Long-Run Labor Market Effects of
Japanese American Internment During World War II
on Working-Age Male Internees

Aimee Chin*
Department of Economics, University of Houston

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ABSTRACT

In 1942, all Japanese were evacuated from the West Coast and incarcerated in internment camps. To investigate the long-run economic consequences of this historic episode, I exploit the fact that Hawaiian Japanese were not subject to mass internment. I find that the labor market withdrawal induced by the internment reduced the annual earnings of males by as much as nine to thirteen percent twenty-five years afterwards. This is consistent with the predictions of an economic model that equates the labor market withdrawal induced by the internment with a loss of civilian labor market experience or a loss of advantageous job matches. (JEL J15, J31, N32)

I. INTRODUCTION

In 1942, the U.S. government evacuated all persons of Japanese descent from the West Coast and incarcerated them in War Relocation Authority (WRA) relocation centers. Approximately 110,000 people were interned, 65% of them American citizens and the remaining 35% Japan-born resident aliens.[1] The internees constituted 87% of the Japanese population in the continental United States and 97% of the Japanese population in the West Coast enumerated in the 1940 Census. Internees were held for an average of three years.

The internees lost both property and income. Property losses resulted from fire sales prior to internment, the inability to manage property or service mortgages while incarcerated, and damage and theft of stored property due to neglect or poor storage facilities. Internees lost income because their labor market wages and opportunities were reduced or eliminated in WRA camps. Social scientists have attempted to quantify the extent of these economic losses. In a widely cited study, Broom and Riemer (1949) used data from several small-scale surveys conducted in Los Angeles County immediately following the internment to estimate the magnitude of property and income losses. A significant part of the economic losses from internment, however, may be due to reduced income in the post-internment period. The extent of these post-internment losses is an open question.

How would internees have fared in the labor market in the absence of internment? In this paper, I use Japanese residents of Hawaii (then a U.S. territory) as a control group to answer this question.[2] In contrast with the West Coast Japanese (and in spite of Pearl Harbor's Hawaii

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[1] Following other researchers, this paper defines internment as the combined process of evacuation and incarceration. The technical definition of internment is the evacuation and incarceration of enemy aliens (i.e., citizens of nations with which the nation concerned is at war). However, the Japanese American internment during World War II applied to all persons of Japanese descent, including American citizens.

[2] I will also use Japanese located in other continental U.S. states in the control. About 90% of the Japanese outside the West Coast lived in Hawaii, which is why Hawaii is emphasized in the discussion.

location), there was no mass evacuation of Hawaiian Japanese. To control for fixed differences in labor market outcomes between West Coast and Hawaiian Japanese, I incorporate birth cohorts whose labor market experience was unaffected by internment. Moreover, I test the identifying assumption underlying my analysis – that in the absence of the internment, labor market outcomes in the West Coast would have followed the same trend as in Hawaii – by using data on Chinese and Whites.

This paper provides new empirical evidence on the long-run economic impacts of a regrettable but important and unique episode in American history. Originally justified as a military necessity, the Japanese American internment during World War II has since been viewed as an act of injustice committed by the U.S. government against a group of people on the basis of race. A public apology has been issued, and reparations of $1.6 billion have been paid out ($20,000 for each surviving former internee) under the Civil Liberties Act of 1988. One question that my paper addresses is whether compensation paid under the 1988 Act is adequate. Additionally, the results reported here may be relevant for other sorts of forced labor market withdrawal, including contemporary detention policies.

Using individual-level data from the 1970 Census, I find that the labor market withdrawal induced by the internment reduced the annual earnings of males by as much as nine to thirteen percent twenty-five years afterwards. Additionally, internment increased the probability of self-employment, and reduced the probability of holding high-status professional and technical occupations. These findings are consistent with the predictions of an economic model that equates the labor market withdrawal induced by the internment with a loss of civilian labor market experience or a loss of advantageous job matches.

The paper is organized as follows. Section II provides a brief historical background and

reviews the related literature. Section III presents the estimation strategy. Section IV describes the data. The empirical results are discussed in Section V and Section VI concludes.

II.   BACKGROUND

A. Historical Background

On February 19, 1942, President Franklin D. Roosevelt signed Executive Order No. 9066, which authorized military commanders to designate military areas "from which any or all persons may be excluded." The military commander in charge of the western U.S. designated much of Washington, Oregon, California and Arizona as military areas and ordered the removal of all persons of Japanese descent from these areas (these four evacuated states are collectively called the West Coast in this paper). That is, immigrants from Japan and U.S.-born persons of Japanese descent were no longer allowed to live, work or travel in the West Coast. The Army enforced the evacuation. By August 7, 1942, 110,000 persons of Japanese descent had been removed from the West Coast. These evacuees were placed in WRA camps; the barbed wire and armed guards were markers of their prisoner status.[3] The internees did not know how long they would be held. Ex post, we know that the exclusion of Japanese from the West Coast was lifted December 17, 1944 and that most camps were closed by the end of 1945.

Internees received food, shelter, medical care and education free of charge. The internees were expected and encouraged to work, but pay was meager. There was a fixed wage scale in the camps of $12/month for unskilled labor, $16/month for skilled labor and $19/month for professional employees.[4] In addition, the camps offered few good jobs. Most jobs were in camp operations, such as food preparation, health and sanitation and security. Broom and Riemer

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[3] Technically, the evacuees spent the first three months in Wartime Civil Control Authority (WCCA) assembly centers while the permanent camps, the War Relocation Authority relocation centers, were being built.
[4] These wages were much lower than the pre-internment monthly wage; for example, in a Los Angeles County sample, the 1941 median monthly wage was $108 (Broom and Riemer (1949), p. 22). They were similar to wages paid to young domestic workers who worked 3-4 hours/day and received room and board.

(1949) state that these wages "provided an inadequate incentive, so many skills were lost to the communities" (p. 34). The U.S. Commission on Wartime Relocation and Internment of Civilians (1997) comments: "Many evacuees saw no reason to devote their best efforts to a system which displayed so little trust in them and held out such demeaning rewards" (p. 167). Myer (1971), the director of the War Relocation Authority, observes that "[o]ver-staffing and the creation of boondoggling type jobs occurred at some centers, and the encouragement of slack work habits was found among many evacuees" (p. 43).

Instead of improving the employment situation inside the camps, the WRA developed various leave policies enabling internees to pursue opportunities outside the camps and the West Coast.[5] Young adult internees were more likely to take these leaves. Other internees tended to stay until the camps closed. Thus, whereas the young adult internees were generally incarcerated for one to two years, the other internees were generally incarcerated for three years.[6] Figure 1 shows the distribution of duration in the internment camps. The mean duration was three years; the median duration was three and a half years.

The internees surely lost income while in camp – the wages paid in camp were substantially below the market wage. It is less obvious, but widely claimed, that internment changed the internees' earnings trajectory thereafter (see, for example, U.S. Commission on Wartime Relocation and Internment of Civilians (1997)). Internees' earnings potential could

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[5] Seasonal leaves permitted internees to leave camp for several months to provide agricultural labor to private farms. Student leaves allowed internees who had been admitted to a college outside the West Coast and whose families had the financial ability to pay for college to continue their education. Eventually, the WRA also granted indefinite leaves, which enabled internees to permanently relocate to areas outside the West Coast provided that they could find a job and support themselves. Also, beginning in 1943, internees could leave camp by volunteering for the armed forces. Between the Pearl Harbor attack and 1943, the War Department had stopped taking Japanese into the military. The draft was reinstated for the Japanese in 1944.

[6] Despite being interned for shorter than the average duration, the young adult internees could have lost just as much civilian labor market experience. This is because the alternative activities they took on to leave the camps may not have been well valued by the civilian labor market either. For example, Angrist (1990) finds that the earnings penalty for military service during the Vietnam era appears to be mediated through loss of civilian labor market experience.

have been reduced through various mechanisms. One possibility is loss of civilian labor market experience. Work experience in the camps was a poor substitute for work experience in the civilian labor market. Workers were underpaid and underutilized. Some skills may have deteriorated through lack of incentive or opportunity to practice them. Another possibility is loss of advantageous job matches. On the one hand, the internment could have separated workers from jobs for which they were especially well suited, such as jobs for which they had developed much firm-specific human capital or jobs that they had obtained after a costly search process. This might be especially applicable to older internees since many of them had worked for years in their own farms and small businesses prior to internment, and many of these enterprises were lost as a result of internment. On the other hand, the internment could have prevented workers from building their search capital. This might be especially applicable to young adult internees, who were at the inception of their work lives when the internment intervened.

These same two mechanisms could have raised earnings potential as well. First, internees might have acquired skills valued by the civilian labor market during internment. For example, there was vocational training and adult English-language classes in the camps. Also, since the internees participated in all aspects of camp operations, they might have gained experience in jobs that were previously inaccessible to them because of racial discrimination, such as secretarial jobs and jobs in schools and hospitals. Second, the internment might have improved job matches. Through the permanent leave program, internees might have landed in cities that had better opportunities for Japanese.

Mass evacuation was not carried out anywhere outside the West Coast, or for any ethnic/racial group other than the Japanese, although it was permitted by Executive Order No. 9066. For example, persons of Japanese descent living outside the West Coast, persons of

German descent and persons of Italian descent were not evacuated wholesale. A selective evacuation process applied to these groups.[7] Table 1 shows the number of internees in 1942 and the Japanese population in 1940 by state of residence. Less than 1% of Japanese living outside the West Coast were placed in the WRA camps whereas all Japanese living in the West Coast were. Many have speculated on the reasons for such disparate policies toward the Japanese in the two regions.[8] They note that to the extent that evacuation was a military necessity as officially claimed, the Hawaiian Japanese should have been evacuated ahead of the West Coast Japanese; after all, not only was Hawaii the location of the Pearl Harbor attack, but also the Hawaiian Japanese were both more numerous and closer to Japan. In any case, the disparate policies may facilitate an evaluation of the Japanese American internment, as will be elaborated in Section III.

B. Related Literature

Academic studies on the Japanese American internment by historians and sociologists on the one hand, and firsthand accounts by former internees on the other, enrich our understanding of the experience inside the WRA camps and suggest mechanisms by which this experience could be propagated to life afterwards. However, there are few studies that use statistical methods to examine the economic effects of the internment. The authoritative reference on the

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[7] Under selective evacuation, individuals who the government believed posed a threat to national security were detained and given a hearing. Following the hearing, they (and, on a voluntary basis, their families) might be sent to Department of Justice internment camps. According to Immigration and Naturalization Service records, 16,849 persons of Japanese descent (this figure includes Japanese from both Hawaii and the continental U.S.), 10,905 persons of German descent and 3,248 persons of Italian descent were held in Department of Justice internment camps.

[8] See, for example, U.S. Commission on Wartime Relocation and Internment of Civilians (1997) and Weglyn (1976). Reasons include the logistical difficulty of evacuating such a large number of people from Hawaii (there were about 158,000 Hawaiian Japanese), the potential crippling effects on the Hawaiian economy (the Japanese constituted 37% of the population in Hawaii but at most only 1.4% of any continental states' population) and the possibility that General DeWitt (the military commander in charge of western U.S.) had different sentiments about the Japanese than General Emmons (the military commander in charge of the Hawaiian Islands).

immediate economic effects is Broom and Riemer (1949).[9] They conducted several small-scale surveys in Los Angeles County inquiring former internees about conditions in 1941 (before internment) and 1946 (immediately after). These data enable them to estimate the property and income losses sustained by internees while interned, and to characterize changes in the occupational and geographic distribution of Japanese following the internment. One limitation of this study is that it is basically a before/after contrast; the effects of the internment cannot be separated from secular time effects. Also, the study leaves open the question of long-run effects; are the immediate effects transitory or permanent?

One of the only studies on the longer run economic effects of the internment is an unpublished undergraduate thesis by Hatamiya (1981). Hatamiya uses aggregate data from the 1940-1970 Censuses to estimate the income loss over time. On the one hand, he does not have income data, and all his statements about income effects are based on changes in occupational distribution over time. Specifically, he has data on the occupation distribution by race for California, and to translate these into income effects he makes the assumption that the median wage for a particular occupation is the same for Japanese as for all Californians. On the other hand, he makes no distinction among different cohorts of Japanese. Yet, by 1970, some workers would have been born after the internment.

This paper contributes to the literature on the Japanese American internment by using econometric techniques to estimate the causal impact of the labor market withdrawal induced by the internment on long-run labor market outcomes. In contrast to Broom and Riemer, I control for secular time effects and examine longer-run effects of the internment. In contrast to

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[9] The U.S. Commission on Wartime Relocation and Internment of Civilians (1997) writes: "In 1954 the JACL [Japanese American Citizens League] characterized this study as authoritative to the Congressional subcommittee considering amendments to the Act [Evacuation Claims Act of 1948] and it is certainly the most thorough analytical work that is even roughly contemporaneous with the evacuation" (p. 119).

Hatamiya, I use individual-level data with income, compute standard errors and separate out the cohorts not affected by the internment.

III. ESTIMATION STRATEGY

The challenge in estimating the long-run labor market effects of the internment is finding a control group that credibly tracks how the internees would have fared in the labor market in the absence of internment. The innovation in this paper is to use the Japanese located outside the West Coast in 1942, i.e., in Hawaii and continental U.S. states, as a control group. In sharp contrast to the West Coast Japanese, the non-West Coast Japanese were not evacuated and incarcerated en masse. They were by and large allowed to remain in their homes and conduct their lives as usual, albeit under greater scrutiny.[10] This suggests a difference-in-differences estimation strategy for obtaining the effect of the internment. An individual is considered treated if he was in the West Coast in 1942 and he is being observed in the post-internment period.

Unfortunately, public-use microdata for residents of Hawaii are not available until the 1960 Census, and so there are no data for any pre-internment years.[11] Hawaii data is critical to the implementation of the estimation strategy since Hawaiian Japanese constitute about 90% of non-West Coast Japanese; relying solely on Japanese in the continental U.S. states would not yield enough control group observations. A feasible solution might be to use cross-cohort instead of cross-time variation. In particular, I can take advantage of the fact that in the post-internment years, there are West Coast cohorts whose labor market experience was affected by the internment as well as West Coast cohorts whose labor market experience was not affected.

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[10] Hawaii was under martial law from the Pearl Harbor attack through October 24, 1944. This imposed curfew, rationed gasoline, required all residents to carry identification cards, censored media, suspended jury trials, etc. This does not necessarily make the Hawaiian Japanese a poor control group; in the counterfactual (of not having been interned), West Coast Japanese would likely have been subject to additional restrictions during the war.

[11] The U.S. decennial census has been conducted in Hawaii since 1900, and population tabulations have been published. However, microdata and even aggregate data by race and cohort have not been released.

The internment interrupted the labor market experience of working-age individuals in the West Coast; the labor market experience of younger individuals in the West Coast was not interrupted. Younger individuals attended school in the camps, just as they would have in their old neighborhoods in the West Coast.[12] The effect of labor market withdrawal induced by the internment on labor market outcomes is given by β in the following equation:

(1) $y_{ic} = \alpha + \beta OLD_{ic} * WC_{ic} + \gamma OLD_{ic} + \kappa WC_{ic} + \pi X_{ic} + \varepsilon_{ic}$

for individual i in cohort c. y_{ic} is a labor market outcome (e.g., log earnings), OLD_{ic} is a dummy variable indicating whether the individual is a member of the older cohort, WC_{ic} is a dummy variable indicating whether the individual was in the West Coast in 1942 (and therefore interned) and X_{ic} is a set of other explanatory variables (e.g., age and education).[13] γ is the change in earnings due to secular cohort effects. κ is the fixed difference in earnings between the West Coast and non-West Coast Japanese.[14] The key assumption needed to interpret β as the effect of labor market withdrawal induced by the internment is that in the absence of the internment, earnings for the West Coast Japanese would have followed the same trend (across cohorts instead of time) as earnings for the non-West Coast Japanese. That is, the age-earnings profile between the two regions would have been the same, after allowing for a level difference (with the West Coast dummy).

Problematic for this interpretation of β would be the existence of trends in earnings that vary at the region-cohort level. One might suspect a differential trend because Hawaii was more

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[12] It is not obvious how the quality of schooling for the young internees changed. In the camps, schools tended to be more crowded and teachers tended to be less experienced (teachers were brought from outside, and also Japanese Americans trained as teachers in college but never found a teaching job got to teach in the camps). But in the old neighborhood, there was overt anti-Asian discrimination which would likely have worsened during the war.

[13] In the empirical implementation, I will actually define WC_{ic} based on state of birth since I do not have a measure of where an individual was in 1942. This is explained in the next section.

[14] One component of the fixed difference is the fact of having been interned. Note both the young and old cohorts from the West Coast were interned.

racially mixed and tolerant than the West Coast prior to the internment. In 1940, the Japanese were the largest racial group in Hawaii (making up 37% of Hawaii's population), but only a small minority group in the rest of the U.S. (making up 1.4% of the population in California, 0.8% in Washington and much less elsewhere). The Japanese in Hawaii had access to virtually all jobs in the economy, including high-status, high-paying jobs (e.g., professional and managerial jobs). In contrast, the Japanese in the West Coast were largely foreclosed from such jobs, except in Japanese-owned enterprises. Thus, although Hawaii's economy was more agricultural than California's prior to World War II, the Japanese in Hawaii were actually less likely to hold agricultural occupations than the Japanese in California. A staggering 46% of U.S.-born male internees reported working in agriculture prior to internment.[15] To address the concern of differential trends between the West Coast and non-West Coast, I will analyze data on other racial groups (specifically, the Chinese and Whites) which have some commonalities with the Japanese but which were not interned. These other groups can be used to test the identifying assumption. I elaborate on this after discussing the data and main results.

IV. DATA

The empirical analysis employs microdata from the 1970 U.S. Census of Population and Housing. The 1970 Integrated Public-Use Microdata Series (IPUMS) files contain individual-level data for 6% of the population (Ruggles, Sobek et al. (2003)).[16] I have made several sample restrictions. First, for my main analysis, I use individuals of Japanese descent. I take these to be

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[15] It must be noted that this figure is for males aged fourteen and over; this includes many workers who are working temporarily in agriculture, including on their father's farm, until they complete their schooling. 1940 Census occupational data by race are not available for Hawaii, but 33% of all employed males in Hawaii had an agricultural occupation, and anecdotal evidence suggests that the Japanese were less involved in agriculture than the average resident of Hawaii. Japanese participation in agriculture was higher in other non-West Coast states in the West census region, but these states constitute less than ten percent of all non-West-Coast Japanese, and consequently would not affect the overall fraction of non-West Coast Japanese in agriculture much.

[16] I have combined the following 1% samples: Form 1 State Sample, Form 2 State Sample, Form 1 Metro Sample and Form 2 Metro Sample, Form 1 Neighborhood Sample and Form 2 Neighborhood Sample.

the respondents who selected "Japanese" for the "color and race" question in the 1970 census questionnaires.[17]

Second, I focus on men. Since there is nearly full labor force participation among adult males, the labor force experience of almost every adult male internee would have been affected by the internment.

Third, I include only U.S.-born individuals. Approximately 65% of the internees were U.S.-born. It is a more straightforward matter to define WC_{ic}, the dummy variable indicating whether the individual was in the West Coast in 1942 (and therefore interned), for those born in the U.S.[18] WC_{ic} is set equal to one for individuals who are born in Washington, Oregon, California and Arizona, and zero otherwise. In this way, I have defined a group that has most likely been interned (the West Coast Japanese) and a group that is unlikely to have been interned (the non-West Coast Japanese).[19]

Finally, I restrict my sample to individuals born 1908 to 1941; individuals with imputed age have been eliminated. They are divided into two groups: the older cohort born 1908 to 1924 (aged 46 to 62 in 1970, 18 to 34 in 1942 when evacuation occurred) and the younger cohort born 1925 to 1941 (aged 29 to 45 in 1970, 1 to 17 in 1942). Both cohorts in the West Coast were interned, but only the older cohort's labor market experience would have been affected; members of the younger cohort were children in camp, attending school as usual.[20] The timing of the

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[17] Respondents are asked to fill in one circle for color and race. The nine choices (in order) were: White; Black or Negro; Indian (Amer.); Japanese; Chinese; Filipino; Hawaiian; Korean; Other.

[18] This variable is difficult to define for foreign-born individuals. For example, a Japanese immigrant observed in 1970 could have been in Japan, Hawaii, the West Coast or elsewhere in 1942.

[19] The implicit assumption is that West Coast-born would have been residing in the West Coast in 1942 and therefore interned whereas the non-West Coast-born would not have. Of course in reality people are mobile, such that there are some West Coast-born Japanese who were not interned, and some non-West Coast-born Japanese who were interned. Internee place of birth data tabulated by the War Relocation Authority of the U.S. Department of the Interior (1946) suggest that this is minimal.

[20] The results reported below are not sensitive to the specific birth cohorts included, or the age cut-off for having labor market experience affected. With regard to the latter, in an earlier version of this paper, I used internees aged

internment and the data necessitates these age restrictions. By the time of the 1970 Census –

twenty-five years after the internment – many individuals whose labor market experience was

affected had already retired.

An individual is considered treated if he was born between 1908 and 1924 in a West

Coast state. As a point of reference, males born 1908 to 1924 constituted three-quarters of U.S.-

born adult (aged 18+) male internees, one-third of all adult male internees, two-fifths of U.S.-

born adult internees and one-fifth of all adult internees. Thus, this treatment group is a

meaningful fraction of the working-age internees.

The resulting sample has almost five thousand observations. Of the two thousand West

Coast observations, 81% are born in California and 14% in Washington. 93% of the non-West

Coast observations are born in Hawaii. Table 2 shows some descriptive statistics. I examine

three types of labor market outcomes: participation, earnings and job characteristics. The latter

two are conditional on participation, which means it is potentially subject to selection bias in

participation.[21] In practice, selective participation is unlikely to be a concern given the extremely

high rates of labor force participation across all groups.[22] The labor market income measures I

use are wages (wage and salary income), business income (from farms, professional practices

and other non-farm enterprises) and earnings (sum of wages and business income); imputed

wages and business income are coded as missing. Because self-employment is so prevalent

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23-34 in 1942 as the group whose labor market experience was affected by the internment and internees aged 3 to 14 as the unaffected group and found similar results. The current version incorporates the intermediate ages to increase efficiency. Admittedly, it is less clear-cut whether the intermediate ages belong to the treatment or control group, but it is likely that among 15 to 22 year-olds, probability of working is increasing in age.

[21] For the estimation strategy described in Section III, selective participation causes bias only if there is *differential* selection between the West Coast and non-West Coast. For example, that successful individuals tend to retire earlier would not cause bias. However, that successful individuals tend to retire earlier *especially in Hawaii* would cause bias.

[22] I show this more formally in Table 4 – the difference-in-differences estimates for worked last year, worked at least 50 weeks last year conditional on working, and worked at least 40 hours last week conditional on working are not significantly different from zero.

among the Japanese, earnings better capture the value of work; wages reflect only the individuals who choose to work for others. The job characteristics measures, occupational score and self-employment indicator, attempt to capture some non-monetary aspects of an individual's labor market experience, including the degree of autonomy and prestige.

Ideally for the estimation strategy, the labor market outcomes of the Japanese in the West Coast and non-West Coast would have been moving in parallel prior to the internment, and subsequently not been subject to interventions (besides the internment) that alter the parallel path. Table 2 hints that the dynamics may have been different between the two regions. First, West Coast Japanese have higher educational attainment, but the non-West Coast Japanese have been catching up over time – the raw difference-in-differences in years of schooling is 0.76. I will show specifications with and without a control for schooling. Second, the older cohort in the West Coast was more likely to have served in the military during the World War II era.[23] I will be able to distinguish the effect of the labor market withdrawal induced by the internment from the effect of military service and effect of differential expansion in education by analyzing other racial groups.

V.   RESULTS

A.   Main Results

The results from estimating Equation 1 using ordinary least squares with the Japanese sample are presented in Table 3. Each column is from a separate regression. The dependent variable is log earnings. The difference-in-differences estimate, β, is reported in the first row. It

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[23] The working-age internees may have felt compelled to prove their patriotism or been desperate to leave camp (but as discussed in Section II, there were other ways to leave). The raw difference-in-difference in military service during World War II era (between September 1940 and July 1947) is 0.07. Controlling for year of birth, state of birth dummies, and years of schooling (allowed to differ for West Coast and older cohort), I find the effect is not significant: the coefficient is 0.0348 and standard error is 0.0350. This analysis is performed using the Form 2 1970 IPUMS samples, which have veteran status variables.

is negative and significant at the 95% level of confidence in every specification. Column 1 has

an estimated β of –0.0724. The main effect of being in the older cohort is weakly negative. The

older cohort is near retirement age and may be working less, which offsets the labor market

rewards for experience. The main effect of being born in a West Coast state is positive. This

primarily reflects higher wages in West Coast labor markets; state of birth is highly correlated

with state of residence.[24] The specification in Column 2 adds years of schooling as a control

variable.[25] The estimated β is now –0.1220. It decreases because there is a significant positive

difference-in-differences in years of schooling, and schooling has a positive effect on earnings.

Controlling for years of schooling may not adequately control for education differences between

the young and old, and West Coast and non-West Coast. Arguably, there could be differences in

quality of education. In Column 3, I allow the returns to education to differ by cohort and

region. The estimated β is –0.0994. The effect of years of schooling is weakly lower for the

old cohort, and weakly higher for the West Coast. Columns 4-6 parallel Columns 1-3, but with a

full set of year of birth dummies (instead of just one dummy for older cohort) and a full set of

state of birth dummies (instead of just one dummy for born in West Coast). The results are

essentially the same. In all subsequent analysis I will use the finer controls for the main effects.

To summarize the results of Table 3, Columns 4-6, the labor market withdrawal induced

by the internment reduced the annual earnings of males by nine percent to thirteen percent to

twenty-five years afterwards. In dollar terms, earnings losses were $1000 to $1400 in 1969

(average earnings among West Coast individuals were approximately $11,000 in 1969).

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[24] In specifications not reported, I control for census region of residence (using all the 1970 IPUMS samples) and state of residence (in an analysis restricted to the State and Metro samples, which do have state of residence identifiers). The results are similar to those reported here. I do not control for place of residence in my main analysis because it can be considered an outcome.

[25] I have also used a traditional potential experience model (which controls for quadratics in education and age as well as an interaction between education and age) and the results were unchanged. These results are not reported.

Table 4 presents the estimation results for a larger set of labor market outcomes. Each cell in Columns 1 and 2 displays the difference-in-differences estimate and its standard error, and is from a separate regression. Column 1 uses the specification of Table 3, Column 4 and Column 3 uses the specification of Table 3, Column 6. Panel A shows that there is not a significant effect on the probability of working last year, working at least 50 weeks last year conditional on working last year, or working at least 40 hours last week conditional on working last week. Thus, it does not appear that the labor market withdrawal induced by the internment rendered working-age internees so unfit for the civilian labor market that they subsequently are unable to find work or to work on a full-time basis.

Panel B shows the earnings effects, the first row which we already saw in Table 3. Results for two additional earnings measures – earnings for individuals who have only wage income and earnings for individuals who have only business income – are also displayed. The earnings effect is negative, significant and large for the individuals with only business income. In contrast, it is only weakly negative for the individuals with only wages. The overall earnings effect is basically a weighted average of these two effects.[26] The relative magnitude of these two effects suggests that self-employed workers account for a disproportionate share of the earnings losses.

Panel C shows the impact on job characteristics. The occupational score is an index of occupations according to the 1950 median income of all individuals in that occupation, in units of hundreds of 1969 dollars. There is a negative and significant effect on occupational score – working-age internees hold occupations that pay $515 to $550 less per year. The earnings losses implied by the regressions using occupational score are about half those implied by the regressions using individual earnings, implying that working-age internees receive lower-than-

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[26] The number of individuals with both wages and business income is small.

median pay for a given occupation. The movements in the occupational score summarize many movements into and out of specific occupations, notably a significantly lower probability of holding a professional/technical or managerial occupation, and significant higher probability of being a non-farm laborer (primarily self-employed contract gardeners as discussed below).

The coefficient for being a self-employed worker is large, positive and significant: 0.1115 in Column 1, 0.0748 in Column 2. This differential increase in self-employment appears to come entirely from the influx of working-age internees into contract gardening.[27] Contract gardeners provide lawn care and landscaping services to residential and commercial clients in urban areas. Prior to World War II, the two most common types of self-employment among Japanese were farmer and proprietor; contract gardener was a nascent occupation. By 1970, contract gardening had expanded dramatically in both the West Coast and non-West Coast, with the number of Japanese contract gardeners exceeding the number of either farmers or proprietors in the West Coast among both younger and older cohorts. Although prewar experience in farming, nursery and gardening was useful for contract gardening, it was not necessary for establishing a viable business; "[t]he Japanese Americans' prewar reputation for horticultural proficiency stereotyped them and made it possible for those who had never done gardening to get contracts."[28] Contract gardening had much lower start-up costs than traditional self-employment channels, but was also less remunerative. The earnings losses and the changes in occupational characteristics for working-age internees discussed earlier in this subsection are in good part driven by the increase in self-employment in contract gardening. Perhaps some working-age internees are unable to find suitable wage employment, and thus turn to self-employment. Or, there are some non-monetary rewards of self-employment that are unique to the working-age

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[27] The Census classifies contract gardeners as non-farm workers in the "gardeners, except farm, and groundskeepers" detailed category.
[28] Broom and Riemer (1949), p. 119.

internees and that compensate for the lower earnings received. I discuss possible channels for the labor market effects in Section V.D.

B.   Controlling for Differential Trends

We have been interpreting the difference-in-differences estimates as the causal effects of the labor market withdrawal induced by the internment. The coefficient for the interaction between cohort and region of birth could be non-zero even in the absence of the internment, however. For concreteness, consider the earnings outcome. There are a number of plausible reasons for the negative coefficient besides the labor market withdrawal induced by the internment. One involves the weakly positive difference-in-differences in military service during the World War II era mentioned in the data section. To the extent that service in World War II has a negative earnings impact – this is suggested by Angrist and Krueger (1994) – then the negative difference-in-differences in earnings may actually be an effect of military service, not an effect of the labor market withdrawal induced by the internment. A second reason involves the differences in the occupational structure of the Japanese in the West Coast and non-West Coast. In Hawaii, the Japanese had greater access to higher-paying, higher-status jobs. In the West Coast, the Japanese had little access to white-collar jobs, and were heavily concentrated in agricultural occupations and self-owned enterprises. Since the empirical analysis uses a single cross-section, and older cohorts are also higher in age than younger cohorts, the coefficient for $OLD_{ic}*WC_{ic}$ may be negative because a steeper age-wage profile applies to Hawaii. A third reason involves the reduction in anti-Asian discrimination following World War II. Perhaps anti-Asian discrimination is abating more in the West Coast than non-West Coast in the post-war period (because the West Coast had a higher initial level of anti-Asian discrimination, and is converging to the level of racial tolerance in the rest of the country), opening up better career

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opportunities for young workers in the West Coast.

The Chinese could potentially control for these reasons for differential trend in labor market outcomes between the West Coast and non-West Coast, as they have some key features in common with the Japanese but they were not interned during World War II. First, the Chinese also have a positive difference-in-differences in military service (actually, the point estimate is even higher than for the Japanese). Second, the Chinese also had better access to higher-paying, higher-status jobs in Hawaii than the West Coast, so the age-wage profiles might be expected to be steeper for those in Hawaii. Finally, the Chinese faced much of the same anti-Asian discrimination as the Japanese – more in the West Coast than non-West Coast – and would also have benefited from a reduction in anti-Asian discrimination. Thus, to the extent that the difference-in-differences estimates in Table 4 are contaminated by one of the foregoing stories, the Chinese should be able to control for it. The estimated β for the Chinese (obtained by estimating Equation 1 using a sample of individuals who are of Chinese descent) would give the difference in earnings for the older cohort in the West Coast that has nothing to do with the internment. We can subtract out the estimated β for the Chinese from the estimated β for the Japanese to obtain the difference-in-differences-in-differences estimate of the effect of the labor market withdrawal induced by the internment; this is a "detrended" estimate of the effect.

To form the Chinese sample, I apply the same sample restrictions as for the Japanese. To make the geographic distribution of the Chinese more comparable to that of the Japanese, I weight each Chinese individual born in state s by $(N_{sJ}/\Sigma_s N_{sJ})/(N_{sC}/\Sigma_s N_{sC})$, where N_{sJ} is the number of Japanese observations with non-missing earnings for state s and N_{sC} is the number of Chinese observations with non-missing earnings for state s.[29] Appendix Table 1 displays the

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[29] The result is that the distribution of the Chinese by state of birth is the same as the distribution of the Japanese by

descriptive statistics. The results from estimating Equation 1 with the Chinese sample are presented in Table 5. None of the coefficients in Columns 1 and 2 are significantly different from zero at the 95% level of confidence. The lack of significant results is partially the result of the smaller sample size for the Chinese. However, the sign and magnitude of the Chinese difference-in-differences estimates do not support the idea that the results for Japanese are driven entirely by a differential trend in labor market outcomes between the West Coast and non-West Coast. For each earnings outcome, the Chinese difference-in-differences estimate is either positive, or negative but lower in magnitude, compared to the Japanese estimate. The difference-in-differences in occupational score is negative in both Columns 1 and 2, but the magnitude is lower than for the Japanese. Finally, the difference-in-differences in the probability of being a self-employed worker is positive in Column 1, but negative in Column 2, and both are lower in magnitude than the Japanese estimate.

We can explicitly subtract out the differential trends – as estimated using the Chinese sample – from the Japanese difference-in-difference estimates of Table 4. The results of this exercise are displayed in Table 5, Columns 4 and 5. The triple differences estimates show the same qualitative results as Table 4, which is not surprising given that the Chinese difference-in-differences estimates were not statistically different from zero. The effects on earnings and occupational score remain negative, and the effect on proportion self-employed remains negative, but they are imprecisely estimated.

A concern with using the Chinese as a control group is that prior to the Japanese American internment, the Chinese had virtually no presence in agriculture, whereas half of U.S.-

state of birth, with the weighted number of Chinese observations the same as the unweighted. Compared to the Japanese, the Chinese had a much larger presence in the Northeast census region. Without weighting, the difference-in-differences in earnings would actually be more positive for the Chinese, meaning the triple differences estimates would be more negative. That is, not weighting strengthens the finding of earnings losses for the Japanese working-age internees.

born male internees worked in agriculture. After World War II, the U.S. underwent rapid structural transformation out of agriculture into industry and service. Thus, if there are region-specific changes in the age-wage profile that are unique to the shift out of agriculture, then the Chinese cannot adequately control for them.[30] One way to address this is to incorporate other Asians into the analysis. At the outset of World War II, the largest Asian groups in the U.S. were the Chinese, Japanese, Koreans and Filipinos. Considering Koreans and Filipinos had a greater presence in agriculture than the Chinese, all non-Japanese Asians might be a better control than Chinese only.[31] In Columns 6 and 7 of Table 5, I report the difference-in-differences-in-differences estimates for when Chinese, Koreans and Filipinos as a group are used to control for a differential trend. The results are similar to Columns 4 and 5, although the standard errors are smaller due to the larger sample size.

A second way to address this is to use data on Whites. We would like the White control group to capture as much of the dynamics of the Japanese as possible, hence geographic restrictions for the former seem necessary. Below, I use two samples of Whites. One is those born in Hawaii and California. A second is Whites born in the West census region of two foreign-born parents; as the children of immigrants, their rootedness in the West would be similar to the U.S.-born Japanese. Whites had a greater presence in agriculture than the Chinese prior to the internment (approximately 13% of the West Coast older cohort was in agricultural occupations in the first sample, and 21% in the second sample according to the 1940 Census).

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[30] Structural transformation in the post-World War II economy displaced Chinese workers as well – for example, technological advances in home production reduced the demand for launderers and domestic servants, two important occupations for the Chinese in the West Coast – but arguably the displacement of workers in agriculture was greater.

[31] Immigration to the U.S. from Korea and the Philippines started later than that from China and Japan. The inflow was heavy from China between the 1850s and 1880s (ended by the Chinese Exclusion Act of 1882), from Japan between the 1890s and 1900s (ended by the Gentlemen's Agreement of 1908), and from Korea and the Philippines since the 1910s. Compared to Japanese and Chinese, Koreans and Filipinos were less educated, more likely to be in farm laborer and factory operator jobs, less likely to be self-employed and members of less established ethnic networks. For these reasons, one might expect a distinct trend for Koreans and Filipinos. Consequently this paper emphasizes results using the Chinese as the only control.

Similar to the Japanese, Whites' participation in agriculture is lower in Hawaii and over time, the difference-in-differences in years of schooling is positive and the difference-in-differences in military service is negative.

The estimation results using the Whites are presented in Table 6 (see Appendix Tables 2 and 3 for the means). Columns 1 and 2 show the triple differences estimates using individuals born in California and Hawaii only. Columns 3 and 4 show the triple differences estimates using individuals born in the West Census Region excluding Alaska, with the Whites having two immigrant parents. There is no evidence from the difference-in-differences estimates for either sample of Whites that the older cohort is faring worse than the younger cohort in the West Coast relative to the non-West Coast. As a result, the triple differences estimates in Table 6 show the same qualitative results as the difference-in-differences estimates for the Japanese.

C.   *Earnings Losses Relative to the Reparations*

In summary, I find evidence that the labor market withdrawal induced by the Japanese American internment during World War II generated earnings losses twenty-five years afterwards. Also, former internees are more likely to be in a lower-paying job – occupational score is lower, and the proportion in professional/technical and managerial occupations is lower. Finally, former working-age internees are much more likely to be self-employed workers. These findings are robust to controlling for differential trends in labor market outcomes between the West Coast and non-West Coast (to the extent that they are adequately approximated by the Chinese or Whites).

These findings should not be interpreted as the overall impact of the internment, but as the impact of the labor market withdrawal induced by the internment.[32] Additionally, these

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[32] This is because both the younger and older cohorts of Japanese in the West Coast were interned, although only the older cohorts' labor market experience was interrupted (the younger cohort was still school-aged in camp).

findings are for a single point in time, 1970, twenty-five years after the internment. It is possible that the long-run effects differ from shorter-run effects, and even that the effects estimated here are idiosyncratic effects for 1970. One way to get a sense of the general validity of the estimates obtained here is to apply to same empirical strategy to data from other census years; micro-level census data for residents of Hawaii became available starting in 1960, and conceivably I can estimate treatment effects for 1960 and 1980 also. It must be noted that by 1980, members of the treated cohort (born 1908-1924) were already aged 56-72. These ages are too advanced to meaningfully study labor market outcomes, and so I have not pursued analysis using 1980 Census data.

I have, however, performed a detailed analysis using 1960 Census data. Appendix Table 4 reports the double and triple differences estimates using Japanese and Chinese born 1908-1935.[33] The triple differences estimates in Columns 7 and 8 are broadly consistent with those presented in Table 5 using 1970 Census data.[34] They are negative for log earnings and log wages, and positive for probability of being a self-employed worker. These results suggest a larger detrimental effect on wages than the results using 1970 data, which implied that most of the earnings effect is mediated through reduced self-employment income. Several caveats must be made about 1960 results. First, micro-level data are available for only a one percent sample of the population (as opposed to 6% in subsequent censuses). Considering I am looking at a narrow portion of the population (due to race, year of birth, sex and place of birth restrictions), the resulting sample size becomes extremely small. In particular, there are fewer than 800 observations for Japanese and fewer than 200 observations for the Chinese. Second, the

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[33] The analysis using 1960 data excludes those born 1936-1941 (aged 19-24). Some of these individuals are still attending school in 1960 and should not be included in a study of labor market outcomes.

[34] I do not discuss the difference-in-differences results reported in the same table because of the strong trends found in the Chinese control sample. In this context, the detrended results are more relevant.

youngest members of the younger cohort are still school-aged. The results in Appendix Table 4, which drops individuals under age 25, may therefore not be directly comparable to the earlier results using 1970 data.[35] Finally, as a result of the small sample sizes, there are actually too few self-employed workers to estimate the effect on business income. Given these caveats, I have chosen to emphasize the 1970 results in this paper.

It is interesting to note how similar these long-run effects estimated using 1970 data are to the immediate effects estimated by Broom and Riemer (1949). Based on a survey of former internees in Los Angeles County, Broom and Riemer found that real income fell about 20% between 1941 and 1946.[36] Additionally, they observed an influx of former internees into contract gardening, and called it "[o]ne of the clearest and most important trends in the postwar period."[37] The deleterious effects of internment estimated by Broom and Riemer appear to have been persistent since they show up even using 1970 data.

The Civil Liberties Act of 1988 paid each surviving former internee $20,000 (about $6000 in 1969 dollars) in reparations.[38] My estimates imply that these reparations fall considerably short of compensating working-age male internees for lifetime earnings losses resulting from the labor market withdrawal induced by the internment. Members of the treatment group in my analysis had several decades of work life ahead of them. My empirical analysis suggests a single-year earnings loss of $1000 to $1400 in 1969 dollars, which already

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[35] To the extent that the work lives of the oldest members of the young cohort were partially interrupted by the internment (but the work lives of the youngest members were not at all impacted), then the earnings losses suggested by the difference-in-differences estimates would be too low. I have repeated the analysis for all individuals born 1908-1941 (i.e., not dropping the 19-24 year-olds) and get similar results.
[36] Per worker nominal income increased 9% between 1941 and 1946, but inflation was 25%. Over the same period, per worker nominal income increased 44% for Whites.
[37] Broom and Riemer, p. 119.
[38] The Evacuation Claims Act of 1948 was passed to compensate for physical property losses incurred by the internees. Not only did this act ignore non-property losses, also it ended up covering only a small fraction of property losses (only $37 million was paid out against claims of $148 million).

amounts to one-fifth of the reparations.[39] As a back-of-the-envelope calculation, if I assume $1100 is the constant permanent effect of the labor market withdrawal induced by the internment and 65 is the retirement age, then the implied lifetime earnings losses are $31,000 in 1969 dollars for the oldest member of the treatment group (born 1908) and $48,000 in 1969 dollars for the youngest (born 1924).

D.   Results in the Context of Human Capital Models

Prior to the internment, the children of Japanese immigrants were poised to do at least as well as their fathers. They had more education, better English-language skills and more legal rights (to own property, to vote) than their fathers. Their fathers had started in the U.S. as laborers, but had managed to build up their own businesses. The children were expected to go to the next step, to professional and other non-manual-labor occupations. After the internment, we observe the U.S.-born working-age internees going through what their fathers had gone through decades ago – working as laborers (mostly in contract gardening), saving money, and building their own businesses. The internment seems to have set the U.S.-born working-age internees back a generation. How did this happen?

The findings are consistent with both the loss-of-labor-market-experience model and the loss-of-advantageous-job-matches model (which were discussed in Section II). It is difficult to empirically disentangle which is the more relevant model.[40] Data on actual years of labor market experience would help – if there is a significant treatment effect even after explicitly controlling for years of labor market experience, then the loss-of-labor-market-experience model cannot account for it. Unfortunately, I do not have such data. However, examining the occupational distribution of the internees before and after the internment might provide elucidation on the

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[39] Calculation is based on the difference-in-differences estimates for log earnings of 9% to 13%, and average earnings of $11,000.

[40] Additional models might apply, as discussed below.

specific mechanisms for the earnings losses.

Table 7 tabulates the occupational background of male internees. The data are from a form filled out for all internees in 1942, when they entered the camps. Occupational data by cohort are not available. This is not a serious impediment because the U.S.-born individuals roughly correspond to the older cohort born 1908-1924 that is the treated group in this paper, whereas the foreign-born individuals roughly correspond to an even older cohort that is too old in age to study using the 1970 Census. 46% of the U.S.-born internees worked in agriculture immediately prior to the internment. Given the youth of this group (age 14 and over who have ever worked), agricultural laborer must have been a temporary or part-time occupation; many had not yet finished schooling and started their careers.

To examine the occupational shifts, I use IPUMS data from the 1940, 1950, 1960 and 1970 Censuses. In Table 8, I report the occupational distribution of the Japanese by cohort and census year. Note the 1940 distribution matches the distribution for U.S.-born internees in Table 7 fairly well despite the 1940 IPUMS having very few observations. In 1950, the working-age internees studied in this paper were aged 26-42. Typically by this age, men would have started their permanent careers but in fact more than one-quarter were still laborers. Indeed, by 1950, only one half of the laborers in 1940 had managed to enter another occupation (a majority to self-employment as farmer or proprietor). By 1960, more left contract gardening for other occupations, interestingly everything but farmer and proprietor. Workers stayed in the same occupation between 1960 and 1970 except for half of the farmers, who became contract gardeners. Although this latter movement can be viewed as caused by urbanization which would have happened even in the absence of the internment, it can also be interpreted as a result of the internment; had the internment never occurred, the working-age internees would not have been

as likely to become farmers in the first place. I elaborate on this next.

The pre-internment occupational distribution for the working-age internees would not appear to provide much support for the loss-of-civilian-labor-market-experience model. On the one hand, much of the mass of the working-age internees prior to the internment was in occupations that are not known to confer much returns to experience (46% farm laborers, 3% other laborers, 3% (domestic) service workers). On the other hand, there is a great deal of movement away from agricultural jobs to non-agricultural jobs. When switching occupations, skills relevant for the old job may not be particularly relevant for the new job, and so loss of a few years of labor market experience in the old job may be immaterial.[41] In this context, the loss-of-advantageous-job-match model seems more relevant for explaining the effects of the labor market withdrawal induced by the internment. However, the specific channel is not clear. Only 16% of the old cohort was self-employed in 1940, and so the story is probably not about separation from self-owned enterprises for which much specific human capital had been accumulated; this might be a better story for even older internees. Moreover, many of the enterprises would have been farms, and individuals would have been separated from them anyway by 1970 with the rapid urbanization. A more plausible story involving the loss of advantageous job matches is that the labor market withdrawal induced by the internment prevented the working-age internees from accumulating search capital.[42] Search capital might include knowledge of what types of jobs are out there, where to look and who to contact. Without search capital, working-age-internees would have a harder time finding a good job after the displacements caused by the internment and urbanization. They search for employment in a

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[41] Some agricultural skills were useful in contract gardening (a non-agricultural job). However, even an inexperienced farm worker would possess the skills needed to succeed in contract farming.
[42] In this case, the job match that is lost is not one the individual ever held, but one he would have gotten had he been able to build up the search capital.

less effective way, and may end up with no acceptable job offers. There is no expectation that further search would be any more fruitful and there is urgent need for money (they had families to support; the internment had caused huge property losses so many were starting their post-internment lives with nothing), so they just take the dependable path of self-employment.

The loss-of-civilian-labor-market-experience could be salvaged- if we allow that some working-age internees observed in the pre-internment era were in temporary occupations. It is plausible to think that in the absence of internment, they would have stopped being agricultural laborers and entered a new occupation (the plan was white-collar jobs), marking the start of their career. Because of the internment, the working-age internees lost these years of work experience in the desired area. After the internment, they applied for jobs offering wages exceeding their reservation wage. However, they might have been less able to get these jobs because non-Japanese job applicants with otherwise similar qualifications possessed a few more years of relevant work experience. Phrased differently, the best wage offer from the wage employment sector may have fallen short of their reservation wage. Without acceptable offers from the wage employment sector immediately after the internment, the working-age internees might have given up their search and turned to self-employment.[43]

The key distinction between the loss-of-advantageous-job-match story and the loss-of-civilian-labor-market-experience story is that in the former, it is lack of search capital that prevents an individual from getting a good job while in the latter it is the lack of work experience in the desired area that prevents it. In both cases though, the result is devolution into self-employment. Initially, self-employment was as contract gardener. As savings were amassed, it was as farmer and proprietor. Urbanization took away many farms, leading some farmers to

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[43] Either the individual has the same reservation wage for all types of employment and he gets no offer from the wage sector, or he has a higher reservation wage for the wage sector than the self-employment sector. The latter is plausible, since there are non-monetary rewards to self-employment, such as greater autonomy.

become contract gardeners by 1970. Enough working-age internees stuck to their fathers' path of self-employment, and stopped looking for wage employment after the initial search, that overall the labor market withdrawal induced by the internment had negative effects decades after the internment. In the difference-in-differences analysis, those choosing wage employment earned weakly less, but those choosing self-employment suffered earnings losses that were large and significant.

Although I have interpreted the results through the lens of interrupted work lives, there could be alternative mechanisms. The internment experience had many effects which could in turn impact long-run labor market outcomes. It caused property losses, psychological distress, fragmentation in the Japanese community, trauma and so on. Not every effect of internment can be considered a mechanism for the earnings losses found in the paper. In the difference-in-differences strategy, internment effects that are common between the younger and older cohorts are absorbed by the West Coast fixed effect and are not part of the treatment effect. Instead, only effects of internment that are differential by cohort can be valid alternative mechanisms. Interruption of work life is an obvious one (since children would not have begun their work lives yet), but there may be others. One example might be health. This is suggested by the medical literature on the long-run health consequences of prisoner-of-war (POW) status during World War II.[44] These studies tend to find excess morbidity and mortality among former POWs compared to non-prisoner veterans decades after the imprisonment (see for example Beebe (1975), Keehn (1980) and Page and Brass (2001)). Trauma, malnutrition and stress during imprisonment are among the key contributors to worse health later. Violence and nutritional deprivation were less serious problems in the internment camps compared to the POW camps, but inhabitants of both types of camps were prisoners being held for indefinite periods. If we

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[44] I thank the referee who pointed me to this literature.

assume that the internment impaired the health of adult internees more, then health would yet be another mechanism for the long-run labor market effects estimated in this paper.[45]

VI. CONCLUSIONS

This paper provides new empirical evidence on the long-run economic consequences of an important episode in American history. I find that because of the civilian labor market withdrawal induced by the Japanese American internment during World War II, male internees incurred earnings losses, shifted to lower-paying, lower-status jobs, and moved to self-employment opportunities. These findings are contrary to the view that the Japanese recovered from the wartime experience with remarkable resilience to emerge as a model minority. While the Japanese appear successful overall, their success must be compared to an appropriate counterfactual; perhaps they would have succeeded even more in the absence of the internment.

The treatment group used in the analysis of this paper was born between 1908 and 1924. These are the youngest birth cohorts for whom labor market experience was affected by the internment. Older cohorts were probably even more adversely impacted, since they were more likely to be foreign-born, to have held an agricultural occupation prior to internment, and to have owned a farm or small business prior to internment (and therefore possessing more firm-specific human capital). Thus, the earnings losses for working-age male internees as a whole likely exceed 9% to 13%.

A promising avenue for further investigation is to examine the effects of internment on females. Considering women's labor force participation rate was less than half of men's prior to the internment, we might expect the experience of working-age female internees to be somewhat different. What economic mechanisms account for the effects on women, and what are the

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[45] There is no empirical evidence on the validity of this assumption. The follow-up studies on former POWs obviously do not inform on this issue since children do not serve in the military.

implications for economic models of the family?

REFERENCES

Angrist, Joshua D. and Alan B. Krueger, "Why do World War II Veterans Earn More than Nonveterans?," *Journal of Labor Economics* 12 (1994): 74-97.

Angrist, Joshua D. and Alan B. Krueger, "Empirical Strategies in Labor Economics," in O. Ashenfelter and D. Card (eds.) *Handbook of Labor Economics Volume 3A*, Amsterdam: Elsevier, 1999.

Beebe, G.W., "Follow-up Studies of World War II and Korean War Veterans. II. Morbidity, Disability, and Maladjustments," *American Journal of Epidemiology* 101 (1975): 400-422.

Broom, Leonard and Ruth Riemer, *Removal and Return: The Socio-Economic Effects of the War on Japanese Americans*, Berkeley and Los Angeles: University of California Press, 1949.

Daniels, Roger, *Prisoners without Trial: Japanese Americans in World War II*, New York: Hill and Wang, 1993.

Hatamiya, Lon, "The Economic Effects of the Second World War Upon the Japanese in California," Harvard Undergraduate Thesis, 1981.

Keehn, Robert, "Follow-up Studies of World War II and Korean Conflict Prisoners," *American Journal of Epidemiology* 111 (1980): 194-211.

Myer, Dillon S., *Uprooted Americans: The Japanese Americans and the War Relocation Authority during World War II*, Tucson, Arizona: University of Arizona Press, 1971.

Page, William F. and Lawrence M. Brass, "Long-Term Heart Disease and Stroke Mortality Among Former American Prisoners of War of World War II and the Korean Conflict: Results of a 50-Year Follow-Up," *Military Medicine* 166 (2001): 803-808.

Ruggles, Steven, Matthew Sobek et al., *Public Use Microdata Series: Version 3.0*, Minneapolis: Historical Census Projects, University of Minnesota, 2003 (http://www.ipums.org).

U.S. Commission on Wartime Relocation and Internment of Civilians, *Personal Justice Denied: Report of the Commission on Wartime Relocation and Internment of Civilians*, Washington, D.C.: The Civil Liberties Public Education Fund, 1997. (First edition published in two volumes in 1982 and 1983.)

War Relocation Authority of the U.S. Department of the Interior, *The Relocation Program*, New York: AMS Press, 1975. (First edition published in 1946.)

War Relocation Authority of the U.S. Department of the Interior, *The Evacuated People: A Quantitative Description*, New York: AMS Press, 1975. (First edition published in 1948.)

Weglyn, Michi, *Years of Infamy: The Untold Story of America's Concentration Camps*, New York: Morrow Quill Paperbacks, 1976.

Figure 1. Duration in the Internment Camps
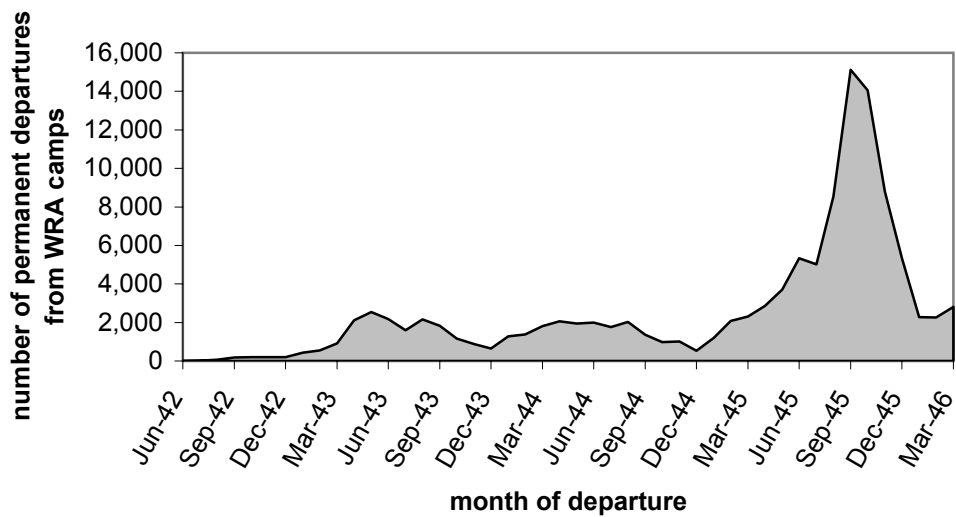
Mean duration of internment: 3.25 years (3 mos in WCCA centers + 36 mos in WRA camps)
Median duration of internment: 3.5 years (August 1945 = 42nd month)

Notes: The area under the graph sums to 117,694, which includes the 110,000 evacuated
   from the West Coast in 1942 as well as births during internment.
   Source is U.S. War Relocation Authority (1946), Table 10, Column 3.
   "Permanent Departures" are departures for relocation purposes, armed forces,
   institutions, Department of Justice internment camps and repatriation to Japan.
   Prior to location in WRA camps, the internees spent up to three months
   in WCCA assembly centers; Army-enforced evacuation began in March 1942.

Table 1. Japanese Affected by the Internment

	population in 1940	number interned in WRA camps in 1942	interned/ pop in 1940
	(1)	(2)	(3)
The Evacuated Area: West Coast			
Arizona	632	245	39%
California	93,717	92,757	99%
Oregon	4,071	3,531	87%
Washington	14,565	12,848	88%
West Coast total	*112,985*	*109,381*	*97%*
Unevacuated Areas			
All other continental U.S. states	13,962	105	1%
Hawaii	157,905	1,037	1%

Notes: Column 1 is from the 1940 Census.
Column 2 is from U.S. War Relocation Authority (1946), Table 19. The latter excludes 145 internees from Alaska (Aleuts) and 502 internees with no last permanent address data. The internees from non-West Coast continental U.S. states include persons whose permanent address is outside the West Coast but were in the West Coast at the time of evacuation, or persons who voluntarily joined family members in relocation centers. The internees from Hawaii are predominantly persons who were individually evacuated and their families.

Table 2. Means for Japanese, 1970 Census

	born in the West Coast (evacuated states)			born elsewhere (non-evacuated states)		
	overall	born 1908-24	born 1925-41	overall	born 1908-24	born 1925-41
	(1)	(2)	(3)	(4)	(5)	(6)
Panel A. Labor Force Participation Measures						
worked last year	0.9819	0.9746	0.9892	0.9733	0.9634	0.9822
worked >= 50 weeks last year, if worked	0.8342	0.8273	0.8409	0.8794	0.8646	0.8925
worked >= 40 hours last week, if worked	0.9177	0.9255	0.9098	0.9170	0.9138	0.9199
Panel B. Earnings Measures (in 1969 dollars)						
log earnings, indivs with any earnings	9.2018	9.1538	9.2454	9.1027	9.0924	9.1115
log wages, indivs with no bus. inc.	9.1786	9.1481	9.2019	9.0808	9.0622	9.0956
log bus. inc., indivs with no wages	9.1270	9.0130	9.3335	9.1967	9.2185	9.1563
Panel C. Job Characteristics (of individuals who worked last year or last week)						
occupational score (see notes)	45.18	41.38	48.93	45.44	44.28	46.46
self-employed worker	0.3101	0.4004	0.2211	0.1198	0.1631	0.0818
Panel D. Other Variables						
age	44.87	51.36	38.40	44.71	52.41	37.81
years of schooling	13.17	12.48	13.87	11.97	10.83	12.99
high school diploma	0.8630	0.8147	0.9120	0.7207	0.5386	0.8840
college diploma	0.2579	0.1713	0.3458	0.1636	0.0911	0.2286
served in WWII	0.3095	0.4464	0.1756	0.2726	0.3741	0.1779
ever served in U.S. military	0.5998	0.4639	0.7328	0.5764	0.3973	0.7434
total number of observations	2,045	1,022	1,023	3,409	1,610	1,799
obs with non-missing earnings	1,783	848	935	3,158	1,452	1,706

Notes: Sample is as follows: Japanese male, 1970 IPUMS (the State, Metro and Neighborhood samples -- both Form 1 and 2 -- have been merged),
and year of birth 1908-1941 (aged 29-62). Individuals born 1908-1924 are classified as the older cohort. The West Coast is defined as AZ, CA, OR and WA.
Occupational score is an index of occupations according to the 1950 median income of all individuals in that occupation, in units of of hundreds of 1969 dollars.

Table 3. Difference-in-Differences in Earnings,
1970 Census for Japanese

| | dependent variable is log 1969 earnings (wages + business income) | | | | | |
	(1)	(2)	(3)	(4)	(5)	(6)
older cohort * born in West Coast	-0.0724 (0.0357)	-0.1220 (0.0350)	-0.0994 (0.0377)	-0.0878 (0.0358)	-0.1317 (0.0351)	-0.1015 (0.0377)
older cohort (born 1908-1924)	-0.0192 (0.0207)	0.1073 (0.0219)	0.2194 (0.0870)			
born in West Coast (CA, WA, OR or AZ)	0.1339 (0.0245)	0.0785 (0.0238)	-0.0099 (0.1009)			
years of schooling		0.0595 (0.0034)	0.0626 (0.0059)		0.0604 (0.0033)	0.0648 (0.0057)
years of schooling * older cohort			-0.0097 (0.0069)			-0.0132 (0.0069)
years of schooling * born in West Coast			0.0061 (0.0072)			0.0078 (0.0071)
year of birth dummies	NO	NO	NO	YES	YES	YES
state of birth dummies	NO	NO	NO	YES	YES	YES
Adjusted R-squared	0.0087	0.0810	0.0817	0.0423	0.1098	0.1110
Number of observations	4,941	4,816	4,816	4,941	4,816	4,816

Notes: Robust standard errors in parentheses. Sample is as follows: 1970 IPUMS
(the State, Metro and Neighborhood samples -- both Form 1 and 2 -- have been merged),
male and year of birth 1908-1941 (aged 29-62).

Table 4. Difference-in-Differences in Labor Market Outcomes,
1970 Census for Japanese

dependent variable	dep var mean (st dev) of Japanese old & non-WC	Japanese Diff-in-Diffs Estimate coeff for *older cohort*born in West Coast*		
		basic (1)	educ ctrl (2)	N in (2) (3)
Panel A. Labor Force Participation Measures				
Worked last year	0.9634 (0.1879)	-0.0062 (0.0080)	-0.0113 (0.0088)	5,312
Worked >= 50 weeks last year, if worked last year	0.8646 (0.3423)	0.0032 (0.0203)	-0.0114 (0.0215)	5,195
Worked >= 40 hours last week, if worked last week	0.9138 (0.2808)	0.0102 (0.0163)	0.0115 (0.0177)	4,891
Panel B. Earnings Measures (in 1969 dollars)				
Log annual earnings, indivs with any earnings	9.0924 (0.5732)	-0.0878 (0.0358)	-0.1015 (0.0377)	4,816
Log annual wages, indivs with no business income	9.0622 (0.5242)	-0.0309 (0.0362)	-0.0430 (0.0376)	4,104
Log annual business income, indivs with no wages	9.2185 (0.8882)	-0.4387 (0.1874)	-0.4180 (0.1903)	426
Panel C. Job Characteristics (of individuals who worked last year or last week)				
Occupational score	44.2758 (14.7289)	-5.5013 (0.9620)	-5.1484 (0.9755)	5,203
Self-employed worker	0.1631 (0.3696)	0.1115 (0.0232)	0.0748 (0.0256)	5,203

Notes: Robust standard errors in parentheses. Sample is as follows: 1970 IPUMS
(the State, Metro and Neighborhood samples -- both Form 1 and 2 -- have been merged),
male and year of birth 1908-1941 (aged 29-62). The diff-in-diffs estimate is the coefficient for
the interaction term, older cohort*born in West Coast. "Basic" specification in column 1 has
a full set of year of birth dummies and state of birth dummies on the right-hand side.
"Educ ctrl" specification in column 2 adds years of schooling, yrssch*older cohort
and yrssch*born in West Coast as explanatory variables.

Table 5. Comparison to Other Asians, 1970 Census

dependent variable	dep var mean (st dev) of Chinese old & non-WC	Chinese Diff-in-Diffs Estimate coeff for *old*West Coast*			Diff-in-Diffs-in-Diffs			
		basic (1)	educ ctrl (2)	N in (2) (3)	Japanese - Chinese		Japanese - All Other Asians	
					basic (4)	educ ctrl (5)	basic (6)	educ ctrl (7)
Panel A. Labor Force Participation Measures								
Worked last year	0.9584	0.0054	0.0079	1,388	-0.0115	-0.0195	-0.0293	-0.0257
	(0.1999)	(0.0205)	(0.0185)		(0.0218)	(0.0203)	(0.0215)	(0.0204)
Worked >= 50 weeks, if worked last year	0.8868	-0.0650	-0.0655	1,345	0.0695	0.0545	0.0063	-0.0078
	(0.3173)	(0.0437)	(0.0432)		(0.0476)	(0.0477)	(0.0438)	(0.0450)
Worked >= 40 hours, if worked last week	0.8942	0.0313	0.0392	1,257	-0.0221	-0.0286	-0.0626	-0.0552
	(0.3081)	(0.0370)	(0.0396)		(0.0399)	(0.0428)	(0.0347)	(0.0370)
Panel B. Earnings Measures								
Log annual earnings, indivs with any earnings	9.1869	0.0253	-0.0167	1,260	-0.1133	-0.0829	-0.0772	-0.0602
	(0.6782)	(0.0791)	(0.0766)		(0.0857)	(0.0843)	(0.0784)	(0.0800)
Log annual wages, indivs with no bus. inc.	9.0928	0.0039	-0.0198	1,066	-0.0319	-0.0187	-0.0054	-0.0057
	(0.6229)	(0.0786)	(0.0754)		(0.0853)	(0.0830)	(0.0790)	(0.0793)
Log annual bus. inc. indivs with no wages	9.7708	-0.1528	0.0781	116	-0.3387	-0.5285	-0.2675	-0.4417
	(0.6882)	(0.3670)	(0.3105)		(0.3708)	(0.3314)	(0.3229)	(0.2949)
Panel C. Job Characteristics								
Occupational score	48.2243	-1.1112	-0.7152	1,351	-4.4549	-4.4275	-6.1945	-5.2876
	(16.4137)	(2.1858)	(2.0940)		(2.3584)	(2.2809)	(2.0944)	(1.9830)
Self-employed worker	0.1420	0.0193	-0.0057	1,351	0.0907	0.0757	0.0831	0.0667
	(0.3496)	(0.0514)	(0.0541)		(0.0556)	(0.0590)	(0.0479)	(0.0518)

Notes: See Table 4 notes. In addition, in Columns 1 to 5 (6 to 7), each Chinese (non-Japanese Asian) observation has been weighted such that the distribution of Chinese (non-Japanese Asian) by state of birth is the same as the distribution of Japanese by state of birth. Columns 4 and 5 (6 and 7) drop the observations with states of birth that either have no Chinese (non-Japanese Asian) or no Japanese.
The diff-in-diffs-in-diffs estimate is the coefficient for the interaction term, older cohort*born in West Coast*Japanese.
"Basic" specification in Columns 4 and 6 has older cohort*born in West Coast, dummies for each Asian group, year of birth dummies and state of birth dummies (the effects of the last two groups of variables are allowed to vary by Japanese/non-Japanese) on the right-hand side.
"Educ ctrl" specification in Columns 5 and 7 adds years of schooling, yrssch*older cohort and yrssch*born in West Coast, and their interactions with Japanese, as explanatory variables. For the log annual earnings outcome, N = 5993 in Column 5 and N = 6974 in Column 7.

Table 6. Comparison to Whites,
1970 Census

dependent variable	California and Hawaii Diff-in-Diffs-in-Diffs		West Children of Immigrants Diff-in-Diffs-in-Diffs	
	basic (1)	educ ctrl (2)	basic (3)	educ ctrl (4)
Panel A. Labor Force Participation Measures				
Worked last year	-0.0340	-0.0162	-0.0148	-0.0121
	(0.0159)	(0.0166)	(0.0130)	(0.0137)
Worked >= 50 weeks,	-0.0427	-0.0557	0.0128	0.0018
if worked last year	(0.0298)	(0.0318)	(0.0290)	(0.0301)
Worked >= 40 hours,	0.0064	0.0250	0.0306	0.0359
if worked last week	(0.0242)	(0.0257)	(0.0225)	(0.0238)
Panel B. Earnings Measures				
Log annual earnings,	-0.1387	-0.0558	-0.0841	-0.0781
indivs with any earnings	(0.0539)	(0.0555)	(0.0524)	(0.0534)
Log annual wages,	-0.0688	-0.0053	-0.0010	-0.0023
indivs with no bus. inc.	(0.0539)	(0.0553)	(0.0533)	(0.0542)
Log annual bus. inc.	-0.4632	0.0101	-0.3268	-0.2029
indivs with no wages	(0.4020)	(0.3725)	(0.2697)	(0.2642)
Panel C. Job Characteristics				
Occupational score	-6.0727	-3.1038	-5.3543	-4.8024
	(1.3162)	(1.3187)	(1.2545)	(1.2359)
Self-employed worker	0.0824	0.0727	0.0981	0.0605
	(0.0288)	(0.0316)	(0.0304)	(0.0327)

Notes: Robust standard errors in parentheses. In Columns 1 and 2, individuals are born either in California or Hawaii. In Columns 3 and 4, individuals are born in the West census region excluding Alaska (i.e., AZ, CA, CO, HI, ID, MT, NV, NM, OR, UT, WA and WY) and Whites have two immigrant parents. The diff-in-diffs-in-diffs estimate is the coefficient for the interaction term, older cohort*born in West Coast*Japanese. "Basic" specification has older cohort*born in West Coast, year of birth dummies and state of birth dummies (the effects of the last two groups of variables are allowed to vary by Japanese/non-Japanese) on the right-hand side. "Educ ctrl" specification adds years of schooling, yrssch*older cohort and yrssch*born in West Coast, and their interactions with Japanese as explanatory variables.

Table 7. Occupational Distribution of Male Internees, 1942

	Total		U.S.-born		Foreign-born	
	Number	%	Number	%	Number	%
	(1)	(2)	(3)	(4)	(5)	(6)
Panel A. Male Internees						
professional, technical and managerial	7,010	17%	2,677	14%	4,333	19%
clerical and sales	3,943	9%	2,959	16%	984	4%
service	3,812	9%	1,051	6%	2,761	12%
craft/operative -- skilled	2,188	5%	1,029	5%	1,159	5%
craft/operative -- semi-skilled	3,005	7%	2,185	11%	820	4%
craft/operative -- unskilled	777	2%	422	2%	355	2%
agricultural, fishery and forestry	21,027	50%	8,720	46%	12,307	54%
Total	41,762	100%	19,043	100%	22,719	100%
Panel B. Comparable Categories						
white-collar	10,953	26%	5,636	30%	5,317	23%
blue-collar	9,782	23%	4,687	25%	5,095	22%
agricultural	21,027	50%	8,720	46%	12,307	54%
	41,762	100%	19,043	100%	22,719	100%

Notes: Source of Panel A is U.S. War Relocation Authority (1946), Table 22, "Primary Occupational Classification as of 1942 by Sex and Nativity: Evacuees 14 Years Old and Over to WRA in 1942." This table reports the number of males in each occupational category, among males reporting some occupational experience. The WRA occupational categories are mapped into the three broad categories as follows: professional, clerical and sales are white collar; agricultural, fishery and forestry are agricultural, and the rest are blue-collar.

Table 8. Occupational Distribution of Japanese, 1940-1970 Censuses

	1940 Census		1950 Census		1960 Census		1970 Census	
	b. 1908-24	b. 1925-41	b. 1908-24	b. 1925-41	b. 1908-24	b. 1925-41	b. 1908-24	b. 1925-41
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Panel A. Japanese born in the West Coast								
professional, technical	4%	NA	10%	5%	16%	28%	17%	39%
farmer (owners, tenants, mgr)	11%	NA	22%	11%	22%	13%	9%	5%
managers, officials, proprietors	4%	NA	11%	2%	11%	5%	12%	11%
clerical	5%	NA	5%	2%	9%	7%	7%	5%
sales workers	12%	NA	5%	4%	8%	6%	7%	5%
craftsmen	3%	NA	8%	10%	12%	16%	12%	14%
operatives	7%	NA	9%	14%	8%	10%	11%	8%
service workers	3%	NA	3%	4%	4%	1%	4%	3%
farm laborers	46%	NA	10%	20%	4%	8%	3%	2%
other laborers	3%	NA	18%	26%	4%	5%	18%	9%
proportion who are self-employed	16%	NA	41%	19%	42%	18%	40%	22%
number of observations	94	NA	209	99	182	141	989	1,001
Panel B. Comparable Categories								
white-collar	26%	NA	31%	13%	45%	45%	43%	60%
blue-collar	17%	NA	37%	55%	29%	31%	45%	33%
agricultural	56%	NA	33%	31%	26%	21%	12%	7%

Notes: Japanese males born 1908-1941 (aged 16-32 in 1940) in AZ, CA, OR or WA who have worked. The 1940, 1950 and 1960 IPUMS are each 1% samples, the 1970 IPUMS samples add up to a 6% sample. The Census occupational categories are mapped into the three broad categories as follows: professional, technical, managers, officials, proprietors, clerical and sales workers are white collar; farmer and farm laborers are agricultural, and the rest are blue-collar. "NA" denotes not applicable, the younger cohort is too young to be working.

Appendix Table 1. Means for Chinese, 1970 Census

	born in the West Coast (evacuated states)			born elsewhere (non-evacuated states)		
	overall	born 1908-24	born 1925-41	overall	born 1908-24	born 1925-41
	(1)	(2)	(3)	(4)	(5)	(6)
Panel A. Labor Force Participation Measures						
worked last year	0.9721	0.9566	0.9818	0.9545	0.9584	0.9513
worked >= 50 weeks last year, if worked	0.8459	0.8153	0.8646	0.8741	0.8868	0.8636
worked >= 40 hours last week, if worked	0.9315	0.9354	0.9292	0.9095	0.8942	0.9215
Panel B. Earnings Measures (in 1969 dollars)						
log earnings, indivs with any earnings	9.2244	9.2149	9.2302	9.2167	9.1869	9.2403
log wages, indivs with no bus. inc.	9.1354	9.0940	9.1599	9.1458	9.0928	9.1861
log bus. inc., indivs with no wages	9.5223	9.6003	9.4699	9.7834	9.7708	9.7947
Panel C. Job Characteristics (of individuals who worked last year or last week)						
occupational score (see notes)	51.56	50.61	52.15	49.02	48.22	49.66
self-employed worker	0.2558	0.2909	0.2344	0.1336	0.1420	0.1270
Panel D. Other Variables						
age	43.59	52.28	38.14	44.12	52.59	37.28
years of schooling	13.48	12.28	14.24	12.72	11.91	13.36
high school diploma	0.8664	0.7573	0.9354	0.8148	0.7265	0.8856
college diploma	0.3206	0.1964	0.3992	0.2811	0.1993	0.3467
served in WWII	0.3722	0.6493	0.1994	0.2584	0.3664	0.1651
ever served in U.S. military	0.6916	0.6752	0.7019	0.5815	0.4378	0.7056
total number of observations	581	219	362	860	354	506
obs with non-missing earnings	523	194	329	786	317	469

Notes: Each observation has been weighted such that the distribution of Chinese by state of birth is the same as the distribution of Japanese by state of birth.
   Sample is as follows: Chinese male, 1970 IPUMS (the State, Metro and Neighborhood Form 1 and 2 samples), and year of birth 1908-1941 (aged 29-62).
   Individuals born 1908-1924 are classified as the older cohort. The West Coast is defined as AZ, CA, OR and WA.
   Occupational score is an index of occupations according to the 1950 median income of all individuals in that occupation, in units of of hundreds of 1969 dollars.

Appendix Table 2. Means for Whites Born in California or Hawaii, 1970 Census

	born in the West Coast (evacuated states)			born elsewhere (non-evacuated states)		
	overall	born 1908-24	born 1925-41	overall	born 1908-24	born 1925-41
	(1)	(2)	(3)	(4)	(5)	(6)
Panel A. Labor Force Participation Measures						
worked last year	0.9536	0.9280	0.9683	0.9269	0.8887	0.9566
worked >= 50 weeks last year, if worked	0.7832	0.7777	0.7862	0.8251	0.7919	0.8492
worked >= 40 hours last week, if worked	0.8947	0.8863	0.8994	0.9103	0.9031	0.9154
Panel B. Earnings Measures (in 1969 dollars)						
log earnings, indivs with any earnings	9.1381	9.1514	9.1309	9.0041	8.9675	9.0303
log wages, indivs with no bus. inc.	9.1048	9.1188	9.0976	8.9764	8.9409	9.0014
log bus. inc., indivs with no wages	9.2393	9.1890	9.2892	9.2085	9.0727	9.3502
Panel C. Job Characteristics (of individuals who worked last year or last week)						
occupational score (see notes)	46.76	46.72	46.78	44.61	44.01	45.04
self-employed worker	0.1475	0.1911	0.1236	0.0688	0.0796	0.0609
Panel D. Other Variables						
age	42.45	52.81	36.51	44.02	53.53	36.60
years of schooling	12.66	12.20	12.93	11.14	9.75	12.21
high school diploma	0.7572	0.7077	0.7855	0.5629	0.3986	0.6889
college diploma	0.2142	0.1696	0.2397	0.1560	0.0899	0.2067
served in WWII	0.3415	0.6078	0.1866	0.2612	0.3923	0.1591
ever served in U.S. military	0.6773	0.6387	0.6998	0.5949	0.4558	0.7032
total number of observations	56,430	20,554	35,876	1,641	719	922
obs with non-missing earnings	50,927	17,813	33,114	1,478	617	861

Notes: Sample is as follows: White male, 1970 IPUMS (the State, Metro and Neighborhood Form 1 and 2 samples), year of birth 1908-1941 (aged 29-62),
   and state of birth is California or Hawaii. Individuals born 1908-1924 are classified as the older cohort. The West Coast is defined as AZ, CA, OR and WA.
   Occupational score is an index of occupations according to the 1950 median income of all individuals in that occupation, in units of of hundreds of 1969 dollars.

Appendix Table 3. Means for Whites with Immigrant Parents, 1970 Census

	born in the West Coast (evacuated states)			born elsewhere (non-evacuated states)		
	overall	born 1908-24	born 1925-41	overall	born 1908-24	born 1925-41
	(1)	(2)	(3)	(4)	(5)	(6)
Panel A. Labor Force Participation Measures						
worked last year	0.9455	0.9299	0.9637	0.9386	0.9242	0.9710
worked >= 50 weeks last year, if worked	0.7651	0.7621	0.7685	0.8060	0.8041	0.8100
worked >= 40 hours last week, if worked	0.8934	0.8806	0.9079	0.9123	0.9094	0.9187
Panel B. Earnings Measures (in 1969 dollars)						
log earnings, indivs with any earnings	9.0558	9.0589	9.0524	8.9672	8.9652	8.9713
log wages, indivs with no bus. inc.	9.0174	9.0153	9.0196	8.9494	8.9555	8.9376
log bus. inc., indivs with no wages	9.1642	9.1463	9.2025	8.8942	8.8677	9.0100
Panel C. Job Characteristics (of individuals who worked last year or last week)						
occupational score (see notes)	43.53	43.75	43.28	43.50	43.52	43.47
self-employed worker	0.1646	0.1978	0.1268	0.1935	0.2117	0.1547
Panel D. Other Variables						
age	46.64	53.33	38.77	49.51	54.13	39.16
years of schooling	11.21	11.02	11.43	10.82	10.58	11.35
high school diploma	0.5714	0.5510	0.5954	0.5210	0.4836	0.6043
college diploma	0.1171	0.0970	0.1408	0.1155	0.0968	0.1572
served in WWII	0.4216	0.5491	0.2717	0.4264	0.4844	0.2964
ever served in U.S. military	0.6218	0.5720	0.6803	0.5667	0.5085	0.6970
total number of observations	6,893	3,724	3,169	2,460	1,701	759
obs with non-missing earnings	6,176	3,249	2,927	2,164	1,466	698

Notes: Sample is as follows: White male with both parents foreign-born, 1970 IPUMS (the State, Metro and Neighborhood Form 2 samples),
   year of birth 1908-1941 (aged 29-62), state of birth in the West Census Region except Alaska (i.e., AZ, CA, CO, HI, ID, MT, NV, NM, OR, UT,
   WA and WY). Individuals born 1908-1924 are classified as the older cohort. The West Coast is defined as AZ, CA, OR and WA.
   Occupational score is an index of occupations according to the 1950 median income of all individuals in that occupation, in units of of hundreds of 1969 dollars.

Appendix Table 4. Analysis using 1960 Census

	Diff-in-Diffs (coeff for older cohort*born in West Coast)						Diff-in-Diffs-in-Diffs	
	Japanese			Chinese			Japanese - Chinese	
	basic	educ ctrl	N in (2)	basic	educ ctrl	N in (5)	basic	educ ctrl
dependent variable	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Panel A. Labor Force Participation Measures								
Worked last year	0.0005	-0.0047	787	0.0082	-0.0254	166	-0.0115	0.0172
	(0.0198)	(0.0206)		(0.0379)	(0.0399)		(0.0404)	(0.0421)
Worked >= 50 weeks,	-0.0200	0.0174	774	0.3285	0.2548	164	-0.3443	-0.2331
if worked last year	(0.0622)	(0.0647)		(0.1258)	(0.1325)		(0.1316)	(0.1375)
Worked >= 40 hours,	-0.0950	-0.0740	725	-0.1545	-0.1668	159	0.0639	0.0992
if worked last week	(0.0393)	(0.0397)		(0.1197)	(0.1257)		(0.1169)	(0.1213)
Panel B. Earnings Measures								
Log annual earnings,	0.0793	0.0279	767	0.5909	0.4866	163	-0.5337	-0.4785
indivs with any earnings	(0.0966)	(0.0994)		(0.2437)	(0.2521)		(0.2442)	(0.2507)
Log annual wages,	0.0833	0.0675	564	0.6140	0.5213	133	-0.5466	-0.4720
indivs with no bus. inc.	(0.1088)	(0.1096)		(0.2863)	(0.3174)		(0.2804)	(0.3040)
Log annual bus. inc.	-0.0671	-0.1026	131	NM	NM	18	NM	NM
indivs with no wages	(0.3966)	(0.3332)						
Panel C. Job Characteristics								
Occupational score	-1.4554	-1.5070	764	0.5188	-4.8634	162	-2.5733	3.1569
	(2.6543)	(2.5833)		(5.9361)	(6.2361)		(6.0695)	(6.2510)
Self-employed worker	0.1020	0.0950	777	-0.0955	-0.2150	164	0.1996	0.3071
	(0.0609)	(0.0649)		(0.1200)	(0.1326)		(0.1262)	(0.1375)

Notes: Robust standard errors in parentheses. Sample is as follows: 1960 IPUMS male and year of birth 1908-1935 (aged 25-52).
   The diff-in-diffs estimate is the coefficient for the interaction term, older cohort*born in West Coast. "Basic" specification in columns 1 and 4 has
   a full set of year of birth dummies and state of birth dummies on the right-hand side. "Educ ctrl" specification in columns 2 and 5 adds
   years of schooling, yrssch*older cohort and yrssch*born in West Coast as explanatory variables. The diff-in-diffs-in-diffs estimate
   is the coefficient for the interaction term, older cohort*born in West Coast*Japanese. "Basic" specification in Column 7 has older cohort*born in West
   Coast, dummies for each Asian group, year of birth dummies and state of birth dummies (the effects of the last two groups of variables are allowed
   to vary by Japanese/non-Japanese) on the right-hand side. "Educ ctrl" specification in column 8 adds years of schooling, yrssch*older cohort and
   yrssch*born in West Coast, and their interactions with Japanese, as explanatory variables. In Columns 4 to 8, each Chinese observation has been
   weighted such that the distribution of Chinese by state of birth is the same as the distribution of Japanese by state of birth. Columns 7 and 8
   drop the observations with states of birth that either have no Chinese or no Japanese. "NM" denotes not meaningful,
   there are too few observations to get coefficient and standard error for the given specification.