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Estimates of a labour supply function using alternative measures of hours of work

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Abstract

Depending on data source, estimates of hours of work give widely different results both as to level and change. In this paper three alternative measures of hours worked are used to estimate a simple labour supply function to investigate if the estimated wage rate and income effects are data dependent as well. The measures used include those from time-use surveys and those from regular surveys. The latter are based on the responses to a question about normal weekly hours of market work. The results suggest that the estimates of the wage rate effects become much smaller when measures of normal hours are used compared to data collected for a well-defined time period close to the date of interview, such as time-use data. The income effects appear less sensitive to the choice of data.

JEL classification: J22; C81; C39

Keywords: Time-use; Measurement errors; Labour supply; Work hours; Supply elasticities

1. Introduction

Time-use studies have been motivated by their ability to give data for analysis and valuation of household work, but also because they give information about leisure (the ultimate utility yielding activities?), commuting and travel behaviour, etc. In addition most time-use surveys have data on hours of work. One could argue that time-use studies, taking various deviations from normal work hours into account, give better data on hours actually worked as contrasted with the number of contracted hours. Time-use data also have the potential to improve the analysis of labour supply by explicitly including competing activities in the home, and making feasible studies of gender differences in

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market and non-market work, and thus also improving our understanding of female labour supply. However, most labour supply studies have used more conventional data sources such as labour force surveys. [1]

Simple comparisons of levels and trends in hours worked demonstrate that different measures and data sources tell different stories (see Klevmarken, 1999, and below). No previous study has, however, used a common data set to evaluate how the choice of measure will influence estimates of wage rate elasticities and income elasticities in labour supply functions. This is the topic of this paper. These elasticities are of key importance in economic policy, and they have, for instance, guided politicians in designing new tax systems.

Section 2 below gives a survey of the few comparisons of time-use estimates and more conventional survey estimates that can be found in the literature and also presents some stylized facts about average weekly hours of work in Sweden obtained from different sources. There follows in Section 3 a more detailed account for the data used in this study, in Section 4 a specification of the economic and econometric models used, and in Section 5 the empirical results. A few concluding remarks end the paper.

2. Measures of market time

Conventional measures of market time based on survey questions about normal weekly hours tend to give empirical frequency distributions which have pronounced peaks at full-time hours for men and at half-time and full-time hours for women. The observed high concentration at peak hours is probably exaggerated. There are good reasons to believe that many respondents report their contracted number of hours disregarding or forgetting any non-work episodes at work and any irregular overtime work. Even if asked explicitly about secondary work, they might find it difficult to report hours retrospectively, in particular if the respondent only works intermittently in this job. In general, those who have irregular work hours will find it difficult to respond to questions about normal hours. Time-use diaries are, however, normally collected such that meals, coffee breaks and other work breaks, over-time and time on secondary jobs are carefully recorded. In particular, if a time diary is given in a "yesterday interview" and not in a leave-behind diary, its sequential nature makes it difficult to falsify. [2] Time-use surveys also have the advantage of giving data on travel to and from work. Sometimes it is desirable to add commuting time to pure market work time.

Fig. 1 (borrowed from Klevmarken, 1999) illustrates the differences between data based on questions about current hours per week including overtime and secondary jobs (survey data) and time-use data from the same samples of people. Data were obtained from the Swedish Household Panel Surveys HUS (Klevmarken and Olovsson, 1993;

[1] One recent exception is Schwierz (2003).

[2] For this reason one might also argue that work time from a time-use diary will not only include time in the regular "white" market but also in the "black" market.