graduate	-0.0553	*	0.1133	*	0.0606	*	0.2397	*	0.1632	*
	(0.0093)		(0.0118)		(0.0097)		(0.0383)		(0.0252)	
Graduate school	-0.1491	*	0.2127	*	0.1650	*	0.6115	*	0.5130	*
	(0.0107)		(0.0122)		(0.0097)		(0.0404)		(0.0267)	
Urban	0.0164	*	0.0447	*	-0.0343	*	0.1008	*	0.1134	*
	(0.0058)		(0.0069)		(0.0055)		(0.0234)		(0.0150)	
Prior work experience in a managerial capacity	0.0655	*	0.0265	*	0.0513	*	0.2089	*	-0.0055	
	(0.0054)		(0.0063)		(0.0052)		(0.0217)		(0.0141)	
Prior work experience in a similar business	-0.0425	*	0.1024	*	0.0432	*	0.4087	*	0.2484	*
	(0.0049)		(0.0059)		(0.0048)		(0.0202)		(0.0131)	
Have a self-employed family member	-0.0200	*	0.0113		-0.0022		-0.0356		0.0092	
	(0.0055)		(0.0067)		(0.0055)		(0.0227)		(0.0148)	
Prior work experience in a family member's business	-0.0419	*	0.0322	*	0.0552	*	0.3784	*	0.0471	*
	(0.0069)		(0.0079)		(0.0063)		(0.0273)		(0.0178)	
Inherited business	-0.1007	*	0.1097	*	0.2006	*	1.3144	*	0.3524	*
	(0.0237)		(0.0217)		(0.0157)		(0.0800)		(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 marital status of primary owner, region, and work experience of the primary owner.

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

	Specification							
	(1)		(2)		(3)		(4)	
Dependent variable	Closure (1992-96)		Profits $10,000+		Employer Firm		Ln Sales	
Black-owned business	0.0077		-0.1684	*	-0.0703	*	-0.3215	*
	(0.0133)		(0.0213)		(0.0176)		(0.0506)	
Latino-owned business	-0.0143		-0.0444	*	0.0277	*	0.0735	
	(0.0123)		(0.0149)		(0.0126)		(0.0447)	
Native American-owned business	-0.1270	*	0.0322		0.0696		0.3468	*
	(0.0564)		(0.0548)		(0.0454)		(0.1706)	
Asian-owned business	-0.0091		-0.0176		-0.0164		0.0216	
	(0.0149)		(0.0150)		(0.0128)		(0.0495)	
Female-owned business	0.0150	*	-0.1943	*	-0.0498	*	-0.5708	*
	(0.0053)		(0.0069)		(0.0057)		(0.0193)	
High school graduate	-0.0065		0.0428	*	0.0251	*	0.0324	
	(0.0087)		(0.0116)		(0.0099)		(0.0325)	
Some college	0.0095		0.0637	*	0.0398	*	0.0011	
	(0.0086)		(0.0115)		(0.0098)		(0.0322)	
College graduate	-0.0433	*	0.0855	*	0.0470	*	0.1441	*
	(0.0096)		(0.0123)		(0.0106)		(0.0355)	
Graduate school	-0.1617	*	0.1573	*	0.1674	*	0.5567	*
	(0.0117)		(0.0137)		(0.0115)		(0.0397)	
Urban	0.0079		0.0610	*	-0.0144	*	0.1831	*
	(0.0059)		(0.0071)		(0.0059)		(0.0214)	
Prior work experience in a managerial capacity	0.0826	*	0.0075		0.0212	*	0.0401	*
	(0.0056)		(0.0066)		(0.0057)		(0.0200)	
Prior work experience in a similar business	-0.0505	*	0.0962	*	0.0426	*	0.4081	*
	(0.0052)		(0.0061)		(0.0053)		(0.0187)	
Have a self-employed family member	-0.0181	*	0.0004		-0.0057		-0.0651	*
	(0.0057)		(0.0069)		(0.0060)		(0.0207)	
Prior work experience in a family member's business	-0.0323	*	0.0210	*	0.0344	*	0.2300	*
	(0.0071)		(0.0081)		(0.0069)		(0.0250)	
Inherited business	-0.0761	*	0.1351	*	0.2267	*	1.3143	*
	(0.0246)		(0.0238)		(0.0182)		(0.0764)	

(continued)

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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,	0.0600	*	0.1205	*	-0.1523	*	-0.3300	*
and public utilities	(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 1. (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 marital status of primary owner, 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%
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

	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%	7.8%
Personal credit card	2.9%	4.7%
Personal loan from spouse	1.1%	1.6%
Personal loan from family	5.8%	13.8%
Other personal loan	7.1%	10.8%
SOURCES OF NONBORROWED CAPITAL FOR OWNER		
None-100 percent borrowed capital	6.8%	5.0%
Use of owner's personal/family physical assets (building, motor vehicle, equipment, etc.)	19.1%	14.4%
Proceeds from the sale of owner's personal assets	2.4%	3.4%
Owner's personal/family savings	40.5%	53.2%
Other source	3.7%	3.8%
SOURCES OF BORROWED CAPITAL FOR FIRM		
Business loan from banking or commercial lending institution	12.1%	12.3%
Government-guaranteed business loan from banking or commercial lending institution	0.4%	0.7%
Business loan from Federal, State or local government	0.3%	0.4%
Business loan from investment company/profit or nonprofit private source	0.6%	1.1%
Business loan from previous owner	1.9%	4.8%
Business trade credit from supplier	0.9%	1.4%
Other business loan	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. (3) More than one source of capital can be reported for each firm.

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

Table 7
Decompositions of Asian/White Gaps in Small Business Outcomes
Characteristics of Business,1996

	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	-0.0034	-0.0004	-0.0141
	1.6%	5.5%	0.8%	2.2%
Marital status	0.0003	-0.0029	-0.0022	-0.0107
	0.9%	4.7%	3.9%	1.7%
Education	0.0093	-0.0099	-0.0091	-0.0429
	24.2%	16.0%	16.2%	6.8%
Region	0.0005	-0.0217	0.0019	-0.0647
	1.4%	35.0%	-3.3%	10.3%
Urban	-0.0032	-0.0096	0.0074	-0.0213
	-8.4%	15.5%	-13.1%	3.4%
Prior work experience	0.0028	-0.0144	-0.0084	-0.0377
	7.2%	23.2%	14.9%	6.0%
Prior work experience in a managerial capacity	0.0000	0.0003	0.0002	-0.0009
	0.0%	-0.4%	-0.4%	0.1%
Prior work experience in a similar business	-0.0013	0.0023	0.0010	0.0128
	-3.5%	-3.8%	-1.8%	-2.0%
Have a self-employed family member	-0.0014	0.0010	-0.0002	-0.0032
	-3.7%	-1.7%	0.4%	0.5%
Prior work experience in a family member's business	-0.0022	0.0018	0.0032	0.0204
	-5.8%	-2.9%	-5.8%	-3.2%
Inherited business	-0.0002	0.0009	0.0009	0.0048
	-0.6%	-1.5%	-1.5%	-0.8%
All included variables	0.0052	-0.0555	-0.0058	-0.1574
	13.4%	89.7%	10.3%	25.1%

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

Table 8
Decompositions of AsianWhite 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	-0.0020	0.0002	-0.0127
	1.1%	3.1%	-0.3%	2.0%
Marital status	0.0005	-0.0027	-0.0012	-0.0084
	1.2%	4.3%	2.1%	1.3%
Education	0.0103	-0.0061	-0.0097	-0.0506
	26.3%	9.6%	16.6%	7.9%
Region	-0.0001	-0.0235	-0.0014	-0.0861
	-0.2%	37.0%	2.4%	13.4%
Urban	-0.0015	-0.0126	0.0028	-0.0385
	-3.8%	19.8%	-4.8%	6.0%
Prior work experience	0.0035	-0.0137	-0.0090	-0.0472
	8.9%	21.5%	15.5%	7.3%
Prior work experience in a managerial capacity	-0.0010	0.0001	0.0003	-0.0001
	-2.5%	-0.2%	-0.5%	0.0%
Prior work experience in a similar business	-0.0018	0.0028	0.0015	0.0132
	-4.5%	-4.4%	-2.5%	-2.1%
Have a self-employed family member	-0.0011	0.0000	-0.0005	-0.0058
	-2.9%	-0.1%	0.9%	0.9%
Prior work experience in a family member's business	-0.0014	0.0012	0.0020	0.0123
	-3.5%	-1.9%	-3.4%	-1.9%
Inherited business	0.0000	0.0008	0.0004	0.0028
	0.0%	-1.3%	-0.8%	-0.4%
Startup capital	0.0255	-0.0452	-0.0697	-0.3637
	65.3%	71.1%	119.2%	56.6%
Industry	0.0039	0.0061	-0.0096	-0.0357
	10.0%	-9.6%	16.4%	5.6%
All included variables	0.0373	-0.0946	-0.0941	-0.6206
	95.5%	149.0%	160.9%	96.6%

Notes: (1) The sample and regression specifications are the same as those used in Table 3. (2) Contribution estimates are mean values of the decomposition using 1000 subsamples of whites. See text for more details.

[1] See Boyd (1991), Fratoe (1986), and Borjas (1986) for example.

[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.

[4] The procedure for identifying firms owned by persons of Asian, Pacific Islander, Hispanic, American Indian or Alaska Native ancestry was different than for black-owned firms, thus potentially resulting in more missing values for these groups (see U.S. Census Bureau 1997).

[5] Although sample weights are used that correct for non-response, there is some concern that closure rates are underestimated for the period from 1992 to 1996. Many businesses closed or moved over this period and did not respond to the survey which was sent out at the end of the period. Indeed, Robb (2000) showed, through matching administrative records, that nonrespondents had a much higher rate of closure than respondents. Racial differences in closure rates, however, were similar for the respondent and nonrespondent samples.

[6] 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.

[7] Another line of research hypothesizes that Asians have a high rate of self employment because they come from countries with high rates (or culture) of self-employment. Although estimates of self-employment rates are not available for all Asian countries with large immigrant populations in the United States, wide variation in self-employment rates exists across available countries in Asia (International Labour Organization 2005). Asian countries also do not have notably higher self-employment rates compared to other regions of the world. Previous research on the correlation between U.S. self-employment rates and home country rates is also mixed (see Yuengert 1995 and Fairlie and Meyer 1996 for example).

[8] 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.

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

[10] 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.

[11] 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 2007a). 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.

[12] We also find roughly comparable mean total earnings for the two groups using Census microdata.

[13] 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.

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

[15] 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.

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

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

[18] SAS programs are available for the non-linear decomposition technique at http://people.ucsc.edu/~rfairlie/decomposition, and a Stata program and help file is available by entering "ssc install fairlie" in Stata.

[19] 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.

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