N. Anders Klevmarken

Household Market and Nonmarket Activities. The First Year of a Swedish Panel Study.

MEMORANDUM NO 88

HOUSEHOLD MARKET AND NONMARKET ACTIVITIES.

THE FIRST YEAR OF A SWEDISH PANEL STUDY.

Paper presented at the Annual Meeting
with the American Statistical Associa-
tion in Philadelphia 1984.

by

N. Anders Klevmarken

the same dwelling and regularly have meals together belong to the same household. Family members who temporarily live somewhere else are also included. Since each household will become interviewed three times during 1984 we will experience household splits and also new members joining and old household. The rules adopted for these situations were to follow all individuals selected for an interview in the first contact with the household unless they moved abroad or into an institution. New household members are not interviewed.

Since there is no sampling frame of households or dwellings but well a register of all residents of Sweden, each household was identified through a randomly selected individual. The household to which this individual belonged was included in our sample. It was, however not feasible to interview all household members. Instead we decided on a scheme where the head of the household and his spouse were always interviewed.

If the randomly selected person was neither of these two, this third person was interviewed in addition. In this way we could ascertain some information about other adults in the household and also get a "clean" random sample of designated persons. Individuals below 18 years of age and above 74 i.e. born before 1910 or after 1966 were excluded from the sampling frame. The randomly selected persons were thus all in the age bracket 18-74, however other household members need not be. Children were not interviewed.

Each randomly selected person received an introductory letter, which was followed by a telephone contact. In this first contact the interviewer informed about the survey, asked for the name and age of each adult household member and their family relations. Finally, the interviewer also booked a time for a personal interview with each respondent. On the basis of the information obtained in this short interview one household member was designated household head. In a household with both spouses living together the husband was called head. Much of the information collected concern economic facts about the household which the husband on the average is expected to know more about than his wife. In households with two or more adult household members but without a married or cohabiting couple the person with the highest income was the designated head. Who is called head was never communicated to the respondents, but only used to decide who would get questions about housing and other issues not particular to any single household member.

The second step in the field work was a personal interview with each respondent, i.e. a maximum of three per household.

This interview was planned for an average interviewing time of 60 minutes for the head and 45 minutes for other adults. The questionnaire included the following sections:
1. Family composition
2. Social background
3. Schooling
4. Marital status
5. Childcare
6. Health status
7. Labor market experience
8. Employment
9. Job search of unemployed
10. Not in the labor force
11. Housing and housing costs
12. Tenants
13. Real estate ownship
14. Cars
15. Boats
16. Other durable consumer goods
17. Incomes and assets.

The information collected in this personal interview included economic details about the household like housing expenditures, mortages and interest payments, and various income items and assets which most people would not be able to give without consulting note, bills and taxforms. Some respondents might also hesitate to reveal these data because of their sensitivity. For these reasons the respondents were asked to give this information in wrighting on a questionnaire which they put into an envelope and sealed before it was handed over to the interviewer. The interviewers were instructed to interview other household members while waiting for the questionnaire. In this way no sensitive information was revealed to the interviewer.

We had originally planned to obtain most of the information about incomes, transfer payments and personal wealth from government data registers via Statistics Sweden. The government gave us a permit to copy data from the tax assessment form of each respondent. However, to get access to these files we needed the social security number of each respondent. The Datainspection Board also required that we obtain the consent of each respondent to use register data. In a pretest it soon became clear that it was very difficult to get the social security numbers. In Sweden the most commonly used person-id in public and private data files is the social security number, and the public debate about computers and invation of personal privacy made respondents very reluctant to reveal their social security number. To investigate this further some 500 randomly selected respondents (not included in our HUS-sample) were asked if they preferred to give their social security number or would rather give the information we asked for directly in a questionnaire. About 27 per cent answered that they were willing to reveal

their social security number while 65 per cent preferred to give it directly, 5 per cent spontaneously refused to do either while 3 per cent did not know. To avoid a high nonresponse we thus had to change our plans and it was decided that each respondent would have a choice, either to answer questions about income, assets etc. directly in writing, without revealing it to the interviewer, or to give the social security number and not answer the income questions etc.

A disadvantage with this scheme is that the data obtained from the questionnaires might not be fully comparable to the taxfile data. To minimize this problem direct reference was made in the questionnaire to the items of the tax assessment. Most of the field work was also done immediately after the tax assessment forms were submitted to the authorities. In our judgement this problem of comparability is minor compared to the nonresponse problem.

The possibility to compare the income and wealth estimates from register and interview data with the corresponding population totals can be used for nonresponse compensation and model validation, which to some extent makes the nonresponse problem less severe.

In addition to the personal interview, the respondents were contacted twice for two telephone interviews about their time-use and consumption expenditures. The method used was an adaptation of the yesterday question technique previously used at the ISR, the University of Michigan. It is perhaps best described as an one day retrospective interviewer administered diary. The basic idea is that the interviewer goes through the past 24 hours with the respondent and asks him or her to recall for each activity, when it started and ended and if the respondent made any expenditures at the same time. In addition to their time-use and expenditures the respondents were in each interview asked about their labor market status. In the last interview we also asked about purchases of durables since the beginning of the year, and how frequently they had used certain public services.

For each household two days were randomly selected from the 365 days following the 15th of February 1984. Ideally the time-use estimates should cover a calendar year to match income and wealth data, but all Swedes are busy with their tax assessment forms in the end of January and beginning of February and for this reason we wished to minimize our field work during this period and decided to start collecting time-use data when the tax assessment forms had been submitted by February 15.

A pilot study showed that designated dates for interviews caused a relatively high nonresponse because the respondents were not always available for an interview on the selected days. Thus, for each designated date there were also two alternative dates which could be used if a contact could not be reached on the first day. These alternative dates were selected on the same week day[1] one and two weeks respectively after the designated date.

The interviewers were told to contact the respondents on the day following the designated day. If they could not get an interview they should try the next day and the next day again. If they still were unsuccessful they should repeat the same scheme for the first and second alternative day. They were not allowed to conduct interviews with a longer memory time span than for three days.

The personal interview should in general preceed the two telephone interviews. This plan was chosen because it is easier to explain a survey in person than by telephone and in this way the interviewer would not be a complete stranger to the respondents in the time-use interviews. For practical reasons we were, however, not always able to follow this plan. Some telephone interviews had to be made from the telephone unit of the survey institute SIFO in Stockholm. A few were also made before the personal interviews.

3. Pretest experiences.

In April and May of 1982 we made a rather extensive pilot study based on a random sample of 315 households from Western Sweden. There were five main purposes of this study, namely, to
a) compare different methods of collect-expenditure and time-use data,
b) get estimates of response rates and an idea of what might be important for the response,
c) test the questionnaires,
d) develop coding and editing procedures,
e) train the project staff in the entire survey operation.

The results from this pilot study have been reported in Klevmarken (1982, 1983). Here follows only a very brief summary.

There were altogether three contacts with each household. The first one was a short contact interview by telephone with a randomly selected person to establish the household composition and to ask a few demographic questions. Then two interviews followed with each respondent in each household. The same rules for designated respondents were used as explained above. One interview was personal and one was made by telephone. In addition, leave behind expenditure diaries were administered to each respondent and leave behind time-use diaries to a few respondents.

The response rate in the major contacts was as low as 50-55 per cent, which

is much lower than we would find accept-
able in a main study. In short, we as-
cribe this result at least partly to the
ambitions design, the short timespan dur-
ing which the field work had to be done
and the budget constraints, which did not
permit paying the respondents nor per-
mitted expensive nonresponse follow ups.
Our conclusion was that improvements in
the design and use of response stimulat-
ing measures should make it possible to
increase the response rate.

Our nonresponse analysis gave the
following additional results:

o   The initial nonresponse was rather
     high. This was probably the combined
     effect of the following features:
     (i)   The survey was introduced by
            telephone rather than in a
            personal visit.
     (ii)   In this telephone interview
            we asked for family composi-
            tion and previous marriages
            and living arrangements which
            some respondents might have
            found invasive.
     (iii) When the interviewer concluded
            the interview by explaining the
            design of the study many res-
            pondents found the work load
            too high. This shows that the
            first interview should be in
            person and the telephone con-
            tact preceeding it should not
            be used to ask questions, only
            to make arrangements for the
            first interview.

o   A major drop in the response rate
     also occurred immediately after the
     contact interview, i.e. many res-
     pondents refused to keep an expendi-
     ture diary. Leave behind diaries tend
     to increase nonresponse. In this case
     a better result might have been ob-
     tained if the relative simplicity of
     the diary had been demonstrated by
     the interviewer in a personal visit.
     In the pilot study the diary was ex-
     plained in the initial telephone con-
     tact and then mailed to the respond-
     ents.

o   Old respondents showed a relatively
     high nonresponse in those parts of
     the survey which involved relatively
     more work, i.e. diaries and long in-
     terviews about time-use. For this
     reason we decided not to include very
     old persons in the main survey.

o   Nonresponse was relatively high in
     urban areas.

o   There was no indication of a strong
     relationship between nonresponse and
     income or socioeconomic group.

o   Refusals made up a very large share
     of the nonresponse. This indicated
     that we would have to do a much bet-
     ter job in explaining the importance
     of the survey and also provide some
     personal stimulus to obtain a better
     cooperation.

Results from tests of alternative
data collection methods can be summarized
in the following way.

For almost all commodities the yes-
terday question technique gave smaller
estimates of average expenditures than
leave behind diaries. Since we have no
reason to expect that leave behind dia-
ries would give overestimates this result
shows that yesterday questions in the
form used in the pilot study tend to un-
derestimate household expenditures.
However, in the main study we have im-
proved the methodology by deleting a
few supplementary questions for each ac-
tivity, by adding after the time-use
sequence a few questions about expendi-
tures previously not mentioned and by
giving stricter rules for how the ques-
tions should be asked. We thus hope that
the underreporting problem is reduced.

Even if the yesterday questions will
not give systematic errors, expenditures
recorded only for a few days for each
respondent give unreliable estimates. If
the shopping pattern during the week is
approximately the same for all commodi-
ties then it might be possible to adjust
the sampling design to this pattern and
in this way increase the efficiency some-
what. It is, however, not likely that
this gain in efficiency would become so
high that a longer observation period for
less frequent purchases would not be
needed. In the main study we have thus
supplemented the last time-use interview
with questions about purchases of major
durables.

The yesterday question technique to
collect time-use information has worked
relatively well once the interviewers got
used to it. The time-use questionnaire
requires much more training than a tradi-
tional interview briefing gives. The
pilot study did not include a comparison
with the closest alternative, a self ad-
ministered leave behind diary, but a com-
parative evaluation of these two methods
would be useful for future data collec-
tion. All we have been able to do so far
is to compare estimates of time-use in
aggregate activities for the United
States and Finland with our own estimates.
There is a striking similarity in the
time-use pattern between the three coun-
tries (Flood, 1983). We have also com-
pared the response to yesterday questions
with that of retrospective questions cov-
ering two weeks. Similar to results from
other studies we found that retrospective
questions for a longer period tend to
give systematic errors. Time-use for less

frequent activities was underreported compared to the results from yesterday question...

The pilot study also included a comparison between estimates of time off work at work from the time-use diary and from direct questions about time normally used for meals and coffee breaks, personal errands etc. Longer hours was on the average reported for "normal" time off work at work than for the corresponding activities from the yesterday question diary.

If telephone interviews could be used instead of personal interviews was another issue investigated in the pilot study. Our experiences show that a difficult and demanding study like ours should be introduced to the respondents in person. If not, the nonresponse rate is likely to increase. For respondents we could, however, find no significant difference in time-use or expenditures between interviews made in person and those made by telephone.

4. Sample design.

The sample was obtained by a two-stage cluster design. The clusters were stratified by a rather unconventional procedure. First, Sweden was divided into nine major geographical areas. Within each area a cluster analysis was run on the zipcode areas to group them into strata. For each zipcode, variables were used measuring the age, income and occupational distributions, the share of the population living in owner occupied houses and the share of foreigners. The zipcodes were stratified in four to eight strata depending on geographical area.

The primary selection unit was, however, not the zipcode but commune or more precisely, those zipcodes which belong to a commune within a stratum. We preferred to use this primary selection unit rather than zipcode to reduce the geographical dispersion of the sample. If we had used zipcode we would have needed more interviewers than we could possibly recruite and train. From each stratum two primary units were selected.

In the second sampling stage a number of individuals were chosen from each primary unit of zipcode areas. As a sampling frame we used the SPAR register, which is a register of all residents of Sweden. We were aiming at a self-weighted sample with about 10 individuals in each primary unit. With a sample size of 2200 this required a little less than 200 interviewers, which approximately is the size of the interviewer staff of the SIFO institute which did our fieldwork.

In practice it was not possible to get a completely self-weighted sample. The population figures of the SPAR register were about half a year old and the effective sample size of each primary selection unit deviated a little from 10.

In all we obtained 2131 individuals. We thus used a sample of 2131 households and expected to interview on the average 1.65 respondents per household, totaling approximately 3500 respondents.

Our budget did not permit a larger sample although it would have been desirable to increase its size. Our possibilities to analyze subgroups of households will now become somewhat limited. For instance we will get relatively few unemployed, academicly trained or wealthy people.

To make feasible an inference to the annual time-use of the Swedish population we decided to use a random day design. This design should ideally take advantage of seasonal and weekly variations in time-use. Efficiency calculations made for the time-use studies at ISR, the University of Michigan (Karlton [1983]) indicate that a sample of two days might be sufficient. The marginal increase in efficiency of additional days decrease rapidly. If it is desirable to draw conclusions about a particular season or, for instance, calculate within individual variance estimates for weekdays, more than two days are needed. Budget considerations, however, limited our alternatives considerably. We could not afford more than a sample of two days for each respondent. Given this constraint, differences in time-use between seasons and between workdays and holidays were built into the design in the following way.

The calendar year was split into a winter and a summer season and the days of a week were divided into workdays and weekends or holidays. The 365 days of a year were thus grouped into four strata.

	Workday	Weekend & holidays
Winter season	A	B
Summer season	B	A

The sample of households were randomly divided into two halves A and B. For each household in group A a winterseason workday and a summer season Saturday, Sunday or holiday were randomly drawn and for each household in group B a winterseason Saturday, Sunday or holiday and a summer season workday. In each stratum days were drawn with equal probabilities and without replacement.

We also tried to balance the sample of days with respect to the strata of clusters and to the two selected primary units from each stratum.

5. Fieldwork considerations.

In addition to the normal interviewer training which SIFO provides its interviewers each interviewer had to participate in an one day training session particular to the HUS-project. In all, about 20 sessions were hold around the country. During these sessions the interviewers were informed about the purpose and scope of the project and about the details of the field work procedure. They also practiced with the HUS-questionnaires. Before the field work started each interviewer also had to do testinterviews in the field with the questionnaires for the head of the household. These questionnaires were sent in to SIFO, reviewed and corrected and returned to the interviewers. Those interviewers who were not able to produce satisfactory testinterviews did not participate further.

From our pretests we know that nonresponse is our major problem. Since the present study is to become the first wave of a future panel study it is essential to have a high response rate. For this reason it was decided to give the respondents some kind of renumeration. Our budget did not allow for cash payments but we have tried a combination of gifts and a lottery. At the and of the personal interview the interviewer gave the respondent a list of a few small gifts, for instance, one item was a chocolate box. The respondent could either chose one of the gifts from this list or participate in a lottery to win a flight ticket for two persons to Paris. This design does not only serve the purpose to reduce nonresponse, but it will also give interesting data about peoples choice behaviour under uncertainty. Each respondent will also receive a summary of the main results from the survey.

6. Response.

When this is written the fieldwork with the contact interviews is completed and only three personal interviews remain, while most of the telephone interviews still have to be done. Table 1 shows the field work logg by the 19th of June which exhibits the nonresponse by reason as of this date.

No interviews were attempted with those labled "Not in the population". The response rate for attempted contact interviews is 75.5 per cent and for attempted personal interviews 74.6 per cent. Nonresponse is almost entirely due to refusals. One might also note that there was almost no increase in nonresponse in the telephone interviews following the personal visit.

7. Concluding remarks.

After the first year of fieldwork we will have data about labour market status from three different interviews for each responding household member. This will become our first piece of longitudinal information. Our plans are to return to the same households in the beginning of 1986 to obtain data on changes in household composition, and new data on housing, labour force participation, earnings, incomes and assets. New time-use and expenditure data will probably not be collected until later.

Footnotes.

1) If the designated day was a workday (holiday) but any of the corresponding weekdays one and two weeks later was a holiday (workday) the closest following workday (holiday) was chosen as an alternative day.

References.

Eliasson, G. & Klevmarken, N.A. (1981), Household Market and Nonmarket Activities. Research Program and Proposal. IUI Research Report No 12, 1981.

Karlton, G. (1983), Sampling Design Issues in Time Diary Studies, Appendix B to A Proposal to The National Science Foundation for support of A 1984-85 Study of Time Allocation Among American Households. Principal Investigator: F. Thomas Juster. Co-Principal Investigators: Martha S. Hill and Frank P. Stafford. The University of Michigan, March, 1983.

Klevmarken, N.A. (1982), Household Market and Nonmarket Activities (HUS). A Pilot Study. Research Report 1982:3, Department of Statistics, University of Gothenburg.

Klevmarken, N.A. (1983), Collecting Data for Micro Analysis. Experiences from the HUS-pilot Study. Paper presented at the Symposium on Microanalytic Simulation Models to Support Social and Financial Policy, in Bonn, June 20-22, 1983.

Table 1. Non-response by reason August 20, 1984.

	Contact interview	Personal visit	Telephone interview I	Telephone interview II
Not in the population				
Living abroad	21	27		
Moved, address unknown	35	41		
Not Swedish speaking	25	55		
Unhealthy, institution	16	22		
" at home	23	37		
Other	20	42		
Subtotal	140	224	230	221
Nonresponse				
Refusal, personal integrity	29	54		
" too busy	31	67		
" never participates	17	33		
" participated before	19	37		
" interview workload too high	12	25		
" not interested	35	57		
" after attempted personal persuasion	165	285		
" other	123	275		
Not available	57	63		
Other	0	0		
Subtotal (of which additional non-response in the telephone interviews)	488	896	886 (29)	867 (7)
Accepted interviews	1504	2635	1758	396
Still in the field	0	0	881	2271
Total sample size	2132	3755	3755	3755
Response rate (%)	75.5	74.6		

Note 1. The first column shows the number of randomly selected persons which equals the number of households. The last three columns show the number of individuals designated to participate. For those households which did not complete the contact interview the number of designated respondents is unknown. These households have in columns 2-4 been enumerated as single person households.

Note 2. The response rate in the last row of the table is the ratio between the number of accepted interviews and the total sample size less those not in the population.

Publications in English

1984

Labor Mobility. Studies of Labor Turnover and Migration in the Swedish Labor Market. Bertil Holmlund. 279 pp.

Economic Growth in a Nordic Perspective. ETLA, IUI, IØI. 373 pp.

1983

Energy in Swedish Manufacturing. Joyce Dargay, Lars Hultkrantz, Leif Jansson, Stefan Lundgren, Tomas Nordström and Bengt-Christer Ysander (ed.). 260 pp.

Energy and Economic Adjustment. Lars Bergman, Karl-Göran Mäler, Tomas Nordström and Bengt-Christer Ysander (ed.). 247 pp.

Policy Making in a Disorderly World Economy. Gunnar Eliasson, Mark Sharefkin and Bengt-Christer Ysander (eds.). IUI Conference Reports 1983:1. 417 pp.

1982

Studies in Labor Market Behavior: Sweden and the United States. Proceedings of a Symposium at IUI, Stockholm, July 10—11, 1979. IUI Conference Reports 1981:2. 442 pp.

On the Complete Systems Approach to Demand Analysis. N. Anders Klevmarken. 91 pp.

Business Taxation, Finance and Firm Behavior. Proceedings of a Symposium at IUI, Stockholm, August 28—29, 1978. IUI Conference Reports 1981:1. 435 pp.