Cyclical and Demographic Influences on the Distribution of Income in California*

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The California economy is stronger than it has been in a number of years. Employment growth is solid, unemployment is low, and consumer confidence is high. Despite these strengths, research suggests that the living standards of families at many percentiles of the California income distribution remain below those of comparable families in previous expansions. In this paper, we examine how business cycle timing and changes in demographic structure have affected family income growth in California during the 1990s. We find that demographic and cyclical factors have served to temper family income growth in the state during the past decade.

1. Introduction

The California economy is stronger than it has been in a number of years. Employment growth is solid, unemployment is low, and consumer confidence is high. Sustained good news regarding economic conditions in the state has prompted many to turn their attention towards distributional issues, particularly those related to income growth and income inequality. Much of the research in this area finds that California's recent economic expansion has not improved the living standards of families across all percentiles of the income distribution (Daly and Royer 1999, Reed, Haber, and Mameesh 1996, Reed 1999). As a result, income inequality in California has continued to increase.

This outcome stands in contrast to the experience outside of California. Continuous and robust economic growth elsewhere in the U.S. has lifted the living standards of families across the income distribution. Moreover, recent rapid growth in the incomes of families in the bottom 25 percent of the U.S. income distribution has helped slow growth in income inequality (Daly and Valletta 2000).

Indeed, before the late 1980s, the California economy produced gains in family income that met or exceeded those experienced elsewhere in the nation. Since then, only those at the top of the income distribution experienced real income growth, and income inequality in California continued to increase relatively rapidly. This divergence was exacerbated by the early 1990s recession, which was deeper and longer in California than in the rest of the U.S.

In addition to diverging from the U.S. in recent years, California also has strayed from its own historical pattern. Compared to previous periods of expansion, when economic growth was associated with declines in the number of families living in poverty and increases in the number of families regarded as middle class, data through 1998 show that a larger number of Californians were in poverty and a smaller number were in the middle class than in 1989, the latest business cycle peak. Moreover, a majority of Californians had incomes below those held by families at equivalent percentiles of the income distribution in 1989. In combination, these circumstances (divergence from the U.S. and from historical state patterns) have struck a nerve among policymakers, researchers, and the public and have prompted many to ask whether the government should take a more active role in guaranteeing the equality of outcomes among the population.

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However, before considering policy prescriptions designed to reduce income dispersion in California, it is important to understand how and why California's experience during the 1990s has deviated from its own historical pattern and from the recent experience of the rest of the U.S. A number of potential hypotheses exist, including differences in business cycle timing, changes in population composition, changes in industrial structure, and changes in the way the economy operates in the state. Other researchers have looked at many of these factors and concluded that each plays some role in explaining why California looks different in the 1990s (Daly and Royer 1999, Reed, Haber, and Mameesh 1996, Reed 1999).

This paper adds to this literature by examining how business cycle timing and changes in demographic structure have affected family income in California. Specifically, we look at the relative contributions of business cycle timing and changes in demographic characteristics on rising inequality, slower family income growth, and smaller absolute income gains in California, over time and compared to the rest of the U.S. Previous research has concentrated on examinations of growing inequality (Reed, Haber, Mameesh 1996 and Reed 1999) or on the economic well-being of the middle class (California State Legislature 1997), but relatively little research has been done on the relationship among economic growth, income inequality, and movements within the income distribution.

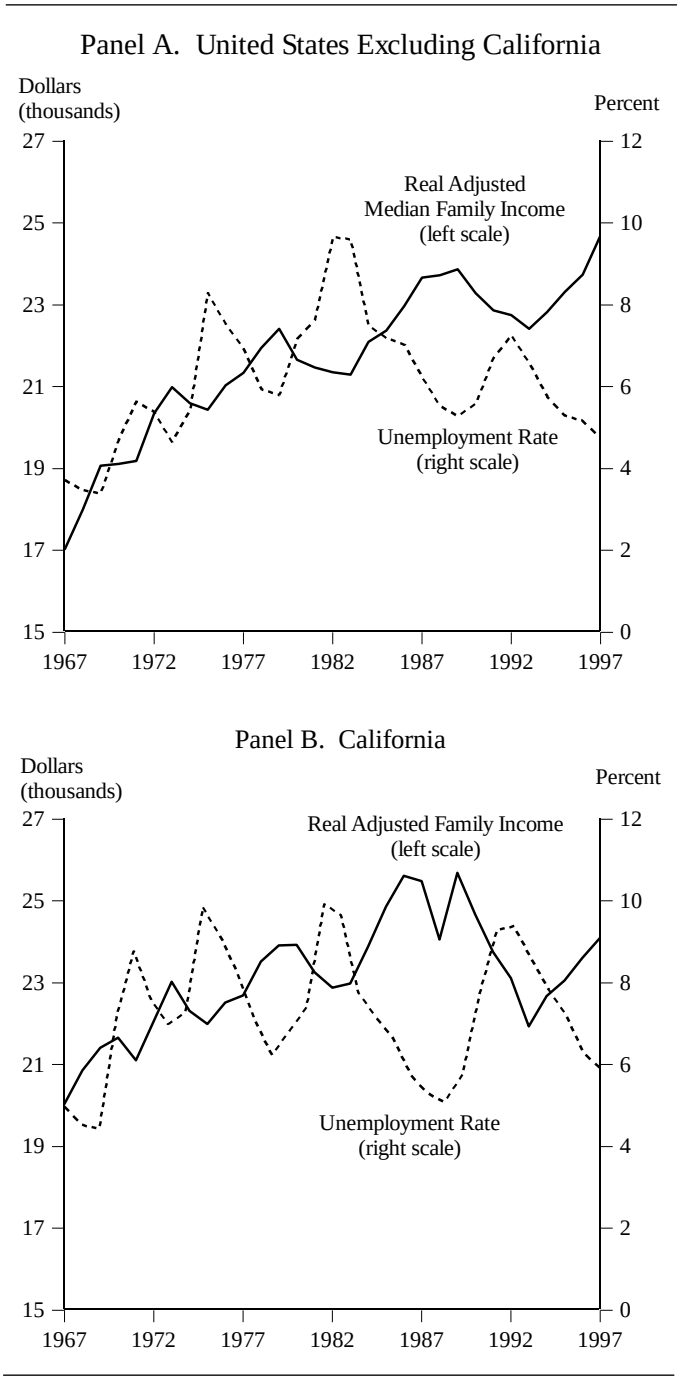
We begin by documenting trends in family income and measures of income inequality in California and the rest of the U.S. We then describe the movement of various portions of the income distribution over time, comparing the experiences of Californians with those living elsewhere in the U.S. Finally, we examine the extent to which demographic and business cycle differences account for the divergence of California from the rest of the U.S. during the 1990s.

2. Year Selection, Data, and Variable Design

2.1. Business Cycles and the Income Distribution

Cross-sectional comparisons of the economic status of Americans over time are sensitive to the years over which the comparisons are made. Figure 1 plots two general economic indicators of the business cycle—civilian unemployment rates and median real family income—that demonstrate this point. Outside of California, business cycle peaks (i.e., low points in unemployment) in 1973, 1979, and 1989 were followed by business cycle troughs in 1975, 1982, and 1992 for most of the U.S (Panel A). While an upward-sloping line can be drawn across real median family income points in either the peak or the trough years over this period, this growth was not accomplished smoothly. There were periods of rising income and falling unemployment—1975 to 1979 and 1982 to 1989—as well as periods of economic decline—1973 to 1975, 1979 to 1982, and 1989 to 1992. The patterns were similar in California, although, as shown in Panel B, the 1990 recession was longer and deeper in California. Under these circumstances, a random choice of starting and stopping

Figure 1
Real Median Income and the Unemployment Rate



years could yield upward, downward, or constant measures of economic status. Consequently, the results presented here focus on how families fared from peak to peak years of three business cycles, namely 1969–1979, 1979–1989, and 1989–1998.[1]

2.2. Data

Studies of income growth typically rely on data from the March Current Population Survey (CPS). The March CPS is an annual cross-sectional survey of a nationally representative sample of more than 50,000 U.S. civilian households (5,000 households in California) containing detailed questions about household composition and sources of income.[2] These data are used to trace changes in the distribution of real income in California and the rest of the U.S. between 1969 and 1998.[3] The data can be weighted to represent populations in both California and the rest of the U.S.[4,5] In most of the analysis, the focus is on the years 1969, 1979, 1989, and 1998. These years represent either business cycle peaks or ongoing expansions, so that the analysis of changes over time will be relatively unaffected by underlying business-cycle determinants of inequality.[6]

Throughout the analysis it is important to remember that the CPS is a cross-sectional survey designed to collect data from a different sample of households each year. Thus, it cannot be used to track the progress of individuals or specific families over time. Rather the results presented here show how the real incomes of families in predefined income groups (e.g., families below the 25th percentile of the income distribution) compare with those of equivalently defined families in other time periods.

2.3. Measuring Economic Status

We measure economic status in terms of income. Because most people share resources within families, the family is usually considered the appropriate unit for collecting information on economic status. That approach is followed here. In households containing one family, family income is calculated as the sum of the sources of income for all family members during a calendar year. For multifamily households, family income is computed in one of two ways depending on whether or not the families in the household are related. For households that contain multiple families related by blood or marriage (including multi-generational families), the resources of all families are pooled to form total family income, under the assumption that related families sharing living quarters share income in the same manner as nuclear family units. In multifamily households containing unrelated individuals, each individual (or family) is treated as a separate observation dependent only on his or her own income. Income in the analysis refers to pretax post-transfer real resources.[7] All incomes are valued in 1998 dollars using the Personal Consumption Expenditure (PCE) Deflator.

There are many reasons why family income is less than an ideal measure of economic status (Moon and Smolensky 1977). One of the most important is differences in family size. To account for the fact that $20,000 a year provides a higher standard of living for a single-person family than it does for a family with multiple members, all incomes are adjusted by the number of persons in the family. In general, the well-being of family members depends on income per member. However, as noted by a variety of researchers, given a particular level of total income, well-being per member does not decline by the same amount for each additional family member added, due to economies of scale in consumption. Therefore, the adjustment factor applied in this analysis proceeds as follows. Letting T denote total family income and F denote family size, equivalent family income is defined by:

1. Because we have not reached the peak of the 1990s business cycle our analysis will underestimate the net peak-to-peak gains over the 1990s business cycle. Nonetheless, other 1989–1998 comparisons provide a relative pattern which is unlikely to be greatly altered as additional years of information become available.

2. The files also include Armed Forces personnel living with civilians. However, these households are excluded from the analysis.

3. Between 1969 and 1998, several changes were made to the Current Population Survey. See Reed, Haber, and Mameesh (1996) for a discussion of these changes and their effect on inequality measures.

4. See Reed, Haber, and Mameesh (1996) for a description of the representativeness of the March Current Population Survey for California.

5. The sampling weight is equal to the sum of the individual weights for all persons in the family unit. Thus, although the analyses are conducted at the family level, the results should be interpreted as characterizing the experience of individuals who constitute the associated population.

6. While there are no formal rules for choosing comparison years for measuring the change in economic well-being, it is important to distinguish changes due to a movement up or down in a business cycle from the longer-term changes that occur between two similar points in consecutive business cycles.

7. To preserve respondent confidentiality, the Census Bureau truncates recorded income values at an upper limit (topcode). Previous research and our own examination suggest that prior to 1996 changes in nominal topcodes had little impact on changes in inequality. However, beginning with the 1996 survey (income year 1995), the Census Bureau recorded values for several topcoded variables at the group means of the actual topcoded incomes rather than at the topcode itself. For consistency with previous years of data, we recoded these variables to equal the topcode value and adjusted total family income accordingly in income years 1995–1998.

$$Y = \frac{T}{F^{\sigma}}$$

where σ=0.5. This value lies at the midpoint of the range of assumptions regarding economies of scale in family consumption, and it has the virtue of being nearly identical to the implied equivalence scale used in the Census Bureau's official poverty thresholds (Ruggles 1990).[8] This adjustment is applied to most families identified in the data, the notable exception being related families that share living quarters, for which income and family size are totaled across the household.[9]

3. Trends in Income Inequality and Family Income Growth

Table 1 reports on two commonly applied summary measures of income inequality, the Gini coefficient and percentile point measures (see the Appendix for the formulas for computing these measures). The Gini is a measure of relative income inequality constructed by comparing the degree to which income is proportionally distributed throughout the population. When income is distributed equally the Gini coefficient equals 0; thus, higher values of the Gini index represent higher degrees of inequality. The percentile point measures calculate the ratio of the level of income held by individuals at different percentile points of the population. Table 1 reports values for three such measures: the 90/10, 90/50, and 50/10 percentile point ratios.

Table 1 shows that although income inequality increased substantially in both California and the rest of the U.S. during the past 30 years, the pace of growth in inequality was faster in California. Between 1969 and 1998 the Gini coefficient rose from 0.35 to 0.43 in California, a percentage change of about 23 percent. In contrast, in the rest of the U.S. the Gini grew by about 15 percent, rising from 0.35 to 0.40. Looking within this 30-year period reveals similar results; as measured by the Gini coefficient, income inequality grew faster in California than in the rest of the nation in every decade examined, with the difference in growth accelerating during the 1990s.

Table 1

Summary Measures of Real Adjusted Family Income Inequality

	Inequality Measures				Percentage Change over Business Cycle Peaks			Percentage Change over Entire Period
	1969	1979	1989	1998	1969–1979	1979–1989	1989–1998	1969–1998
California								
Gini coefficient	0.35	0.37	0.41	0.43	5.7	10.8	4.9	22.9
Percentile point measures								
90/10	5.7	6.7	8.7	10.2	17.5	29.9	17.2	78.9
90/50	2.1	2.2	2.4	2.6	4.8	9.1	8.3	23.8
50/10	2.7	3.1	3.6	3.9	14.8	16.1	8.3	44.4
Rest of the U.S.								
Gini coefficient	0.35	0.36	0.39	0.40	2.9	8.3	2.6	14.3
Percentile point measures								
90/10	6.0	6.7	8.2	8.6	11.7	22.4	4.9	43.3
90/50	2.1	2.1	2.3	2.3	0	9.5	0	9.5
50/10	2.9	3.2	3.6	3.7	10.3	12.5	2.8	27.6

Source: Authors' tabulations of March CPS data.

8. Equivalence scales contain assumptions about the returns to shared living. An equivalence scale with an elasticity of 1 would imply that two individuals living together require twice as much income to be equally well off. Equivalence scales with an elasticity of 0 assume that a household with an infinite number of individuals can live equally well off the income of a single person household. Thus, an elasticity of 0.5 assumes that the true economies of scale lie directly in between these two extreme values. See Burkhauser, Smeeding, and Merz (1996) for a discussion of the sensitivity of different equivalence scales in cross-national comparisons.

9. The equivalent income measure for related families that share living quarters therefore is constructed under the assumption that income and consumption are shared *across* sub-families in these households in the same way that they are shared *within* other families in the sample.

Although the Gini highlights the more rapid increase in inequality in California, it cannot pinpoint the movements within the distribution of income. The percentile point measures provide a first pass at identifying where the changes in the distribution of income occurred. Over the past three decades, the 90/10 measure nearly doubled in California and increased by more than 40 percent in the rest of the U.S. Like the Gini coefficient, the 90/10 ratio in California was similar to that for the rest of the U.S. through 1989, and then rose rapidly during the 1990s. The results for the 90/50 and 50/10 measures highlight some of the main differences between California and the rest of the U.S. during the 1990s. Between 1989 and 1998, the 90/50 and 50/10 ratios grew by about 8 percent in California, indicating an increase in dispersion at both ends of the income distribution. In contrast, in the rest of the U.S., the 90/50 ratio remained virtually constant between 1989 and 1998, and the 50/10 ratio grew by about 3 percent. These results suggest that during the 1990s the magnitude and character of income inequality in California departed from that observed in the rest of the nation.

Another method of evaluating the income trends in California is to calculate the percentage change in income over time for each percentile of the income distribution. Figure 2 reports the results of such a calculation for California and the rest of the U.S. between 1969 and 1998. As the figure shows, between 1969 and 1998 family income grew more in the rest of the nation than it did in California across the entire distribution. During this period, real adjusted family income at the 90th percentile grew by 54.1 percent in the nation and 44.6 percent in the state. In contrast, at the 10th percentile, income grew by 8.7 percent in the nation but fell by 19.9 percent in California. These findings suggest that the divergence of California from the rest of the U.S. was associated more with limited increases in the level of income recorded for the bottom than with disproportionate increases in income levels among those families in the top percentiles.

Table 2 looks within the statistics reported in Figure 2 and summarizes trends in the income growth for selected percentiles of the income distribution at similar points in the business cycle. The first row shows the percentage change in adjusted family income from peak to peak of various business cycles for families at the 20th percentile of the income distribution. As noted earlier, since this is cross-sectional data the results do not indicate how the same families have fared over time; rather, they show the differences in income levels among families at equivalent percentiles of the income distribution over time. Over the three major business cycles covered by this analysis, the income level of families in California at or below the 20th percentile declined by about 12 percent. Looking within the 30-year period, it is clear that the income levels of families in the bottom two deciles of the income distribution have been falling for some time. The real adjusted incomes of families at the 20th percentile declined by 4.1 percent

Figure 2

Percentage Change in Real Adjusted Family Income by Income Percentile (1969 to 1998)

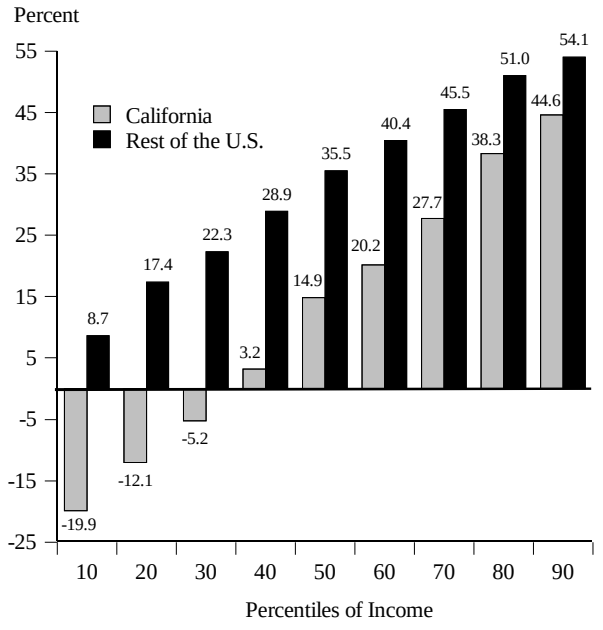


Table 2

Percentage Change in Real Adjusted Family Income by Income Percentile

	Business Cycle Peaks			Entire Period
Income Percentile	1969–1979	1979–1989	1989–1998	1969–1998
California				
20th	–4.1	–2.2	–6.3	–12.1
Median	11.7	7.4	–4.2	14.9
80th	18.6	12.5	3.6	38.3
Rest of the U.S.				
20th	10.1	–1.5	2.0	17.4
Median	17.7	6.5	8.1	35.5
80th	21.3	12.1	10.4	51.0

Source: Authors' tabulations of March CPS data.

from 1969 to 1979, by 2.2 percent from 1979 to 1989, and by about 6.3 percent from 1989 to 1998. In contrast, for the upper-middle portion of the California distribution, represented by the 80th percentile, real adjusted family income increased by nearly 40 percent between 1969 and 1998, growing in each of the three business cycles covered in the data. This pattern in which income levels at the bottom of the distribution fall while income levels at the top increase has been well-documented and is recognized as the main reason inequality increased so dramatically over the past 25 years.[10]

While the growth patterns for the bottom and top percentiles of the income distribution in California are well known, the recent patterns for the middle of the distribution are less well understood. Median family income in California increased by about 15 percent between 1969 and 1998. However, all of that improvement was realized between 1969 and 1989. Since that time, median income has fallen by about 4.2 percent, leaving the median family economically worse off than the median family in previous decades. The slow recovery of median family income in California occurs at a time when, elsewhere in the U.S., all percentiles of the distribution of family income have risen above 1989 peak levels (U.S. Bureau of the Census 1999).

The results in Table 2 and Figure 2 show that, in contrast to the rest of the U.S., the increasing income inequality in California has resulted from income declines at the bottom rather than income gains at the top.[11] The economic status of families occupying the bottom 20 percent of California's income distribution has fallen in each of the business cycle periods examined. In the most recent expansion, even those in the middle of California's income distribution find themselves with less family income than their counterparts at equivalent percentiles held in previous business cycle peaks. Finally, over the entire period observed, family income grew faster outside of California than it did in California, a difference which intensified during the 1990s. As a result, income inequality has grown faster in California than it has in the U.S. excluding California.

10. The most comprehensive work on this subject is by Reed, Haber, and Mameesh (1996). The patterns reported here are consistent with their work, although the magnitudes differ slightly due to differences in the unit of income analysis (i.e., household versus family).

11. Burkhauser, Crews, Daly, and Jenkins (1999) find that in the U.S. most of the increase in income inequality over the past two decades came from improvements in the middle and upper portions of the distribution rather than from losses at the bottom.

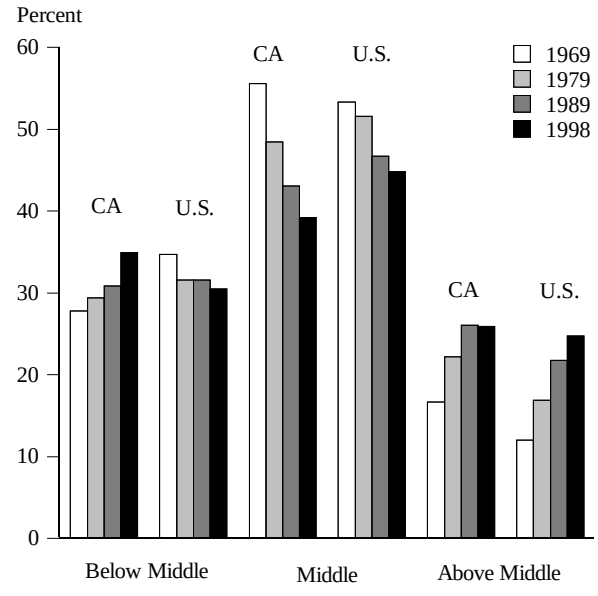
4. Income Inequality and the Distribution of Income

While the trends reported above unequivocally point to faster growth in income inequality in California than in the rest of the U.S., they do not provide much detail about the distribution of individuals across particular income levels or about how the income levels of Californians compare to those held by equivalent families living outside of California. This type of information is important to understanding more fully what three decades of rising inequality have done to the absolute and relative well-being of families in California.

In the remaining analysis, we look more closely at movements within the income distribution in California and the rest of the U.S. Figure 3 compares the proportion of the population living in three groups defined by the ratio of income-to-needs. The income cutoffs for each income-to-needs groups are based on the poverty thresholds set by the U.S. Census Bureau and represent absolute categories of well-being that do not change over time. The definitions used in this analysis are as follows: (1) the below middle group includes those with incomes less than or equal to two times the U.S. poverty line; (2) the middle group includes

Figure 3

Percentage of Families Living in Each Income-to-Needs Group



Note: U.S. refers to the United States minus California.

families with incomes between two and five times the U.S. poverty line; and (3) the above middle group includes families with incomes greater than or equal to five times the U.S. poverty line.

As the figure indicates, over the past three decades the percentage of the population in the below middle group increased by about 26 percent in California. In contrast, in the rest of the U.S. the percentage of the population in this category declined by nearly 12 percent. Like other researchers, we find that the middle of the income distribution declined between 1969 and 1998 in California and the rest of the U.S. However, the decline was far larger in California. Between 1969 and 1998, the middle income group in California decreased by nearly 30 percent, falling from 55 percent of the population to just 39 percent of the population over the 30-year period. In the rest of the U.S. the decline in the percentage of the population in the middle of the income distribution was smaller, about 20 percent between 1969 and 1998.

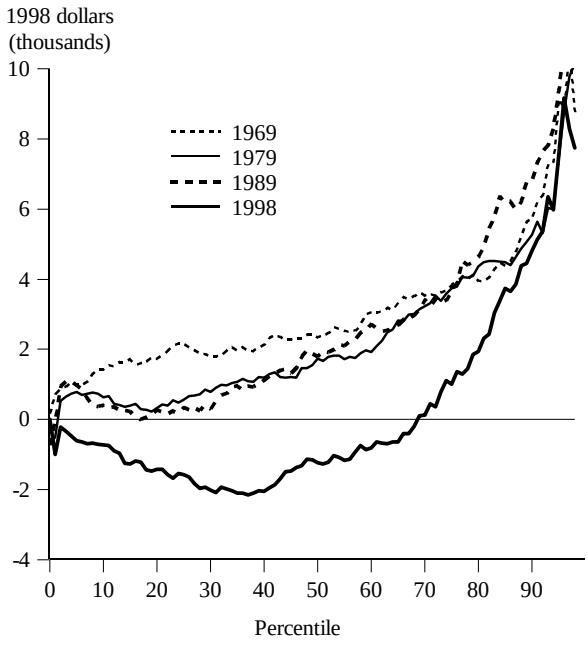
Although California did experience a larger decline in the percentage of families in the middle income group, the most important difference between California and the rest of the U.S. is where the displaced middle of the distribution moved.[12] Since we are not describing movements of individual families but rather of population mass, it is best to think of this exercise as defining how the population proportions in each income-to-needs group have changed over time. In California, a little more than 40 percent of the decrease in the percentage of the population residing in the middle of the distribution of family income went to the bottom of the income distribution; elsewhere in the U.S., the proportion of families residing in the lowest income-to-needs group actually decreased, meaning that the middle mass shifted to the upper part of the distribution.[13] Thus, while the middle class in both California and the U.S. were hollowed over the past three decades, the experiences of these groups differed greatly. In California, income inequality and the decline in rewards for those at the bottom of the distribution occurred along with an increase in the fraction of the population residing in those categories. In the rest of the U.S., the incomes of those at the bottom declined while the incomes of those at the top increased, but a larger fraction of the population experienced the gains than experienced the losses.

Another question important to policymakers in California is how the income levels of Californians fared relative to other families in the U.S. Looking at the percentage change in family incomes over time suggests that Californians have not experienced the same gains in income during the most recent expansion as have families elsewhere in the nation. However, the percentage change figures reveal little about the absolute levels of income in these areas or how the standard of living in California compares to that of families living outside of California. Figure 4 shows the dollar difference in real adjusted family income between California and the rest of the U.S. by percentile. When the line is above zero, families in California had higher real incomes than families in the rest of the U.S.; when the line is below zero, families in California had lower real incomes than families elsewhere in the nation. The four lines represent the four business cycle peak years used in the analysis: 1969, 1979, 1989, and 1998.

As Figure 4 shows, in each of the years except 1998, families in California had higher real adjusted incomes than families elsewhere in the United States at every percentile of the income distribution. The figure also shows how the differential percentage increases in family income

Figure 4

Dollar Difference in Real Adjusted Family Income between California and the Rest of the U.S. by Income Percentile



12. Again, it is important to remember that the results do not refer to movements of individual families over time, but rather to changes in the distribution of individuals across the income scale.

13. This result is consistent with Burkhauser, et al. (1999), which finds that during the 1980s a majority of the "lost middle class" went to the upper end of the income distribution.

since 1969 (Figure 2 and Table 2) reduced the dollar difference in income levels between California and the rest of the nation, eventually eliminating it. As the relative income gains outside of California surpassed those realized by Californians, the dollar difference between incomes in the state and elsewhere in the nation decreased. In 1969, for instance, a family at the 10th percentile of the California income distribution had about $1,400 more than an equivalent family living elsewhere in the U.S. By 1989, this difference had shrunk considerably; the difference in family income at the 10th percentile was about $370 in 1989.

The most striking result in Figure 4 is the change in California's experience during the 1990s. In 1998, only families in the top 35 percentiles of California's income distribution had real adjusted incomes greater than their counterparts elsewhere in the U.S. Families occupying the remaining percentiles of California's income distribution had lower real incomes than those at equivalent percentiles elsewhere in the nation.[14] Thus, the 1990s was a time when many Californians had lower real incomes than other families in the U.S. and lower incomes relative to the historical experience of families living in California. Overall, the results for the population proportions in each income-to-needs group along with the dollar differences in family income by percentile between California and the rest of the U.S. show that not only did income inequality increase in California more than in the rest of the nation during the 1990s, but the increase was accompanied by a loss of the middle of the distribution to the lower tail and a decline in living standards relative to families elsewhere in the U.S.

5. Factors Contributing to California's Divergence from the U.S.

A natural question to ask about the divergence of California from the rest of the U.S. is what caused the change. A number of factors may explain this difference in the pace of income growth at the bottom of the income distribution in California and the rest of the U.S., including differences in industrial structure, the proportion of immigrants in the state, and the age, race, and educational structure of the population. Data from the CPS and the decennial Census show that California has a higher share of low-wage immigrants than other parts of the U.S. In addition, California has larger populations of individuals who do not have a high school education or who are on public assistance. Finally, much of the job growth in California during the 1990s has been in industries with high skill requirements.

For any of these factors to make a significant contribution to the divergence of California from the rest of the U.S., the change in these variables in California would have to be larger than the changes taking place outside of California. This narrows the list slightly and allows us to focus on two potential explanations: demographic characteristics and business cycle effects.[15] (See Reed 1999 for a discussion of the effects of these factors on the male earnings distribution.)

5.1. Demographic Influences

To understand the extent to which changes in the composition of California's population have caused the income distribution in the state to deviate from that in the rest of the U.S., we perform a simple reweighting exercise that imposes the demographic structure of the rest of the U.S. on California in each year examined. The demographic reweighting adjusts for age, sex, race, and education. The results, shown in Figure 5 and Table 3, suggest that changes in demographic characteristics have affected the distribution of income in California relative to the rest of the U.S.

Figure 5 compares the dollar difference in adjusted family income by percentile in California and the U.S. in 1998 (as in Figure 4) to the dollar difference in family income between California and the rest of the U.S. when the U.S. age, sex, race, and education structure is applied. Figure 5 shows that in 1969 and 1979 California's demography helped keep real family income in the state well above levels realized elsewhere in the U.S. Thus, when the California population is made to look like the rest of the U.S. population, the dollar difference in real adjusted family income is reduced. This pattern is reversed in 1989, when California's demographic makeup held down the difference in family incomes in California and the rest of the nation; in other words, had the age, sex, race, and educational structure in California been the same as the rest of the U.S in 1989, the positive dollar difference in family incomes between California and the rest of the U.S. would have been larger.

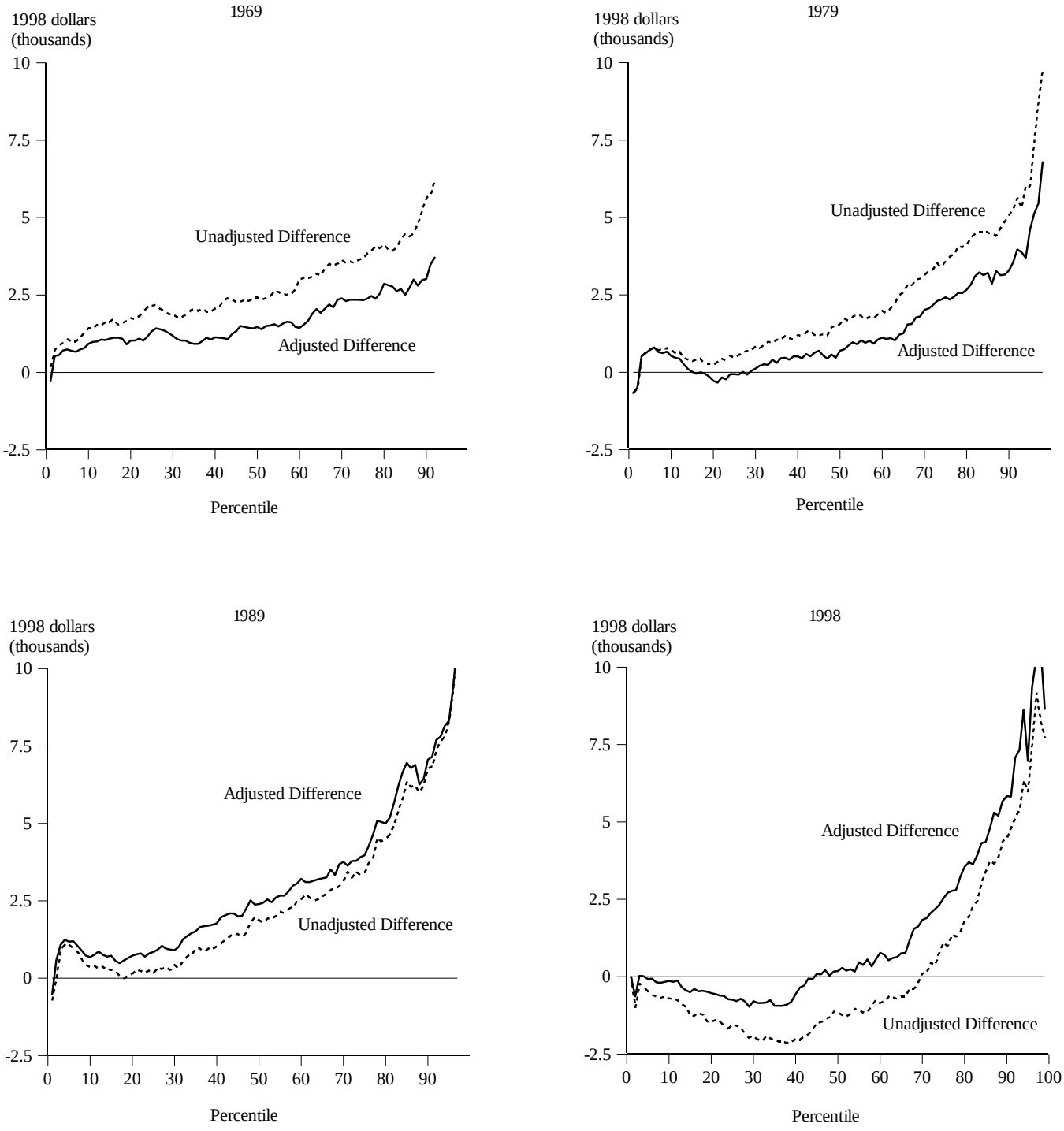
The most dramatic impact of demographic factors occurred in 1998. Under the actual (unadjusted) distribution of income in California, only families in the top 30 percent of the California income distribution had real incomes higher than equivalent families living outside of

14. When adjustments are made for the differential cost of living in California and the rest of the U.S., the magnitudes of the differences in 1969, 1979, and 1989 are reduced, and the magnitude of the difference in 1998 is raised (Reed, Haber, and Mameesh 1996 and Reed 1999).

15. Reed (1999) examines the influence of changes in industrial structure on the distribution of male wages in California and finds only a small impact over time. Therefore, we do not examine changes in industrial structure in our paper.

Figure 5

Demographic Effects on Dollar Difference in Real Adjusted Family Income between California and the Rest of the U.S. by Income Percentile



Note: Real adjusted family income is adjusted for age, race, sex, and education.

California. In contrast, under the adjusted distribution, families from the 40th percentile and above in California have real adjusted family incomes higher than their counterparts living elsewhere in the U.S. Thus, while demographic differences cannot explain all of the divergence of California from the rest of the U.S. in the 1990s, they do significantly diminish it.

Turning to Table 3, the same analysis is performed for the income inequality measures and other income distribution measures. Table 3 reports the percentage change in our four dispersion measures, three percentiles of the income distribution, and the proportion of the population residing in each of the three income-to-needs groups. These percentage changes are shown for California and the rest of the U.S. without demographic adjustments and for California adjusted for U.S. demographic characteristics. The California adjusted measures represent the outcomes in California between 1969 and 1998 that would have arisen had California maintained the same age, sex, race, and education structure as the U.S. in each of the four years we examine. The final two columns of the table report the difference in the percentage changes between California and the rest of the U.S. under the unadjusted and adjusted scenarios.

Looking first at the measures of dispersion, for the most part the demographic controls reduce the growth in income inequality in California over the past 30 years. The notable exception to this general effect is for the 90/50 measure, which was unaffected by the demographic adjustment. The effects on growing dispersion are greatest for the 50/10 measure, suggesting that changes in demographic characteristics had the largest impact on the bottom half of California's income distribution.

The results on income growth also suggest that demographic changes have had the largest impact on the bottom half of the distribution. For example, between 1969 and 1998 the real value of adjusted family income for the 20th percentile in California declined by 12.1 percent. When we adjust the California population distribution to reflect the U.S. characteristics, the change in the real value of the 20th percentile rises by about 2 percent. Likewise, although median income in California actually rose by 14.9 percent during the past 30 years, if California had had the U.S. population composition, median income would have grown by more than 25 percent.

Finally, examining how changes in demographic characteristics have affected the distribution of California's population relative to our three income-to-needs groups supports the idea that California's changing demography added to the increase in dispersion of real adjusted family income. If California's demographic structure had not diverged from that of the rest of the U.S., the proportion of

Table 3

Demographic Effects on Real Adjusted Family Income and Income Inequality in California

	Percentage Changes, 1969–1998			Absolute Difference between California and the Rest of the U.S.	
	California Unadjusted	Rest of U.S. Unadjusted	California Adjusted	Unadjusted	Adjusted
Dispersion					
Gini coefficient	22.9	14.3	20.0	8.6	5.7
90/10	78.9	43.3	68.4	35.6	25.1
90/50	23.8	9.5	23.8	14.3	14.3
50/10	44.4	27.6	35.7	16.8	8.1
Percentiles					
20th	–12.1	17.4	1.9	–29.5	–15.5
Median	14.9	35.5	26.7	–20.6	–8.8
80th	38.3	51.0	48.7	–12.7	–2.3
Proportions of population					
Below Middle	25.6	–12.3	6.0	37.9	18.3
Middle	–29.5	–15.9	–26.5	13.6	10.6
Above Middle	55.6	106.4	85.6	–50.8	–20.8

Source: Authors' tabulations of March CPS data.

the population with incomes below two times the poverty line would have increased by just 6 percent, rather than the 25 percent increase that we observe.

Moving to comparisons between California and the rest of the U.S. (the last two columns) the results indicate that changes in demography account for about one-third to two-thirds of the differences in changes in real family adjusted income and income inequality in California and the rest of the U.S. between 1969 and 1998. The demographic adjustments for California lift the income levels of families at nearly every percentile of the income distribution, although the effects are largest for those in the middle and top. As a result, the demographic adjustments have less of an effect on income inequality than on the measures of changes in absolute income levels and relative growth. For example, while the demographic adjustment reduces the percentage change in the Gini by about one-third, the same adjustment reduces the increase in the proportion of Californians with real family adjusted incomes below two times the U.S. poverty line by about one-half.

In general, the findings in Figure 5 and Table 3 indicate that California's population composition first had a positive and then a negative effect on the relative income performance of California during the past 30 years. In 1969 and 1979, California's demography served to raise income levels in the state above what families at equivalent percentiles outside of California were obtaining. Beginning in 1989 this pattern was reversed and demographic differences between California and the rest of the U.S. began to restrain income growth and income levels in the state. Thus, adjusting for demographic differences moves the income gains and real adjusted family income levels in California much closer to those experienced by families outside of California. This being said, even when these population characteristics are accounted for, there remain sizeable differences in outcomes between California and the rest of the U.S. during the 1990s.

5.2. Business Cycle Timing

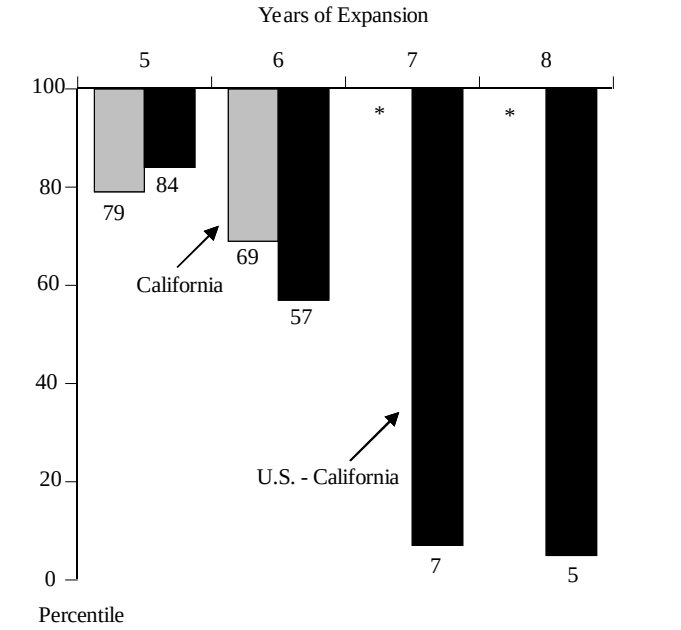
In addition to changes in demographic structure relative to the rest of the U.S., California experienced a much longer and deeper recession in the early 1990s. Measured by changes in payroll employment growth, the U.S. economy outside of California began to recover early in 1992, when job growth turned positive. Less than one year later, total employment for the U.S. excluding California had surpassed its pre-recession peak. In California, payroll employment continued to contract until early in 1994. In addition, the number of jobs lost in California during the prolonged recession made for a slow return to pre-recession levels of employment. Total payroll employment did not surpass its pre-recession peak until January 1996.

According to these data, California's expansion is about two years behind that for the rest of the U.S. Thus, to evaluate how the rewards of economic expansion have been distributed in California relative to the rest of the U.S., it is important to move away from comparisons in calendar time and look at comparisons based on the number of years spent in economic recovery. The results of such an analysis are portrayed in Figure 6, which compares the percentile of the income distribution at which real family income surpassed its 1989 peak in California and the rest of the U.S. by the number of years of recovery. The first two bars show that after four years of economic expansion, families above the 79th percentile of the income distribution in California (top 21 percent) had real incomes greater than comparable families in 1989; outside of California, families above the 84th percentile had real incomes higher than equivalent families in 1989.

The fifth year of recovery produced similar results, with a greater percentage of families in California and the rest of the U.S. moving above pre-recession levels of income. Although data constraints prevent a comparison of California and the rest of the U.S. beyond five years of expansion, data for the rest of the U.S. for the sixth and seventh years suggest that the benefits of economic growth began

Figure 6

Income Percentiles Achieving
Income Higher than 1989 Peak



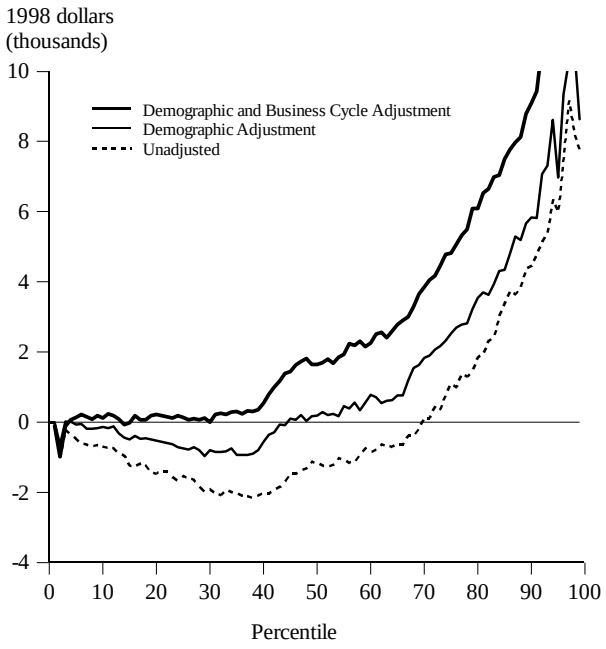
* California data not available

to be distributed rapidly as the recovery proceeded. By the sixth year of the U.S. expansion, less than 10 percent of the real family income distribution was below 1989 levels. By the seventh year, 1998, families at nearly all percentiles of the income distribution were better off than their counterparts in 1989.

Putting the results from our business cycle and demographic adjustment together, Figure 7 shows the dollar difference in income for California and the rest of the U.S. in 1998. Recall that since we are adjusting for differences in business cycle timing in California, the comparison in Figure 7 is between California incomes in 1998 and incomes in the rest of the U.S. in 1996. California's demography is adjusted for the demographic makeup of the U.S. population in 1996, although separate analysis using the 1998 U.S. population composition showed little difference. The exercise in Figure 7 is to compare the unadjusted line (dotted) to the line with the simple demographic adjustment (similar to the line shown in Panel 4 of Figure 5) and to the line with both the business cycle and demographic adjustment included. The results support those shown in Figure 6, namely that business cycle timing matters. Combined, the business cycle and demographic adjustments succeed in lifting the real income level of Californians at nearly every percentile of the income distribution above the income values of those living outside of California.

Figure 7

Business Cycle and Demographic Effects on Dollar Difference in Real Income in 1998 between California and the Rest of the U.S. by Income Percentile



6. Conclusions

By most measures, the California economy has recovered fully from its deep recession earlier this decade. Employment levels are high, unemployment is low, and personal income growth is consistently outpacing the U.S. average. Despite these strengths, many Californians feel left behind by the current expansion. Recent data seem to confirm these feelings; after six years of solid economic growth, a larger number of Californians are living in poverty, a smaller number are in the middle class, and a majority have family incomes below those observed in 1989, the last business cycle peak. Moreover, a majority of families in California have less income than comparable families living elsewhere in the U.S.

However, an examination of the causes for these disparities suggests that demographic and cyclical factors play a large role in determining the differences between California and the rest of the U.S. Deviations in demographic structure between California and the rest of the U.S. account for about one-third to one-half of the differences in measures of income distribution between the two areas. Further adjusting for differences in business cycle timing virtually eliminates the observed difference between California and the rest of the U.S.

Appendix: Cross-Sectional Parametric Measures of Inequality Formulas Used for Computation

(A.1) The Gini coefficient:

$$\text{GINI} = \left[\frac{1}{2n^2\mu}\right]\sum_{i=1}^{n}\sum_{j=1}^{n}\left|y_i - y_j\right|,$$

in which y is individual income, n is the number of individuals, and μ is mean income.

(A.2) Percentile point measure:

$$\{(Y)_{py} / (Y)_{px}\},$$

where y and x are equal to percentile points of the distribution, and (Y) is real adjusted family income.

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