

Dissertation Awards

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Econometric Studies of Long-Run Earnings  
Inequality: Dissertation Summary

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# Econometric Studies of Long-Run Earnings Inequality

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My dissertation comprises three econometric studies of long-run earnings inequality. Two studies are empirical analyses of U.S. data, one contributing to the well-established literature on male earnings inequality and the other extending the analysis to the understudied level of families. These empirical chapters focus on documenting trends in long-run earnings inequality and evaluating the potential causes. The third study develops an econometric technique that is necessary to complete the empirical analyses, specifically, how to use a Generalized Method of Moments estimator with an incomplete data set. Because this estimator is becoming increasingly popular and because researchers often face the prospect of using incomplete data, the study will be useful to the applied researcher.

## **EARNINGS INSTABILITY AND EARNINGS INEQUALITY IN THE UNITED STATES, 1967-91**

In this chapter, I examine the relationship among annual earnings inequality, lifetime earnings inequality, and earnings instability. Many researchers have found that annual earnings inequality in the United States increased substantially during the past twenty years. Recently, economists have pointed out that this increase could have come from either of two sources: lifetime earnings could have become more unequal among individuals, or the receipt of lifetime earnings could have become more erratic for each individual. Implicitly, researchers assumed the former was true. Distinguishing between the two possibilities will be important both for evaluating the hypotheses that have been put forward to explain increasing annual earnings inequality and for informing the welfare evaluation of increasing annual earnings inequality.

Using the Panel Study of Income Dynamics (PSID), I first examine these issues by comparing the distribution of long-run earnings for two time periods. I find that long-run earnings inequality has increased substantially. I then examine the same issues with a parametric approach that is common in the earnings dynamics literature. In particular, I specify a model that

generates lifecycle earnings and then derive the implications of the model to lifetime earnings inequality and earnings instability. I estimate the parameters of the model using a Generalized Method of Moments (GMM) framework. The increased complexity of the parametric approach is useful because I am able to examine the timing of changes. I find that lifetime inequality increased almost exclusively during the 1980s and that earnings instability increased during the 1970s. These results contribute to the existing literature by encompassing most previous findings and importantly demonstrating the inconsistency of other findings.

After establishing the changes in earnings inequality, I turn to explore what could have been the underlying causes. The increase in lifetime inequality is associated with an increase in persistent wage inequality rather than an increase in persistent hours inequality. Furthermore, about one third of the increase in the persistent component is due to increasing returns to education. These findings suggest that we should look to demand shifts that bid up the relative wages of highly paid individuals to explain the increase of annual earnings inequality in the 1980s. Explanations that are consistent with these findings include skill-biased technological change and changes in international trade. Finally, I find that earnings instability increased during the 1970s because wages and hours became more unstable, and earnings instability is strongly countercyclical because hours inequality is strongly countercyclical. Explanations that are consistent with these findings include changes in job stability and unionization.

## **GENERALIZED METHOD OF MOMENTS WITH INCOMPLETE DATA**

This chapter is an econometric theory study that develops an estimation technique used in the previous

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chapter. Much of the theoretical work on GMM estimation presumes the availability of a data set having only complete observations ("complete observations" are those that have values available for all variables). Applied researchers often face the prospect of using a data set having incomplete observations ("missing data"). Incomplete observations might arise because of item non-response in survey data or sample attrition in panel data. Previously, many researchers have simply discarded the incomplete observations, so that the usual GMM formulas could be applied to the remaining data set. Such an approach can lead to large efficiency losses, particularly when many observations must be discarded. Other researchers confronted with incomplete data sets have devised procedures that exploit the incomplete observations. However, their procedures have not been sufficiently general to be applicable to a wide range of incomplete data problems or they do not have desirable small sample properties.

In this chapter, I develop a GMM estimator that is applicable to a broad class of incomplete data problems and that includes the specific applications previously developed. The estimator relies on an "ignorability" assumption and makes explicit the conditions under which the incomplete data problem is ignorable; a similar assumption is needed for the previous strategies used for GMM with incomplete data. With this assumption, moment functions can be constructed that satisfy the usual GMM assumptions. Thus, I show that the incomplete data estimator is consistent for the population parameter value and asymptotically normally distributed by relying on the usual theorems. A consistent estimator for standard errors is readily available. Because the estimator is relatively easy to implement, it should be useful to applied researchers.

### **THE LONG-RUN EARNINGS INEQUALITY OF FAMILIES**

Although there exists a growing body of research that examines whether long-run inequality is changing for individuals, very little research has examined changes at the family level. Extending such an analysis to families is interesting because many important consumption decisions are made at the family level and because there have been many significant labor market and demographic changes during the last three decades. For example, male long-run earnings inequality increased, but female long-run earnings inequality

declined. In addition, the labor supply of wives increased substantially, but the increase has been concentrated among wives of high-wage, high-labor-supply males. Finally, childbearing among married couples has declined, childbearing among single mothers has increased, and the divorce rate has increased. Each of these changes could have important implications concerning the pool of married couples and how labor supply decisions are made within these couples, which will in turn affect the distribution of family earnings.

Also using the PSID, I first directly examine changes in the long-run inequality of family earnings. I find that long-run family inequality has increased and that most of the increase is due to the increasing inequality of husbands' earnings; the earnings of wives were actually equalizing. Another important factor contributing to the increase in long-run family inequality was an increase in the correlation of spousal earnings; this increase was particularly strong for young couples. Overall, my results indicate that the increasing husbands' inequality was responsible for about 75 percent of the gross increase in family inequality and the increasing correlation coefficient was responsible for about 25 percent of the gross increase; the decreasing wives' inequality served to offset about 30 percent of the gross increase.

Although these changes in family earnings inequality will represent important changes in the labor market and are important to policymakers, focusing on earnings overlooks the distinction of whether there were accompanying changes in the distribution of wages and/or hours. Much of the literature on family earnings inequality fails to make this distinction. I next examine whether the changes in the earnings distribution were due to changes in the distribution of hours or the distribution of wages. My findings indicate that most of the change in the husbands' earnings inequality was due to changes in the distribution of wages and that the wives' earnings inequality declined despite an increase in wage inequality. However, I find that much of the change in the correlation of spousal earnings was due to the wives of high-wage husbands dramatically increasing their labor supply. Overall, changes in the distribution of wages were much more important than changes in the distribution of hours for the increase in family earnings inequality.