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# GROWTH and EMPLOYMENT

## *Moving Up? Earnings Mobility in California*

*by*
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Recent studies of the increase in income inequality suggest that the low-wage workers of today are relatively worse off than the low-wage workers of yesterday and that income inequality in California has increased more rapidly than in the nation as a whole. What such studies do not tell us is whether today's low-wage workers are the same individuals as yesterday's low-wage workers. Most previous research on income inequality focuses on earnings at particular points in time ("cross-sectional" analysis) rather than on long-term patterns of earnings and employment for individual workers ("longitudinal" analysis). In this study, we analyze payroll data for 187,000 California workers from 1988 to 2000, using two forms of longitudinal analysis to measure both absolute mobility and relative mobility of earnings. In both cases we find substantial earnings mobility for individual

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# Moving Up? Earnings Mobility In California,

*In this article, we follow a large group of California workers from 1988 to 2000 in order to measure how their earnings improved. We examine how this varies across the earnings distribution and by industry, and compare our results to national trends.*

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*continued from the cover*

workers. This differs from cross-sectional studies which suggest that real wages are declining for a large share of California's workers, especially those at the bottom. We find that real wage gains are greatest for those workers who started out at the lowest wages. In addition, workers who switched industries enjoyed substantially higher earnings growth over the 12-year period than workers who remained in the same industry. Mobility patterns across industries reflect an effort by workers to gain higher-paying employment and do not concur with general employment trends. The findings of significant gains in earnings mobility for individual workers underscore the importance of longitudinal analysis for understanding the patterns of job movement and earnings changes in California.

## Introduction

The increase in income inequality at the national level has been explained by the growing wage gap between skilled and unskilled workers (Bernhardt et al. 2001). Over the past two decades, income inequality in California has increased even more rapidly than in the nation as a whole, despite the state's relative prosperity and robust employment growth. The differences between California and the rest of the nation have been attributed to a higher "earnings penalty" for low levels of education and skill, higher shares of low-skill immigrants, and the deep recession in the state in the early 1990s (Reed 1999; Reed and Cancian 1999; Daly and Royer 2000). While we know that the gap between the lowest- and highest-paid workers has widened, we don't know how individual workers have fared, or if some workers are caught in a low-wage trap for their entire lives. This article addresses that shortcoming by tracking individual earnings mobility for a large sample of

workers in California from 1988 to 2000. Because this period starts and ends near business cycle peaks, the trends observed should not be affected by short-run fluctuations in the economy.[1]

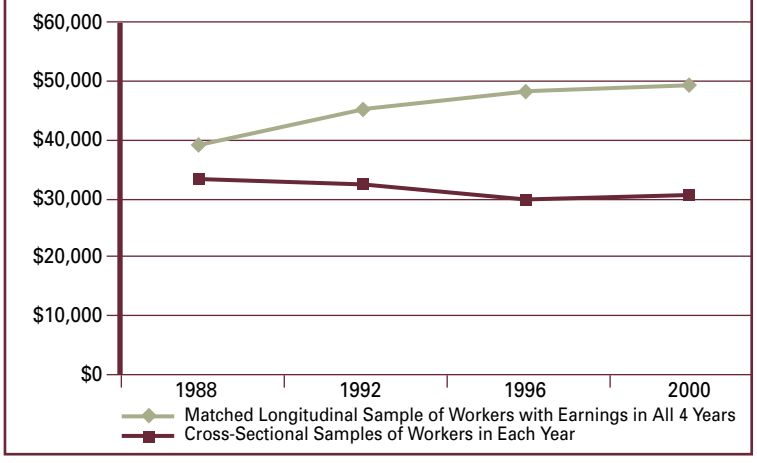
The growing income gap has raised interest in improving workplace opportunities for less skilled workers as a means of advancement. Although "skills upgrading" and job mobility are increasingly the focus of employment policy, much remains unknown about long-term patterns of job and earnings mobility among workers. An increasingly unequal wage distribution—especially with declining real wages for low-skill workers—is a more serious policy concern if it means there is little opportunity for individuals to improve their earnings over time. Policymakers need to know how well low-wage workers are able to transition to better-paying jobs, whether some career paths are more effective than others, and if there are policies to encourage these transitions.

## Income Distribution and Individual Earnings Mobility

Most research on income inequality focuses on summaries of overall earnings at particular points in time ("cross-sectional" analysis); changes in these patterns over time tell us about the distribution of income throughout the economy. Due to data constraints, much less information is available on long-term patterns of earnings and employment for individual workers ("longitudinal" analysis). Cross-sectional analysis of the income distribution can inform us about how unequal earnings are throughout the economy, but it tells us little about how individuals have fared over time.

We examine individual earnings mobility by analyzing payroll data for 187,000 California workers followed over 12 years (a longitudinal sample). We compare the data to a larger cross-sectional sample representing the entire California workforce in each year. **Figure 1** displays median inflation-adjusted ("real") annual earnings for both longitudinal and cross-sectional samples in California. Similar to widely reported results on trends in income distribution, median annual earnings declined by 7 percent in real terms for the California workforce over the entire period. From a cross-sectional perspective, we would therefore conclude that the average worker has had a decline in earnings. However, for the specific individuals whose wages were tracked

Figure 1
Median Annual Earnings 1988—2000 (2000 $)




[1] For each of four years (1988, 1992, 1996, 2000) a random 5 percent sample of quarterly earnings records was drawn from payroll data collected by the California Employment Development Department. Workers were matched across years to produce longitudinal samples of individuals. Figure 1 uses a sample composed of workers with earnings in all four quarters of all four years evaluated; later figures and tables use a larger sample that is restricted to those workers with earnings in all four quarters of both 1988 and 2000. For more information, see "Data and Methods".

over the entire 12 years, median earnings actually rose by 24 percent even after correcting for inflation. These strong wage gains reflect the labor force attachment of this group of workers (workers who have been in the labor force over the 12 year period), as well as the natural tendency for an individual's earnings to increase with age and experience. In cross-sectional data the older, higher-paid workers gradually leave the workforce and are replaced by new entrants, who are generally paid less.

However, just as it is important not to be too pessimistic when looking at cross-sectional trends, we must temper our optimism when examining longitudinal trends . First, some of the workers in our sample were working part-time in 1988 and were working full-time in 2000 – for them we are measuring a very large earnings gain but not necessarily a wage gain. Because our entire sample ages 12 years, there are fewer young workers in 2000 (who are most likely to work part-time). Second, when matching wage records between 1988 and 2000, only 42 percent of the original workers were employed in California in all four quarters of 2000. Most of the attrition can be explained by the strict criteria we used for inclusion in the sample. Based on analysis of Census data for California workers, we would expect to lose at least 19 percent of our starting group to retirement, 22 percent to migration out of the state, 2 percent from movement to industry sectors not covered by these records, and approximately 1 percent to an extended spell of unemployment. Thus 44 percent of our sample is expected to be missing for reasons that are unlikely to bias our results. The other 14 percent who are missing are out of the workforce for at least one quarter in 2000 for one or more of the following reasons: intermittent jobs; a temporary leave due to illness, pregnancy, or other disability; or their status as "discouraged workers" (workers who are not technically "unemployed" because they are not looking for work). The omission of some of these workers will underestimate the share of workers with earnings losses over this period.

Nonetheless, the outcome provided by the longitudinal data shows substantial earnings mobility and suggests that the cross-sectional data might not be representative of individuals' experiences, demonstrating the importance of using longitudinal data to understand workforce issues. Before discussing mobility patterns in our California sample, we review what has been learned from the national longitudinal studies of earnings mobility.

## Findings From National Longitudinal Studies of Earnings Mobility

Research on earnings mobility using national data suggests that long-term mobility tends to be quite high. Results have varied widely depending on the definitions used for mobility and on differences in sample design. For example, some studies focus on "absolute" mobility—the change in real income or earnings power over time in relation to a fixed standard, such as inflation or the earnings

distribution in the workforce as a whole. Absolute mobility measures are useful in examining how much the actual earnings power of individual workers improves over time. The results from these studies indicate that the vast majority of Americans enjoy significant real increases in earnings and income over time. For example, one study indicated that only 5 percent of individuals in the bottom fifth of all workers in 1975 remained in the same inflation-adjusted quintile[2] by 1991 (Cox and Alm 1995). Although this is likely to be an underestimate, an adjusted percentage would still be a low number.

The majority of mobility studies focus on "relative" mobility, usually defined as the shift in relative earnings among a fixed group of individual workers over time. This approach has the advantage of determining how individuals and groups fare in relation to one another, allowing for the wage increases that tend to occur over time due to factors such as increased experience and overall economic growth. Results indicate that relative income mobility is also quite substantial on average although significantly less than absolute mobility. Nationally, from 25 percent to 40 percent of individuals moved into a different earnings quintile after a year. Income mobility after five years has been estimated at about 45 percent, and at about 60 percent over nine- and seventeen-year periods. However, several studies also indicate that relative mobility rates are lower among the best and worst paid workers (Sawhill and McMurrer 1996; Daly and Duncan 1997).

Past studies have shown that the average working career lasts about 40 years, spanning an average of ten job changes. Evidence from male high-school graduates shows that the first ten years in the workforce account for 66 percent of lifetime wage growth, and the same fraction of lifetime job changes (Topel and Ward 1988). Income mobility declines with age, experience, and with current tenure (length of time in a given job). Wages increase with job changes, but these gains decline with age. Certain groups including women, blacks, and particularly those with less education, show less upward mobility (Carrington and Fallick 2001; Smith and Vavrichek 1992; Gittleman and Joyce 1995). A number of studies have demonstrated fairly steady mobility rates across quintiles during recent decades, despite the widening of the overall wage distribution during the same period (Sawhill and McMurrer 1996; Daly and Duncan 1997).

Information on mobility trends by industry and occupation may help policymakers determine if certain career paths enable workers to transition more effectively to higher-paid employment over time. Unfortunately, research on this topic is scant. One study found that increased service sector employment among younger workers contributed to a rise in long-term job instability and earnings inequality for this group, because some types of service sector employment are less stable on average (Bernhardt et al. 2001).

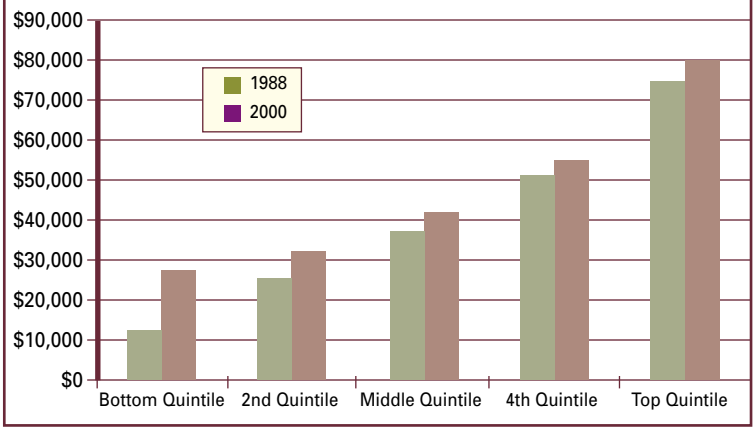
[2] "Quintiles" break the distribution of all wages, income, or other characteristic being studied into five equal parts.

## Earnings Mobility in California

The national data is useful for providing an overview of workforce dynamics; however, before drawing conclusions about income mobility trends in California from national studies, it is important to study California workers directly. California's workforce is distinct in a number of important ways, including greater levels of residential mobility, much larger shares of (primarily low-skill) immigrant workers, and a younger workforce. As noted previously, these differences help account for the greater wage inequality in the state during recent decades, and they may also influence income mobility patterns. **Figure 1** portrayed the earnings trend for the entire workforce and a longitudinal sample with a single measure: median annual earnings. Not all workers received the median earnings, however, and not everyone had the same rise in earnings — over 30% of all workers experienced a decline in earnings, and a third of the workers had gains greater than 50%. This distribution is strikingly similar across industries. To determine how workers fared according to their initial earnings, **Figure 2** shows the change in real median earnings from 1988 to 2000 by each worker's position in the 1988 earnings distribution. It reveals that the lowest-paid workers in 1988 enjoyed the largest overall earnings increase by 2000; median annual earnings more than doubled for this group. The median earnings of workers in the second quintile increased by 29 percent. These findings support the general conclusion that the majority of low-paid workers are able to transition to higher-paying employment over time.[3] Earnings rose across the income distribution but the higher a worker's earnings were in 1988, the lower the rate of earnings growth they were likely to experience.

To evaluate earnings growth across the earnings distribution, **Table 1** shows both absolute and relative measures of mobility by quintile from 1988 to 2000. In both cases, mobility is measured for the longitudinal sample of workers employed in both years. However, the quintile breakpoints against which mobility is gauged vary depending on whether an absolute measure or relative measure of mobility is used. The comparison groups for the two studies differ. The first measure,

Figure 2 Median Annual Earnings by Initial Earnings Quintile (2000 $)




[3] Younger workers, and part-timers, are likely to be over-represented in the bottom quintile in 1988; the rate of earnings growth for older workers in this quintile is undoubtedly much lower.

Table 1

Absolute and Relative Mobility for Sample of California Workers, 1988-2000

| | Earnings Position in 2000 | | | | | |
|---|---|---|---|---|---|---|
| | Same Quintile | | Moved Up | | Moved Down | |
| Earnings Position in 1988 | In relation to all workers ("absolute") | Within-sample ("relative") | In relation to all workers ("absolute") | Within-sample ("relative") | In relation to all workers ("absolute") | Within-sample ("relative") |
| Bottom Quintile | 20% | 46% | 80% | 54% | -- | -- |
| 2nd Quintile | 25% | 34% | 62% | 36% | 10% | 29% |
| Middle Quintile | 31% | 31% | 53% | 29% | 16% | 40% |
| 4th Quintile | 37% | 36% | 42% | 21% | 21% | 44% |
| Top Quintile | 78% | 58% | -- | -- | 22% | 42% |

** Note: Cross-sectional samples are based on those individuals working all four quarters of each year.*

"absolute" mobility, assesses the mobility of our sample of California workers compared to the entire California workforce in 1988, 1992, 1996, and 2000. (This method helps to determine if those workers who started off with low wages relative to all workers still had low wages relative to others after 12 years.) Mobility according to this measure is very high, especially for workers who started in the bottom earnings quintile in 1988. Over 80 percent of these workers were able to transition to a higher earnings quintile over the 12-year period. Workers in the top quintile in 1988 were successful in maintaining their position over time; 78 percent were still in the top quintile 12 years later.

The second method employed in Table 1 measures relative mobility, or the shifts in the relative positions of earnings among the same group of workers over time. The natural tendency of earnings to increase due to age, experience, or economic growth is not a factor in this case. This method determines whether the earnings distribution among a cohort of workers is static over time. (That is, it determines how the workers in the sample cohort fared relative to other workers in the same cohort.) By this measure, mobility is reduced but still fairly common; workers in the bottom quintile in 1988 had a slightly better than 50-50 chance of moving to a higher quintile by 2000. These findings are consistent with the national research cited earlier: overall, about 60 percent of workers transitioned to a different earnings quintile after 12 years.[4]

## Mobility Across Industries in California

An important question in the context of workforce development is how these mobility patterns might relate to employment shifts across industries. In 1988, the workers in the bottom earnings quintile of the sample were highly concentrated in a few industries; almost two-thirds were employed in retail trade and service jobs. **Table 2** shows the distribution of sample workers by industry according to their position in the overall 1988 earnings quintiles.[5] A few industries—agriculture, retail trade, and business services (which includes temporary help agencies)—employed disproportionately large shares of low-paid workers. Nearly half of the workers in agriculture[6] had earnings that placed them in the bottom quintile, and retail trade workers were almost as poorly paid. Most other industries had earnings distribu-

[4] Workers in the bottom quintile are much more likely to be under 18, students, and/or part-time workers. These characteristics increase the odds that these workers would have had a large increase in earnings due to an increase in hours worked, as well as the sharp gain in earnings in the first few years in the workforce.
[5] The industry breakdowns used in this analysis focus on those industries in which low-skill workers are most likely to be employed, according to the March 2000 Current Population Survey for California.
[6] Due to the seasonal nature of many jobs in agriculture, as well as the presence of large numbers of undocumented workers, the payroll sample for agriculture is not representative of overall employment in this sector.

tions in 1988 that were close to the overall earnings distribution, except that durable goods manufacturing and transportation/utilities had noticeably fewer workers who were paid at the bottom end.

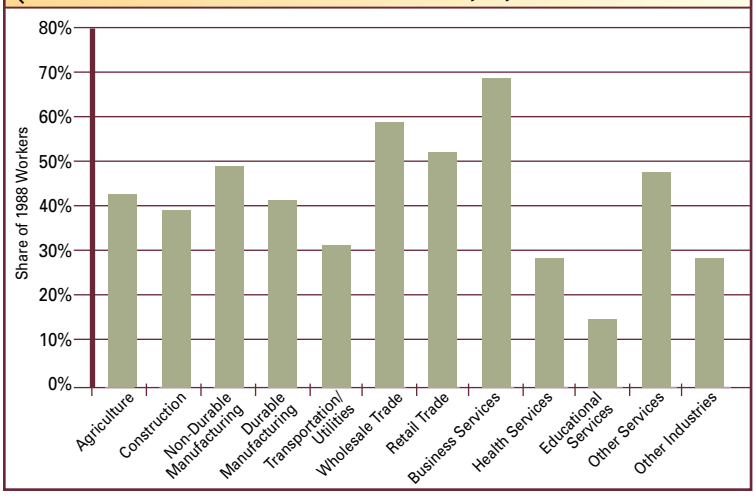
Over the 12-year period, many workers switched industries at least once – the share of workers who were employed in a different industry in 2000 than they were in 1988 ranged from 15 percent in education to 69 percent in business services (see **Figure 3**).[7] Industry switching was least likely in those industries with higher than average educational attainment or professional credentials, or both, and somewhat more likely in those industries with large shares of younger workers.

Table 2
Distribution of Workers in Each Industry by Quintile in 1988

| 1988 Industry | 1988 Earnings Distribution (% of each industry's workers) | | | | |
|---|---|---|---|---|---|
| | Bottom Quintile | 2nd Quintile | Middle Quintile | 4th Quintile | Top Quintile |
| Agriculture | 46 | 29 | 13 | 7 | 6 |
| Construction | 14 | 19 | 20 | 23 | 25 |
| Non-Durable Manufacturing | 17 | 22 | 23 | 22 | 17 |
| Durable Manufacturing | 9 | 18 | 22 | 25 | 26 |
| Transportation/Utilities | 8 | 12 | 20 | 31 | 28 |
| Wholesale Trade | 16 | 23 | 23 | 20 | 19 |
| Retail Trade | 42 | 23 | 15 | 13 | 7 |
| Business Services | 28 | 23 | 19 | 14 | 17 |
| Health Services | 18 | 26 | 22 | 18 | 16 |
| Education Services | 21 | 15 | 19 | 23 | 22 |
| Other Services | 25 | 21 | 19 | 16 | 18 |
| Other Industries | 10 | 19 | 22 | 21 | 29 |

**Figure 4** compares the industry distribution in 2000 for those sample workers who left their original industry to the distribution of all new jobs created throughout the state since 1988.[8] If workers who left their industry chose new industries randomly, we would expect that they should reflect the pattern of where job creation took place. However, workers in our longitudinal sample were much less likely to take jobs in construction, retail trade, and services (business, health, education, and "other") than employment growth would suggest. At the same time, they were much more likely to take jobs in manufacturing and wholesale trade – which is particularly surprising given that durable goods manufacturing was the only industry in which employment shrank over this period. These patterns were quite similar when we examined

Figure 3
Share of Workers Who Left Their Initial Industry by 2000




[7] This high turnover rate is due to the inclusion of temporary help agencies in the business services category. In the rest of business services industries, the share of workers switching industries was 54 percent.
[8] Employment figures shown for "all new jobs" in Figure 4 are taken from official state employment estimates, from Employment by Industry data collected by the California Employment Development Department.

Figure 4

Distribution of Employment Changes
1988—2000


only those workers who were in the bottom half of the 1988 earnings distribution.

What accounts for these findings? Workers switching industries are searching for a better match, and young workers in particular are seeking jobs that provide better career and earnings potential. **Table 3** shows that workers who were employed in the same industry in 2000 as in 1988 had higher initial earnings than those who switched industries. However, those who switched industries enjoyed substantially higher earnings growth over the next 12 years. Earnings growth was higher for those leaving the lowest-paying industries, such as retail trade and agriculture. Only in durable goods manufacturing (and "other industries") did workers leaving the industry receive smaller wage gains than those who stayed. Across almost all industry-to-industry switches, the percentage increase in median earnings was much greater for workers who started out in the bottom half of the distribution than for those in the top half.

The pattern of gains suggests that workers changed industries in pursuit of higher-paying employment. These findings are consistent with research cited earlier showing that mobility between industries is higher among younger workers and those with less education. That is, younger workers are more likely to change industries and occupations to improve their situation and are most likely to experience large gains in earnings. Although the payroll data do not yet permit an

Table 3

Real Earnings Growth for Industry-Stayers and Industry-Leavers from 1988 to 2000

| | Workers in the Same Industry in 1988 and 2000 | | Workers Who Changed Industry from 1988 to 2000 | |
|---|---|---|---|---|
| 1988 Industry | Median Earnings in 1988 (2000$) | Median Change by 2000 | Median Earnings in 1988 (2000$) | Median Change by 2000 |
| Agriculture | $22,161 | 5% | $19,015 | 46% |
| Construction | $47,972 | 11% | $33,487 | 20% |
| Non-Durable Manufacturing | $40,599 | 9% | $32,920 | 14% |
| Durable Manufacturing | $47,620 | 15% | $38,983 | 12% |
| Transportation/ Utilities | $51,488 | 13% | $40,038 | 16% |
| Wholesale Trade | $43,413 | 14% | $32,053 | 25% |
| Retail Trade | $29,309 | 10% | $18,368 | 83% |
| Business Services | $37,503 | 27% | $28,311 | 40% |
| Health Services | $36,163 | 14% | $27,572 | 29% |
| Education Services | $42,401 | 22% | $27,462 | 44% |
| Other Services | $37,990 | 19% | $28,152 | 46% |
| Other Industries | $47,131 | 22% | $33,954 | 15% |

analysis controlling for worker attributes such as age and education, the difference between earnings gains enjoyed by those who left an industry to those who stayed in an industry is highly correlated with the share of its workers under 25 years of age. However, it appears that much of the relationship between earnings gains and youth is due to employment patterns in only one industry, retail trade. When we compare the share of workers under 25 (in 1988) to the median earning gains by industry, retail trade looks very different from all other industries.[9] Earnings gains in other industries do not seem to be strongly driven by how young an industry's workforce is, so other factors such as wage prospects, intensity of work effort, and skill attainment must be involved.

## Conclusion

The picture of stagnant real wage gains that comes from cross-sectional snapshots of the workforce is best complemented by longitudinal analyses that follow the earnings history of individual workers to assess their earnings and employment mobility. Our analysis of mobility trends for a large random sample of California workers largely concurs with research done at the national level. Absolute earnings mobility — measured against wages across the rest of the economy — during the past decade was quite high. Mobility relative to the other workers in the same 1988 sample was lower than absolute mobility but was still significant. Gains in earnings were greatest for the lowest-paid workers and fell sharply as the level of initial earnings increased. Although some of these increases reflect the tendency for younger workers to experience rapid earnings gains as they switch among firms and industries, differential gains between those who switch industries and those who remain suggest that other factors are also at work.

Mobility patterns across industries generally reflect an effort by workers to gain higher-paying employment, and differ in several notable ways from general employment trends. Workers in this sample who switched industries were much more likely to take jobs in manufacturing and wholesale trade — and much less likely to move to construction, retail trade, and services — than one would expect from job growth patterns in the overall economy. In almost every case, workers who switched industries had much larger wage gains than those who remained in their original industry, even though their initial earnings upon switching industries were lower.

Future analysis will focus on the patterns of job movement and earnings changes across industries, particularly for those workers in the bottom half of the earnings distribution. By understanding which career paths between industries are most heavily traveled, and which are the most financially rewarding for low-wage workers, we can improve the allocation of resources for workforce development in California.

[9] These calculations are from the California sample of the 1988 Current Population Survey. A subsequent article will focus on industry change and wage dynamics once individual age data become available for the payroll data.

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### Data and Methods

**Analysis in this article is based on data from the Base Wage Database (BWDB) and ES-202 File maintained by the California Employment Development Department (EDD). These data are reported on a quarterly basis by over 98 percent of California employers for various state administrative purposes. A random five-percent sample of quarterly earnings records was drawn from the BWDB for each of four years (1988, 1992, 1996, and 2000) based on the last 2 digits of the employee's social security number. The samples were then restricted for each year to individuals with positive earnings in all four quarters.**

**Annual earnings were summed across all employers for each individual in the samples and adjusted for inflation using the quarterly Employment Cost Index for private industry in the western region. A comparison of the matched samples with figures from the Current Employment Statistics survey indicates that the samples are fairly representative of employment by industry.**

**For "absolute" mobility, quintile breaks were determined by the earnings distribution for the entire California workforce in each year from the March Current Population Survey data (for workers who worked more than 35 weeks in the year). For "relative" mobility, quintile breaks were based on those sample workers with earnings in all four quarters of 1988 and 2000.**

**For further information on the data and methods employed, see Wage Mobility in California: An Analysis of Annual Earnings, 1988-2000, by Colleen Moore, Akhtar Khan, Michael Dardia and Elisa Barbour, California Employment Development Department, 2002. www.calmis.ca.gov/specialreports/Wage-Mobility-2002.pdf**

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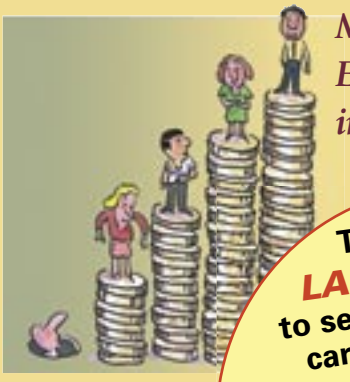

*Moving Up? Earnings Mobility in California*

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