INTERNATIONAL SEMINAR ON
TIME USE STUDIES

An Overview of Time Use Surveys

By Duncan Ironmonger

Households Research Unit, Department of Economics
The University of Melbourne

Sponsored by
MINISTRY OF STATISTICS AND PROGRAMME IMPLEMENTATION,
GOVERNMENT OF INDIA; UNDP AND UN- ESCAP

Organised by
CENTRE FOR DEVELOPMENT ALTERNATIVES

7-10 December, 1999
Venue: EDI, Ahmedabad, India
An Overview of Time Use Surveys

By Duncan Ironmonger
Households Research Unit, Department of Economics
The University of Melbourne

A New Tool for Understanding Economic and Social Systems

The development and monitoring of the progress of social and economic policies requires a thorough knowledge of at least three things. These are:

(1) how social and economic systems operate

(2) the past, current and future evolution of systems under present and proposed policies

(3) the impacts of policies on households and people (women, men and children)

Reliable, tested, knowledge of these three things has been and is extremely difficult to obtain. However, with the advancement of social and economic theory and especially the development of social and economic statistics, a broad understanding of the ways in which social and economic systems operate in different environments has been accumulated.

In countries where national statistical organisations have been supported with adequate financial and technical resources, monitoring of the evolution of the social and economic systems is reasonably accurate. Projections and forecasts of the evolution of economic and social systems are available for many countries. These are of varying degrees of reliability. In some countries the impacts of policies on households and people are calculated before implementation.

It spite of this progress, the presently available statistics that are used to help understand, evaluate and monitor systems, policies and people are inadequate. This is not news; all researchers and policy makers would like to have more and better data. But it is now realised that the main economic statistics used in research and policy making - the national accounts and the official statistics of work are vastly incomplete.

Gross National Product (GNP) covers at best about 60 per cent of all valuable production and labour market employment statistics cover less than 50 per cent of all work performed each week. On a gender basis, the regularly published labour statistics cover perhaps 75 per cent of men’s work and 33 per cent of women’s work.

The diagram inside the cover of the UN 1995 Human Development Report (See Appendix A) dramatically shows the undermeasurement of women’s work. But it also

---
1 I wish to thank Ms Faye Soupourmas and Professor Nancy Folbre for their comments on this paper
shows the **undermeasurement of men’s work**! For me, the main point is not the gender inequity in the measurement of work (though this is important). The main point is that the employment statistics cover less than half of all valuable work done in the total economic system. Much of subsistence work and production and all of household work and production escape regular statistical measurement. Consequently, our understanding of the working of the total economic system is gravely limited by this deficiency of data availability.

To understand the economy properly, knowledge is needed of activities that take place beyond the current, arbitrary, boundaries of the SNA and of market work. All forms of work and production need regular measurement. But not all forms of work are the same; the various forms need **separate measurement** so that the interaction between the various systems of production can be studied and understood. This was clearly recognised in the 1993 revision of the SNA. This suggested that the measurement of economic production outside the present boundary of the SNA should be done in a set of “satellite” accounts which are separate from, but consistent with, the main core national accounts.

There are in reality two major parts to the economic system - the market part and the non-market part. It makes sense to measure them both separately and to study both parts of the system. For developing countries with relatively large “subsistence and informal enterprise” sectors it would make sense to consider the economy as comprising three parts -- (i) the formal market economy, (ii) the subsistence and informal economy and (iii) what I call the household economy. The production and employment in each sector are then measured separately. Only then will the trends and interactions between the sectors be understood properly.

For the range of activities which I call “household production” -- the provision of meals, child care, clean clothes, accommodation, shopping, voluntary work and self education -- a new concept has been proposed -- “Gross Household Product” (GHP). This would be the estimated value of the use of unpaid labour and own capital by households to produce goods and services for their own use without payment. Gross Domestic Product (GDP) needs to be refined to **exclude** the imputed value of owner-occupied housing, currently around 10 per cent of GDP. This imputed value is part of GHP. Stripped of its imputed components which are not marketed, GDP could become a more precise measure of the “market” economy and could be called “Gross Market Product” (GMP). This proposal makes sense to many economists who have long questioned the inclusion of the imputed rental value of owner-occupied housing in GDP and GNP. (The **Glossary** at the end of this paper gives fuller definitions of GHP, GMP and other related economic concepts.)

In all countries, developed or developing, the delivery of final goods and services for consumption by people requires the operation of a productive household which adds value to the commodities provided by the market or by “subsistence” activities. In other words, the unpaid work of women and men adds value to the commodities purchased from the market or obtained from subsistence agriculture, fishing or hunting. In most countries **this household work and this household value added is of the same order of magnitude as the work and value included within the production boundary of the SNA**. In developing countries it is often assumed the omitted work (and value) is relatively more important than it is in developed...
countries. Research has yet to show whether this is true or not. To date, most of the nation-wide time use surveys and all of the accounts of household production (with estimates of GHP) relate to a handful of developed countries.

So the first priority is to move to a wider screen; to enlarge the scope of our vision to include all work and all valuable production, not just that covered at present by the production boundaries of the main national accounts. National accounts of household production are needed; national time accounts are also needed to provide a better, more comprehensive, picture of how time is used. In passing it is well to note that measures of “time use” are really measures of the use of human capital. “Work” is really use of human capital to produce valuable outputs.

Economic statistics of work should cover all paid work and all unpaid work.

Economic statistics of production should cover all market production (formal and informal) and all non-market production (subsistence and household).

**Recent Developments in Time Use Surveys**

This paper is not the place to recount the history of the development of surveys of the uses of time. Suffice to mention the historic place of Alexander Szalai, the Hungarian sociologist who was the principal architect of the international comparison of time use organised in 1965 and the subsequent development of the International Association of Time Use Research (IATUR) which continued the momentum of Szalai and his associates.

In the last twenty years, the national statistical offices in a number of developed countries have been conducting household diary-based time use surveys with increasing frequency. These surveys are starting to become more regular and more widespread amongst national statistical offices.


These time use surveys are designed not only to provide statistics on the amount of paid work, unpaid work and leisure but also to assist in the preparing national accounts of household production. Consistent, regular and timely estimates of the time used in productive activities in the household are essential for the extension of the national monetary accounts to cover nonmarket transactions through Household National Accounts (HNA).

The recommendations of the UN Statistical Commission have been given more urgency at some recent international meetings. In 1995, at the World Summit on Social Development in Copenhagen and the Fourth World Conference on Women in Beijing, governments recognised that one of the obstacles to improved policies on both gender equity and development has been the absence of data on women’s
economic contribution, in particular in unpaid or unremunerated work. At the international level the OECD started the OECD Household Production Information Network in 1992 (Chadeau 1992; OECD 1992) and the UN Human Development Report Office canvassed the issues of valuing women’s work and the evidence of time use in its 1995 report (UNDP 1995). Subsequently this office held a workshop on measuring gender equity in Bangalore, India, in May 1996. One of the main agenda items at this workshop was how the first nationwide surveys of time use could be established in developing countries.

Part of the reason why there has been an increase in the last decade in time use data collection in some developed countries is that women, and the national government agencies for women, have campaigned for governments to provide the statistical organisations with additional resources to conduct these surveys.

For example, in Australia the Office of the Status of Women in the Department of the Prime Minister and Cabinet commissioned Michael Bittman, sociologist at the University of New South Wales, to produce a report on the 1987 Pilot Survey of Time Use in Sydney. The wide distribution of this report, Juggling Time: How Australian Families Use Time (Bittman 1991), and the popular version, Selected Findings from Juggling Time (Office of the Status of Women 1991), was influential in making the public aware of the differential uses of time by men and women. In turn, this led to a wide appreciation in Australia of the usefulness of time use surveys and the adoption of a program of national sample surveys of time use every five years by the Australian Bureau of Statistics.

In 1997 the second national Time Use Survey (TUS) has been conducted by the Australian Bureau of Statistics as part of a continuing programme of surveys every five years; Canada and New Zealand have conducted national surveys in 1998; and the European countries now have a harmonised set of national time use surveys with a standard set of methodologies for the survey instrument and collection procedures. Currently in the field, the European surveys have been several years in the planning stage and were agreed at meetings in 1998. This year a number of countries, such as Spain, Portugal and Greece, have conducted their first official nation-wide diary-based household time use surveys.

The most critical gap to be filled relates to time use data for the developing countries. For the United Nations Human Development Report 1995, Andrew Harvey summarised the time use data available for varying years from 1975 to 1992 from 13 surveys in nine developing countries (Harvey, 1995). There are general problems in comparing the results of these surveys due to lack of uniformity in design, sampling methodology and collection procedures. The data are only sufficient to provide a “glimpse” of time use by women and men in developing countries.

Similarly, in five Pacific Island countries I have studied, there has been only a very limited amount of data collection (Ironmonger and Hill, 1999). In 1987, helped by Yutaka Suzuki of NHK (Nihon Hoso Kyokai, the Japan Broadcasting Corporation) the Fiji Broadcasting Commission conducted a time use survey in Fiji. Six hundred people aged 15 years and over in Suva and ‘farming areas’ were surveyed on a week day using a questionnaire, which was distributed and collected later (Suzuki 1993, p. 356). The survey was done before the introduction of television to Fiji and the
interest was in finding out how much time was spent listening to the radio. The methodology of the research would have favoured those literate in English — that is, the urban populations. The data were disaggregated by gender.

In Vanuatu one element of the 1983-84 Agricultural Census — a very comprehensive study of rural life in Vanuatu (Vanuatu, National Planning and Statistics Office 1986) — was an activity survey of a sample of 640 households carried out using a diary method. Unfortunately the next Agricultural Census, carried out ten years later, did not include a time use component.

Peggy Fairbarn-Dunlop of Samoa undertook a time use study as part of her PhD thesis for Macquarie University. She carried out a census of three villages using a 24-hour recall method. Each home was visited daily over two one-week periods — one during the dry season, the other during the wet season. She commented that:

… measurement of time was particularly difficult in a society such as Samoa where ‘time’ is not a culturally relevant variable. There are few clocks, and radios are only turned on at certain times. (Fairbairn-Dunlop 1991, p. 60)

A time use study of eight Solomon Islands women, undertaken by Warmke (1985), was too small a sample for reliable statistics, but the study may have some relevance for the methodology of future surveys in remote areas.

Whilst there are records of spasmodic time use surveys in many other countries over the last few decades similar to the pattern of data collection in the Pacific, I detect the birth of a new enthusiasm in developing countries for systematic collection of time use data on a national scale and according to internationally comparable standards. An example of this is the national survey in Lao that started in March 1997 and is being conducted by the National Statistical Office in Lao PDR with expert assistance from Statistics Sweden. This seminar in Ahmedabad will provide more information on recent and prospective developments on time use studies in developing countries.

**National Time Accounts: Statistics of Work and Leisure**

National time accounts are a set of estimates of our total income and expenditure of time, similar to the estimates of national income and expenditure that account for our market transactions in monetary units. Proposals for the development of national time accounts have been set forward in papers presented to the Rome and Amsterdam meetings of the International Association for Time Use Research (Ironmonger, 1993; 1994c).

National time accounts will provide measures, on a continuous and up-to-date basis, of how households allocate time between paid work, unpaid work and leisure. The estimates will show totals for these broad allocations both for men and for women according to the standard categories of industrial activities (for paid work) and standard categories of household production and leisure for the remaining uses of time. A system of national time accounts would provide a basis for international comparisons and for greatly improved modelling of our economic and social systems.
A draft structure for a set of national time accounts could follow the arrangement shown in Appendix B. Some work on the possible structure of national time accounts has been done in the National Accounts Division of Statistics Netherlands (Kazemier and Exel, 1992). A number of other national statistical offices may also be investigating the preparation of such accounts. Statistics Canada has established a more comprehensive framework for regular estimates of all work (Stone, 19XX)

The principal benefit from the provision of regular national time accounts would be a more complete perspective and understanding of the role of households in the total economy, not only in regard to household productive activities, but also in relation to leisure activities and the interactions between the household and the market. The enhanced understanding of the dynamics of the economic and social systems in every country should provide a better basis for making policy decisions over a wide range of business and public affairs.

International comparisons of the uses of time seem to be following a path that has some similarities with the stages in the development of international comparisons of our uses of money. National time accounts have been through two initial stages of development. The first was the independent surveys of time use in a number of countries, particularly in Russia and in the United States. The second was the cross-national time budget study of the mid 1960s under the sponsorship of UNESCO and the International Social Science Council and directed by Alexander Szalai.

A third stage of development has now been reached where the national statistical offices in a number of countries have devoted resources on an increasingly frequent basis to conduct regular household time use surveys. These are not yet on a continuous basis like the national income accounts, but have become the focus of an increasing amount of international attention. Consequently it is now possible to assemble across a dozen or more OECD countries sets of national time accounts. In spite of the compilers’ warnings that international comparisons are not possible, these accounts show remarkably similar pictures of the uses of productive (economic) time in the several countries surveyed.

The comparisons prepared in 1995 for the United Nations Human Development Report Office (Goldschmidt-Clermont and Pagnossin-Aligisakis, 1995) provide the basis for the “macro” time use data in Table 1. The “micro” time use data behind the macro figures are shown on a per adult basis in Table 2.
Table 1 Total Hours Worked in 12 OECD Countries
(million hours per week)

<table>
<thead>
<tr>
<th>Country</th>
<th>Women</th>
<th>Men</th>
<th>Adults</th>
<th>Women</th>
<th>Men</th>
<th>Adults</th>
</tr>
</thead>
<tbody>
<tr>
<td>United States</td>
<td>3246</td>
<td>1650</td>
<td>4896</td>
<td>1895</td>
<td>2848</td>
<td>4743</td>
</tr>
<tr>
<td>Germany</td>
<td>1260</td>
<td>649</td>
<td>1908</td>
<td>540</td>
<td>1005</td>
<td>1545</td>
</tr>
<tr>
<td>Italy</td>
<td>1048</td>
<td>230</td>
<td>1278</td>
<td>302</td>
<td>751</td>
<td>1053</td>
</tr>
<tr>
<td>Britain</td>
<td>717</td>
<td>339</td>
<td>1056</td>
<td>427</td>
<td>715</td>
<td>1142</td>
</tr>
<tr>
<td>France</td>
<td>792</td>
<td>363</td>
<td>1155</td>
<td>344</td>
<td>589</td>
<td>933</td>
</tr>
<tr>
<td>Canada</td>
<td>352</td>
<td>195</td>
<td>547</td>
<td>222</td>
<td>361</td>
<td>583</td>
</tr>
<tr>
<td>Australia</td>
<td>256</td>
<td>137</td>
<td>393</td>
<td>102</td>
<td>212</td>
<td>314</td>
</tr>
<tr>
<td>Netherlands</td>
<td>224</td>
<td>119</td>
<td>344</td>
<td>54</td>
<td>127</td>
<td>181</td>
</tr>
<tr>
<td>Austria</td>
<td>120</td>
<td>41</td>
<td>161</td>
<td>55</td>
<td>101</td>
<td>155</td>
</tr>
<tr>
<td>Denmark</td>
<td>48</td>
<td>24</td>
<td>71</td>
<td>65</td>
<td>87</td>
<td>152</td>
</tr>
<tr>
<td>Finland</td>
<td>64</td>
<td>33</td>
<td>97</td>
<td>41</td>
<td>58</td>
<td>99</td>
</tr>
<tr>
<td>Norway</td>
<td>56</td>
<td>29</td>
<td>85</td>
<td>34</td>
<td>52</td>
<td>86</td>
</tr>
</tbody>
</table>

Total of 12 8183 3808 11991 4080 6905 10985
Percent 35.6 16.6 52.2 17.8 30.1 47.8


Table 2 Average Hours Worked in 12 OECD Countries
(Hours per adult per week)

<table>
<thead>
<tr>
<th>Country</th>
<th>Women</th>
<th>Men</th>
<th>Adults</th>
<th>Women</th>
<th>Men</th>
<th>Adults</th>
</tr>
</thead>
<tbody>
<tr>
<td>United States</td>
<td>33.4</td>
<td>18.3</td>
<td>25.9</td>
<td>19.5</td>
<td>31.6</td>
<td>25.4</td>
</tr>
<tr>
<td>Germany</td>
<td>35.9</td>
<td>20.2</td>
<td>28.6</td>
<td>15.4</td>
<td>31.3</td>
<td>22.9</td>
</tr>
<tr>
<td>Italy</td>
<td>42.6</td>
<td>9.6</td>
<td>27.2</td>
<td>12.3</td>
<td>32.8</td>
<td>21.9</td>
</tr>
<tr>
<td>Britain</td>
<td>30.2</td>
<td>15.4</td>
<td>23.7</td>
<td>18.0</td>
<td>32.6</td>
<td>24.4</td>
</tr>
<tr>
<td>France</td>
<td>34.9</td>
<td>17.3</td>
<td>26.6</td>
<td>15.2</td>
<td>28.0</td>
<td>21.4</td>
</tr>
<tr>
<td>Canada</td>
<td>30.7</td>
<td>17.6</td>
<td>23.8</td>
<td>19.4</td>
<td>32.6</td>
<td>25.8</td>
</tr>
<tr>
<td>Australia</td>
<td>37.0</td>
<td>20.3</td>
<td>28.8</td>
<td>14.7</td>
<td>31.4</td>
<td>23.0</td>
</tr>
<tr>
<td>Netherlands</td>
<td>35.4</td>
<td>19.5</td>
<td>27.4</td>
<td>8.5</td>
<td>20.8</td>
<td>14.7</td>
</tr>
<tr>
<td>Austria</td>
<td>35.1</td>
<td>13.2</td>
<td>25.0</td>
<td>16.0</td>
<td>32.7</td>
<td>23.9</td>
</tr>
<tr>
<td>Denmark</td>
<td>22.2</td>
<td>11.4</td>
<td>16.8</td>
<td>30.2</td>
<td>42.0</td>
<td>36.2</td>
</tr>
<tr>
<td>Finland</td>
<td>30.6</td>
<td>17.4</td>
<td>24.3</td>
<td>19.6</td>
<td>30.5</td>
<td>24.9</td>
</tr>
<tr>
<td>Norway</td>
<td>31.6</td>
<td>17.3</td>
<td>25.2</td>
<td>19.1</td>
<td>30.8</td>
<td>25.3</td>
</tr>
</tbody>
</table>

Mean of 12 34.4 17.2 26.1 17.2 31.3 24.0
Stand Dev 4.9 3.3 3.1 5.3 4.7 4.8

Source: Goldschmidt-Clermont and Pagnossin-Aligisakis, 1995
Note: The age range for time use averages are: Australia, Britain, Canada, Finland, France, Italy, United States, 15+; Germany, 16+, Norway, 16-79; Denmark 16-74; Netherlands, 12+; Austria 10+. 

8
The data in Table 2 seem to show a different story only for Italy, Netherlands and Denmark. For the other nine countries the national averages are within one standard deviation of the overall means.

In Italy the household division of labour differs from the other countries, but total household work per adult in Italy is within a normal range, as are the average hours of market work, though market work of Italian women is on the low end of the range in keeping with the very high hours of unpaid work.

For the Netherlands the figures for market work for both men and women are well down on the other countries. This may be explained in part by the Dutch data covering a wider age range including those aged 12, 13 and 14 years of age. Perhaps the Netherlands has an economy that is remarkably efficient in its use of paid labour. But perhaps there are still some survey methodological differences which account for the very different measurements in Holland.

The third country with an apparently different structure of time use is Denmark. Here the picture is not that Danes do more “total” work than other countries; their total average work hours of 53 per week is only a little above the average for the other countries. The picture in Denmark is one where total household work is apparently very low (9.3 hours per week or 36 per cent below the mean) and market work is apparently very high (12.2 hours or 51 per cent above the mean). As the reported figures for unpaid work in Denmark exclude voluntary work and the time spent in the care of other adults there are some methodological data differences to sort out. These factors would only explain a small proportion of the variation, so perhaps Denmark has shifted more production from the household to the market than any of the other 11 countries.

The European initiative to conduct a “harmonised” time use survey across all EU countries has lead to a resolution of many of the methodological differences in data collection. It is always difficult for national statistical offices to move to a new benchmark for data collection, particularly if they have had a history of regular surveys with a tried method. However, if attention is paid to the detail of collection, classification and coding of the basic unit record data, it is generally possible to link new estimates to previous ones. This will then provide accurate comparisons of movements through time as well as new levels of comparability for comparisons between countries.

In addition to the diary based household surveys of time use, official statistical organisations in a number of countries have made estimates, on a continuous basis, of average (micro) hours and hence total (macro) hours of time used in the market economy. For example in Australia, since 1966, the regular household survey which provides monthly labour market estimates of employment and unemployment, also provides estimates of average hours of market work. Initially once a year, these estimates were then made quarterly and are now monthly.

Estimates of hours worked in market industries are often based on the survey interviewer’s question “How many hours a week do you usually work in (all) your job(s)?”. This is a “stylised” question and is subject to different biases than the diary-
based method of measurement of time use. It is obvious that each method -- detailed
diary or stylised interview -- will have its own bias against “reality”. Work by Juster
and others at the University of Michigan has provided some information on the extent
of these biases (Juster, 1985), (Juster and Stafford, 1991). The paper on the
methodology of measuring unpaid work by Regular Herzog at the Ottawa 1993
Statistics Canada meeting considered a series of stylised questions which could be
used to collect continuous data from household surveys of the major sections of
unpaid work and leisure (Herzog, 1994).

If our aim is to have national time account estimates on a continuous quarterly basis,
then we are likely to use detailed diary based surveys to establish the benchmark
figures at five-yearly intervals and update the estimates of the broad divisions of
labour and leisure by monthly or quarterly surveys using stylised questions. At this
stage it seems unlikely that continuous diary-based time use surveys will be
established. However, it is interesting to note the progression in the development of
household expenditure surveys. These started as irregular surveys and in many
countries, such as Australia, are now conducted at regular five-year intervals. Since
World War II in Britain, and in the United States since late 1979, household
expenditure surveys have been conducted on a continuous basis providing data for the
quarterly consumer expenditure (or as I would prefer to say, the “household
purchases”) estimates of the national income and expenditure accounts. So perhaps, as
the benefits of having regular national time accounts are understood, it will be seen to
be a good use of our national statistical budgets to have continuous diary-based
surveys of time use.

The development of national time accounts should be an interactive process between
the model builders, the policy makers and the official statistical organisations, as it
was with the development of the national income accounts and the uses of these
accounts in model building and policy making.

Consistent, regular and timely estimates of the volume of time used in productive
activities in the household are essential for the extension of our monetary accounts to
cover the non-market transactions through national accounts of the household
economy.

At the national level a number of official statistical offices have started to produce
estimates of the value of unpaid household work — for example, Canada
(Hawrilyshyn 1978; Jackson 1992; Swinamer 1985), Australia (Australian Bureau of
Statistics 1990, 1994) and Germany (Schafer and Schwartz 1994b). Some work has
also commenced in the national statistical offices on conceptual thinking and
discussion papers exploring the issues and practicalities of putting together a set of
household accounts — for example, Lutzel (1989), Schafer (1992) and Schafer and

Some notable contributions to the estimation of the value of unpaid work and the
discussion of the form of the household accounts have been made by academic writers
in France (Chadeau and Roy 1986), Britain (Pyatt 1990, 1991) and Denmark (Bonke
1993).
Paralleling these developments, a number of statistical offices have prepared household input–output tables covering the productive and leisure activities of households. These tables flow from the original idea for a household input–output table that started in Australia at the University of Melbourne in 1984 using the first Australian data on the uses of time derived from a Szalai-type sample survey conducted in 1974 (Ironmonger and Sonius 1987, 1989).

**Household Input-Output Tables: National Accounts of the Household Economy**

The most widely used measure of economic activity, gross domestic product, has been widely criticised for failing to account adequately for women’s economic participation. The way in which the statistical organisations of the world plan to meet this criticism is by extending the system of accounts that provide the basis for measuring GDP, the System of National Accounts, to include the unpaid household productive activities of women (and men) in a system of ‘household’ accounts, which will be separate from, but consistent with, the main accounts.

(a) The need for Household National Accounts

The term ‘gross domestic product’ is widely used but poorly understood. Economists and economic statisticians conceived it as a measure of the value added by economic activity. Over the past 60 years the measurement of GDP and the related gross national product (GNP) has moved from the realm of academic economists such as Colin Clark (in Britain and Australia) and Simon Kuznets (in the United States) to become the everyday job of national statistical offices. The rules about how national statistical offices should measure GDP and GNP have been developed through a series of international meetings under the sponsorship of the United Nations Economic and Social Council. The latest set of rules was completed in 1993 and published as the 1993 Revision to the System of National Accounts.

The System of National Accounts has been much criticised for the failing to include in GDP and GNP estimates the value that is added by productive activities of households for the use of their own members and that is not sold to other households or firms. Despite this criticism the 1993 revision of the system maintained the existing ‘production boundary’ as defined by the previous 1968 System of National Accounts except for including water and fuel collection — significant activities in most developing countries including those in the Pacific. Thus, with a few exceptions, GDP and GNP cover only the ‘marketed’ proportion of the total value added. However, the 1993 revision did recommend that national statistical offices estimate the nonmarketed value added by households through what it termed a ‘satellite’ account of household production or the Household National Accounts.

The types of economic activities included within the boundaries of the current System of National Accounts (SNA activities) and the economic activities included in the new Household National Accounts (non-SNA activities) have been set out in the INSTRAW (1995b) report on measuring and valuing unpaid contribution.
(b) Household National Accounts (HNA)

Work to develop Household National Accounts is now proceeding in a number of national statistical offices — for example, in Australia, Canada, Finland, Germany, Norway and Sweden (Ironmonger 1996, p. 39). These accounts are to be separate from but consistent with the traditional main accounts of market production. However, as the household accounts are developed, some changes will emerge and some new names may be necessary to distinguish market and nonmarket product. It has already been proposed that the value added by households should be called gross household product (GHP) and that a more ‘pure’ measure of the product flowing through the market should be called gross market product (GMP) (Ironmonger 1994, 1996).

The greatest part of the value added by households for their own use is derived from unpaid work. A smaller, but increasing part, is derived from the use by households of their own capital — dwellings, vehicles and other durable equipment. The national statistical offices in some countries (including Australia) have already published estimates of the value of unpaid work (Australian Bureau of Statistics 1990, 1994). These estimates have been based on national sample surveys of the use of time.

Household production has been ignored by economic statisticians partly because of a lack of data on time use by households. When the national accounts were developed there were virtually no surveys of the way in which people spent time. Although time use surveys provide the starting point for household production estimates they have been developed in a systematic way only since the 1960s when the Hungarian sociologist, Alexander Szalai, organised a cross-national time budget study in 12 countries under the sponsorship of UNESCO and the International Social Science Council (Szalai 1972).

A recent UN report on measures of unrecorded economic activities in 14 countries (Goldschmidt-Clermont and Pagnossin-Aligisakis 1995) shows that unpaid work in households is of the same magnitude as paid work in the market. The non-SNA economic activities across the 12 OECD countries included in the report amounted to 12 billion hours a week; SNA economic activities amounted to only 11 billion hours (Ironmonger 1996, Table 4, p. 46).

(c) Design of Household National Accounts

The main guidelines necessary to establish a system of accounts for the household economy relate to:
- the scope of productive activities to be included;
- the way in which the volume of labour input is to be measured and valued;
- the way in which capital inputs are to be measured;
- the way in which outputs are to be counted and valued; and
- the way in which information based on surveys is to be interfaced with the existing macro aggregates of the System of National Accounts.

In terms of scope the most difficult activities to classify are voluntary community participation, self-education time and journeys to and from market economy work. If the approach is to cover all activities in the accounts, as is done in ‘extended’
household input–output tables, then a flexible system that allows these problematic activities to be covered in the accounts, along with everything else, is required. There is strong support for the view that voluntary community work falls within the third person criterion of ‘work’. For example, the INSTRAW (1995b) report on measuring and valuing unpaid contributions recommends that both voluntary work and time spent in education be included (Ironmonger and Hill, 1999).

To estimate the labour time absorbed in various household activities, a consensus appears to be emerging that diary-based surveys across a representative sample of households — metropolitan, urban and rural — and across all seasons of the year will become the standard method of establishing the benchmark estimates. These could then be moved forward to the next benchmark using stylised questions asked at regular intervals, again from representative national surveys of households. The valuation of labour input will be properly established only when effective collections of the volumes of the various outputs from household production have been obtained, together with appropriate output market prices. Labour value will then not depend on imputation from market wage rates but will be estimated as a residual after deducting other costs.

In the initial Australian input–output tables the capital component of inputs has been represented by the estimates of housing costs and the purchases of vehicles and other household durables as recorded in the household expenditure survey. It would be more appropriate to use estimated rental value of the service flows from the stock of housing and from the stock of durables and semidurables owned by households. The Canadian household input–output tables used a service flow approach for durables and semidurables (Johal 1992).

To compare the productivity levels of the household economy and the market economy, direct measurements of output are required. The 1995 INSTRAW recommendations on expanding the System of National Accounts are that ‘An output-based approach to valuing non-market production needs to be developed’.

Only two or three surveys of the outputs of household production appear to have been undertaken and none yet by a national statistical office. Therefore the world is not yet in a position to incorporate a direct quantification and valuation (by reference to observed market prices, which statistical offices generally do collect) of the outputs of household production in the household input–output tables. Obviously the number of meals served, the number of shirts washed and ironed, the number of children minded for how many hours, and so on could be surveyed and appropriate estimates made for the gross output values of all the types of goods and services produced by households. The feasibility of a direct approach has been demonstrated by a survey in 1985 of 480 households in Montana, which recorded the output of 57 types of household production (Fitzgerald and Wicks 1990).

Finally, the Household National Accounts need to be consistent with the accounts for the rest of the economy. Also the micro surveys should be able to be reconciled with the macro aggregates of the extended System of National Accounts. A major issue is the reclamation of the imputed value of owner-occupied housing from the market and its inclusion as a part of value added by households. The new measures can be given
new names, gross market product and gross household product, which will clearly distinguish them from the rather ambiguous aggregate gross domestic product.

(d) Household accounts estimation

Traditional input–output tables show the internal industrial structure of the formal business and government sectors of the economy. The input–output tables of the System of National Accounts present the uses of goods and services for each type of product and the production and income accounts for each kind of economic activity.

Similarly, household input–output tables show the activity structure of the informal household sector of the economy and present the uses of intermediate commodities, labour and capital in each type of productive economic activity undertaken in households by unpaid labour and own capital. Household input–output tables can form the basis of a set of accounts for the non-SNA economic activities of households.

The simplest form of household input–output table can be prepared by combining the data from a household expenditure survey with the data from a household time use survey. This was done first for Australia by combining the 1975-76 household expenditure survey with the 1974 time use survey (Ironmonger and Sonius 1987, 1989). The columns of the table are the various activities such as meal preparation, cleaning, laundry, child care, shopping, repairs and maintenance, and gardening. The rows of the table are the inputs of materials, energy, services, labour time and capital equipment (including housing) absorbed in each of the listed activities. With appropriate valuations of the intermediate, labour and capital inputs, the total of each column gives the monetary value of the total output from that activity.

Household accounts estimation refers not to the simple estimation of a national total for the value of unpaid non-market work, but to the estimation in a set of tables of the value of a complete range of household outputs with the component inputs of labour, capital and intermediate commodities. As of now, such tables have been estimated and published for six countries -- Australia, Canada, Finland, Sweden, Norway and United States.

Australia
A number of tables of household production for various years have been published for Australia. These include (1) an input-output table of household production for 1975-76 (Ironmonger and Sonius, 1987), (2) input-output tables of leisure activities for households with children and households without children for 1975-76 (Ironmonger and Richardson, 1991), (3) an extended household input-output table for all activities for 1975-76 (Ironmonger, 1995), (5) a household input-output table for 1987, (6) an extended household input-output table for all activities for 1992 (Ironmonger, 1996a) and (7) input-output tables for households at nine different life stages (Ironmonger and Soupourmas, 1999).

Canada
Statistics Canada prepared household input-output tables for 1981 and 1986 using a similar approach to the Australian idea but with the household activities as an extension to the full I-O tables for SNA activities (Thoen, 1993). An important
improvement in the Canadian tables was the use of capital stock estimates of household vehicles, equipment and semi-durables to provide estimates of the annual capital cost components of household outputs. The early Australian tables used the HES estimates of the annual additions to the stock of vehicles and equipment as the capital cost components. However, the Canadian estimates omitted the capital cost of household land and dwelling space.

Although the imputed rent of owner occupied dwellings is included within the SNA (market) boundary, and hence in Gross Domestic Product, this value should be included as an appropriate item of the household accounts and hence as part of Gross Household Product (GHP) (Ironmonger, 1996b). This is one of the largest of the imputed items of non-market output included within the boundaries of the core accounts of the SNA. It would be an improvement if it were to be removed from the estimate of GDP which could then be a true market-based statistic, renamed as Gross Market Product (GMP). There could be two versions of GMP to retain the distinctions between the market product within domestic borders, GMP(D) and by national enterprises GMP(N).

**Finland, Sweden, Norway**
The methodology of the original concept for the Australian household input-output tables has been followed by the statistical offices of three Scandinavian countries following my visits to those offices in May and June 1993. The Statistics Finland estimates are for 1990 (Vihavainen, 1995), those for Statistics Sweden are for 1990-91 (Rydenstam and Wadeskog, 1995) and those for Statistics Norway for 1991 (Aslaksen, Fagerli and Gravningsmyhr, 1995). The Norwegian estimates are particularly useful because they compare the results for five different types of households -- a single woman, a single man, a couple with no children, a couple with small children and a couple with older children (Aslaksen, Fagerli and Gravningsmyhr, 1996).

**United States**
An input-output table of household production for United States households has been prepared for 1985 using time use data from the 1985 University of Maryland TUS (Robinson, 1985) and expenditure data for 1985 from the US Bureau of Labour Statistics continuing survey of consumer units. This work has been a cooperative project between the Households Research Unit at the University of Melbourne and the School of Family Resources and Consumer Sciences of the University of Wisconsin, Madison. The principal people involved in this project have been Robin Douthitt at Madison and Duncan Ironmonger at Melbourne.

Douthitt has presented some preliminary results of this work at seminars at the University of Wisconsin, Madison and at the University of Melbourne and in a paper to the 18th meeting of the International Association for Time Use Research in Vienna in September 1996.

**Germany**
The Federal Statistical Office of Germany has been very active in the thinking and discussion of the many issues relating to the preparation of national accounts of household productive activities and has made a number of estimates of the value of
household production and in particular, of the concept of “extended consumption” (Lutzel, 1989), (Schafer and Schwartz, 1994).

(e) What data surveys are needed for these accounts?

The broad thrust of the set of rules provided by the System of National Accounts seems to be to define the ‘boxes’ to be filled in the accounting framework and then leave it to the national accountants in each country to estimate the data to insert in the boxes by way of census, survey or administrative collection. In many cases there are several ways of filling a box, which leads to cross checks on the validity of estimates. The same ideas should flow over to the national accounts of household productive activities. However, there are three types of nation-wide household surveys which are likely to be essential to the estimation of these accounts. These are household time use surveys, household expenditure surveys, and household output surveys.

*Household Time Use Surveys (TUS).* These surveys can provide not only the estimates of the labour inputs into household production but also the associated times spent in consuming household production outputs, whether provided by households or provided by market organisations. Thus TUS can also provide broad estimates of the volumes of some household outputs.

*Household Expenditure Surveys (HES).* These surveys can provide the estimates of the intermediate inputs into household production and can also provide the starting points for the preparation of estimates of the stock of household capital which are needed to estimate the cost of capital used in household production.

*Household Output Surveys (HOS).* These surveys can provide the estimates of the volumes of the principal and secondary outputs of household production, whether provided solely by household capital and unpaid labour, provided solely by market capital and paid labour, or provided by mixed modes of production involving household capital and paid labour or market capital and unpaid labour.

The estimates from these surveys will need to be combined on a common population base and common time frame. Supplementary information on the prices at which the market provides accommodation, meals, child care, clothes care, personal transport, etc will also be needed. Moreover, if the TUS, HES and HOS are not conducted on a continuous basis, supplementary indicative information will need to be collected in order to move the initial household accounts forward from year to year.

*Household Expenditure Surveys (HES)*
These surveys have become fairly widespread in the last 30 years, with many countries conducting nation-wide expenditure surveys at regular intervals and some, such as Britain and the United States, conducting these surveys on a continuous basis with a new sample of households every year.

*Household Output Surveys (HOS)*
As far as is known, no national statistical office has yet conducted a nation-wide survey of household outputs. The closest approximation to this ideal is probably the 1979 survey of housework by the Central Statistical Office in Finland, which in addition to collecting housework diaries, also collected outputs, particularly meals and
laundry (Kilpio, 1981). However, as Harvey and Mukhopadhyay (1996) have shown the TUS themselves can be used to provide estimates of some of the major outputs of household production, particularly accommodation, meals, child care and laundry.

Another example of how the TUS data can be used to fill the output and labour input boxes of the household input-output tables is shown in the following Table 3. This shows how Australian adults used their time in 1992 classified according the nine major activities. For each of the principal and secondary final outputs of household goods and services -- accommodation, meals, child and adult care, clothes care and personal transport -- a table could be prepared showing the components of all four modes of production

The TUS provide information on outputs (time spent sleeping or eating can indicate nights of accommodation, numbers of meals, numbers of journeys, etc) and on the labour inputs (time spent in cleaning, meal preparation, laundry, driving, etc). The HOS will provide more detailed information to fill the boxes on accommodation, meals, clean clothes, children and adults cared for, etc.

The HES provide the basic information on the capital and intermediate inputs. For capital, the HES estimates will need to be built up into estimates of the capital stock, perhaps supplemented by surveys of ownership, rental and use of household technology (equipment and vehicles), and then converted to annual capital cost, including not only depreciation but also a return on capital.

The TUS and HES also provide information for the labour, capital and intermediate inputs into the “ancillary” activities of households. Ancillary activities are those ‘supporting activities undertaken within an enterprise in order to create the conditions within which the principal and secondary activities can be carried out’ (UNSNA1993, 5.8 page 144). For business enterprises, the SNA93 suggests that ancillary activities include activities such as cleaning, purchasing, storage of supplies and materials, repairs and maintenance and account keeping. For the household it would be appropriate to include the following as ancillary activities:

Cleaning
Washing up and clearing away
Shopping and transport of household goods
Food and clothes storage
Non-clothes laundry
Repairs and maintenance
Gardening, pet and pool care
Management, bill paying and paperwork

An important feature of ancillary items is that, because the value added by ancillary activities is embodied in the outputs of the principal and secondary (non-ancillary) activities of households, the outputs of ancillary activities do not need to be counted. The value of household accommodation includes the cleaning; the value of household meals includes the shopping, food storage and the washing up.
### Table 3. Use of Time: Australia, 1992

<table>
<thead>
<tr>
<th></th>
<th>Output Time</th>
<th>Input Time</th>
<th>Output Time</th>
<th>Input Time</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>NON-MARKET OUTPUTS</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Household Outputs</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1 Accommodation</td>
<td>45,262</td>
<td>5,971(a)</td>
<td>65.1</td>
<td>8.3(a)</td>
</tr>
<tr>
<td>2 Meals</td>
<td>5,272</td>
<td>6,631(a)</td>
<td>7.6</td>
<td>5.6(a)</td>
</tr>
<tr>
<td>3 Clothes</td>
<td>-</td>
<td>2,890(a)</td>
<td>-</td>
<td>4.2(a)</td>
</tr>
<tr>
<td>4 Transport</td>
<td>1,785</td>
<td>1,460</td>
<td>2.6</td>
<td>2.1</td>
</tr>
<tr>
<td>5 Recreation</td>
<td>25,956</td>
<td>-</td>
<td>37.3</td>
<td>-</td>
</tr>
<tr>
<td>6 Care</td>
<td>-</td>
<td>2,514(b)</td>
<td>-</td>
<td>3.6(b)(c)</td>
</tr>
<tr>
<td><strong>Non-Household Outputs</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7 Volunteer</td>
<td>-</td>
<td>2,109(b)</td>
<td>-</td>
<td>3.0(b)</td>
</tr>
<tr>
<td>8 Education</td>
<td>-</td>
<td>2,514(b)</td>
<td>-</td>
<td>3.6(b)</td>
</tr>
<tr>
<td><strong>MARKET OUTPUTS</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9 Market Work</td>
<td>-</td>
<td>14,438</td>
<td>-</td>
<td>20.8</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td>78,275</td>
<td>38,526</td>
<td>112.6</td>
<td>55.4</td>
</tr>
<tr>
<td><strong>Grand Total</strong></td>
<td><strong>116,801</strong></td>
<td></td>
<td><strong>168.0</strong></td>
<td></td>
</tr>
</tbody>
</table>

Notes:
- (a) Includes a proportion of shopping travel time.
- (b) Includes travel time for this activity.
- (c) This figure is 15.3 hours/week when all child care time is included.

The labour input times involved in the various ancillary household activities have been distributed to the six main household activities. Thus for example, a large proportion of shopping time, including shopping travel, is food shopping and is allocated to the total input time for “Meals”. Consequently, the entries for “Transport” relate only to travel for leisure (2.6 hpw of output time) and travel to and from market work (2.1 hpw of input time).

For some purposes it would be desirable to add the travel to and from market work time to the time actually engaged in “Market Work”. This would increase market work time by 10 per cent in Australia in 1992 from an average of 20.8 hpw to 22.9 hpw. Similarly it may be useful to add the travel time for leisure to the total output time spent in “Recreation”. This would increase the total time spent in recreation by seven per cent from an average 37.3 hpw to 39.9 hpw.

In effect, it would be possible to treat the whole of transport as an “ancillary” activity like shopping and cleaning. This would reduce the list of “household outputs” to just five items -- accommodation, meals, clothes, recreation and care. It is not necessary to count the outputs of ancillary items. However it is necessary to count the labour input times for ancillary activities. In the 1993-94 Australian household input-output tables all transport has been included as an ancillary activity (Ironmonger and Soupourmas, 1999).
It should also be noted that time use has been classified only according to the respondents’ descriptions shown in the first column of the diary. Parallel activities described in the second column have not been taken into account in this distribution of time. As shown in a footnote to the table, the input time into care is quadrupled from 3.6 hpw to 15.3 hpw if parallel time is included in a two-way classification of time use. Compensating reductions can be made to the other entries in the table to keep total time fixed at 168 hpw. A major effect is on the time reported as sleeping. Parents with very young children actually report they are doing child care, not only whilst the child is asleep, but also whilst they themselves are asleep (Ironmonger, 1996c). Effectively, with a one week-old baby, someone is “on call” 24 hours per day.

(f) Measuring nonmarket production in developing countries

To provide the basic benchmark data for nonmarket production, developing countries need to conduct household surveys of time use. This would be a representative sample survey of households and could be conducted on a coordinated basis across a number of countries in the same year. All adult members of sample households in urban areas and in rural areas with high literacy rates would complete written diaries of time use. In areas with low literacy, the survey would need to be based on face-to-face interviews. Recent work in Canada has shown how time use surveys may be used to count outputs (Harvey and Mukhopadhyay 1996). In effect, using appropriate methods of analysis and with some additional questions, time use surveys can be used to count the meals, laundry, child care and accommodation provided by households.

In countries with a large subsistence sector, the opportunity should be taken to collect a range of output data covering the traditional subsistence production of food and clothing and the collection and carrying of wood, water and food. As already noted, the 1993 revision to System of National Accounts includes the activities of collecting firewood and carrying water inside the production boundary of the System of National Accounts, mainly on the basis of the argument that in developed countries water and fuel are provided (sold) by public and private utilities. This leaves statistical offices with the large problem of putting in place the appropriate surveys to measure the time use and value of these activities. The time use survey could be used not only to establish baseline estimates of water and wood collection but also to provide a more comprehensive view of subsistence farming and fishing.

The Tenth Regional Conference of Statisticians held at the South Pacific Commission in Noumea in September 1995 recommended that the document ‘A draft guide to estimating the value of non-market production in Pacific Island developing countries’ be finalised and published, as it would provide valuable assistance for countries and territories developing estimates of the value of nonmarket production (South Pacific Commission 1996b, p. 11, recommendation no. 3).

The guide is primarily about the nonmarket production included within the System of National Accounts and does not deal with the non-SNA activities that are to be included in the household accounts. Thus the guide will be very useful for designing data collections for the ‘subsistence’ sector of ‘village work’ rather than providing a guide for data collections for the ‘household’ sector of meal preparation, housework and child care.
Perhaps the most recently published and comprehensive guide to preparing national accounts of household production and to valuing unpaid work is the INSTRAW (1995b) report, *Measurement and Valuation of Unpaid Contribution: Accounting Through Time and Output*. In addition to extensive discussion of the methods of collecting data on time use and classifying human activities, the relationship of SNA activities to non-SNA activities, and many of the existing studies that have valued nonmarket production, the INSTRAW report explains the benefits that will flow from expanding the System of National Accounts and estimating national accounts of the household economy.

However, it should be realised that the household accounts depend on the collection of reliable data on the use of time. Unless surveys of time use are conducted every year, it will not be possible to extend the System of National Accounts on an annual basis to cover the productive activities of women (and men) in households. In many countries, estimates of gross national product and gross domestic product are produced for each quarter of the year. This means that to produce estimates of gross household product with a comparable frequency, time use data will need to be collected on a quarterly basis.

For Australia, quarterly data are available on hours of paid work, but not yet on unpaid work. It is likely to be quite some time before the Pacific island countries can move to the Australian situation. However, it is not unrealistic to expect that some regular statistics of time use can be collected in developing countries. Some recommendations about how this might be done are made in the report on women’s economic participation in five Pacific Island countries (Ironmonger and Hill, 1999). Details of these proposals are shown in a later section of this paper.

**Recommendations and Priorities for Improved Statistics on Work and National Accounts**

**Priorities for Research on Non-Market Work**

The neglect of non-market work has seen much of women’s economic activity ignored by economists, statisticians and policy makers. The statistics of unpaid work show that the household rivals the market as a user of labour time. We need to know how unpaid labour fits in with the stock of household capital goods to produce goods and services for households.

We also need to know how this whole non-market production process interacts and evolves with the process of market production and how economic and social policies and legal systems affect it. Research on non-market work should be seen as part of the research agenda for understanding the Household Economy in all its ramifications. To help unravel how households interact with the market we need to collect more data and conduct further analysis.

**Data Collection Priorities**
(a) **Standardised national unit record time use data** on households for developing countries is now a critical gap to be filled. We are starting to receive regular nation-wide diary surveys of time use in many of the OECD countries. To date nearly all surveys of time use in developing countries have been confined to village/project based surveys collected by individual researchers. Until recently, the statistical bureaux of the developing countries have conducted hardly any official, nation-wide, diary-based surveys of a substantial sample size. The recent Indian initiatives are an indication of the future.

(b) **National time accounts** are required by all countries to provide continuous quarterly estimates, at the national level of aggregation, of the main uses of time - paid work, unpaid work and leisure for both men and women and by five year age groups. These time accounts are needed to help fully understand the trend evolution and cyclical variation of the major uses of human time across the world. Time accounts can be constructed by updating benchmark estimates of time use from the diary based unit record data by collecting stylised time use questions as part of regular household surveys, such as those for labour market participation and household expenditures.

(c) **Quarterly Gross Household Product estimates and fully articulated Household National Accounts** should be prepared for as many countries as possible. These estimates and accounts will provide a comprehensive framework for modelling the productive and leisure roles of the household economy and understanding the evolution of the household economy in conjunction with the development of the business and public sectors of the market economy. Whilst it will not be possible to completely estimate either GMP or GHP by gender until there are gender statistics on the ownership of capital, these household accounts should provide estimates by gender of the value of labour contribution to Gross Economic Product and its two spheres, GMP and GHP.

(d) The **changing demographic structure of households** demands much more up-to-date information than that provided by the five and ten-yearly censuses of population and housing. Each national statistical office uses the census benchmarks to provide current estimates and projections of human populations. In most countries average household size continues to fall and household structures are changing rapidly. For example, in less than 30 years Australian households have moved from one in two containing at least one child to less than one in three containing a child. By the year 2015, less than one in four Australian households will contain a child. It would be a fairly simple matter for national statistical offices to use current and projected population data to provide current and projected data on the number of households of various types, especially by number of adults (by age) and number of children (by age).

(e) **Regular collections of output data from households** are needed to allow a proper valuation to be made of the contribution from labour and capital in the household. The outputs could be counted and then valued at market prices to provide improved estimates of the contribution of households to Gross Economic Product and help resolve issues of the relative productivity and efficiency of the household and market economies.
(f) **Recommendations for accounts standards.** With the prospect of a large collection of data on time use in Europe being undertaken in 2000, the Statistical Commission of Europe and the Conference of European Statisticians have prepared the ground for a consolidated set of time use comparisons across Europe. Statistics Finland has developed for the Statistical Office of the European Communities (Eurostat) a common methodology for building up Household National Accounts, based on data from the harmonised TUS, which might be used in European countries (Varjonen et al, 1999).

(g) **A new framework for the future** In this section some ideas are proposed for a new shape for the national accounts of household production. First consider the various combinations of unpaid household labour and the owned capital of households with market labour and market capital.

Four different ‘modes’ or ‘methods’ of production can be distinguished according to the use of unpaid (household) labour or paid (market) labour and the use of household (owned) capital and market (rewarded) capital.

Mode 1 uses both market capital and market labour; Mode 4 uses both household capital and household capital. Modes 2 and 3 are mixed modes; Mode 2 uses household capital and market labour and Mode 3 uses market capital and household labour.

Examples of the four modes of production are:

<table>
<thead>
<tr>
<th>Mode</th>
<th>Example</th>
</tr>
</thead>
</table>
| (1) Market capital and labour | Hotel accommodation  
Restaurant meals  
Child day care centre  
Commercial laundry  
Taxi |
| (2) Household capital and market labour | Paid housemaid doing cleaning  
Paid cook in own kitchen  
Paid babysitter at home  
Paid help to do ironing  
Paid driver of household car |
| (3) Market capital and household labour | Rented apartment  
Self service cafeteria  
Laundrette clothes washing  
Self drive rented car |
| (4) Household capital and labour | Owner-occupied housing  
Home meal preparation  
Own child care  
Home laundry  
Driving own car |
The four modes of production can be considered as a small table as follows:

<table>
<thead>
<tr>
<th>Capital Used:</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Market</td>
<td>Household</td>
</tr>
<tr>
<td>Labour Used:</td>
<td>Mode 1</td>
</tr>
<tr>
<td>Market</td>
<td>Mode 3</td>
</tr>
</tbody>
</table>

The current boundaries used by the System of National Accounts (SNA) completely cover Mode 1, the labour component of Mode 2 and the capital component of Mode 3. In addition, because the imputed rental value of owner-occupied housing is also included within the SNA production boundary, the housing capital components of Modes 2 and 4 are also covered. The imputed rents of the other physical household capital components (vehicles and household durables) are not included as capital items in the SNA accounts but the sales of these items to households are inappropriately treated as final consumption items.

A clear set of statistics about the outputs, inputs and factor rewards for all four modes of production is needed. The SNA presentation is incomplete; because of its omissions the SNA does not give the full picture of economic production of goods and services and the use of physical and human capital resources. The household national accounts should not repeat this fault from the other side of the coin. A presentation is needed which, in relation to the principal and secondary household activities at least, shows a full picture covering the outputs from all four modes of production.

**Data Analysis Priorities**

(a) The **role of households in building human capital resources** needs much greater investigation. Education, nurturing and training -- even if provided by the formal private and public sectors of the market economy -- are still classified by the SNA statisticians as the delivery of consumption rather than investment goods. Analysis of the contribution of caring, nurturing unpaid labour to the process of human capital formation is of obvious importance in the policy debate about the extent to which child care is a community concern rather than just a private, parental responsibility.

(b) The **effects of changing household technology** on unpaid household work needs continuing analysis. This is an old research issue dating back to the question of the “mechanisation” of the household with the introduction of the vacuum cleaner and the washing machine. It needs on-going research across a range of new technologies as they are introduced in different countries at different points of time and with different diffusion rates. Large effects from the adoption of automobiles, microwave ovens and personal computers are still taking place as households use relatively more capital-intensive processes of production and change the capital-output ratios.

(c) The **relative movements through the business cycle of production and work between the household and the market** need investigation to establish the extent of the counter-cyclical trade-off between household production and market production.
The rate of substitution could be as high as 80 per cent. In which case, the overall business cycle variation in total work and in total Gross Economic Product (GEP) would be quite small. A new focus for macroeconomic policies could follow with an emphasis on equitable distribution of total product and on smoothing variations in total GEP rather than simply smoothing market GNP.

(d) An analysis of the effects that differences in social and economic policies across countries have on women’s and men’s uses of time would be useful in helping determine which social and economic policies will promote gender equity whilst at the same time minimising negative impacts on family welfare. This analysis could also examine the effects of differential policies across states/regions within countries and through time.

Proposals for Developing Countries: Five Pacific Island Countries

The five Pacific island countries of Fiji, Solomon Islands, Vanuatu, Samoa and Tonga do not have a system to collect regular statistics from a representative sample of households on a monthly or even a quarterly basis — in stark contrast with the disposition of statistical resources in Australia and in many other countries with more adequate provisions for statistics.

Although all five countries have censuses of their populations every five or ten years, these complete enumerations of the population are expensive and are unable to provide timely data on economic participation. The modern, scientific and cost-effective way to obtain timely statistics is by sample surveys of households. The institution of regular (initially quarterly and now monthly) household sample surveys in Australia has been the major development of the past 30 years in Australia enabling the production of gender-disaggregated statistics on a wide range of issues.

Regular household sample surveys were started in Australia in 1965 as the means to obtain regular and accurate estimates of employment and unemployment when it was realised that establishment-based surveys were inadequate. The setting up of a permanent household survey organisation within the Australian Bureau of Statistics was perhaps the most significant step in enabling the bureau to become the second most highly regarded statistical office in the world, after Statistics Canada, which also has an excellent permanent household survey organisation.

Regular household surveys are noticeably absent in the five Pacific island countries. Sometimes when household surveys have been conducted, inadequate provision has been made to tabulate and publish results. As long ago as 1983, the Regional Conference of Statisticians recognised the need for household surveys but appears to have done little to develop this area. There have been about 40 household sample surveys carried out in the past 35 years — less than one survey per country every five years if agricultural surveys are included.

Accurate and reliable gender statistics on employment, unemployment and work in the Pacific could be obtained through sample surveys of households, avoiding the high collection and processing costs of censuses.
(a) **Half-yearly work and employment surveys**

Accordingly, in our report for AusAid, the Australian Agency for International Development, Dr Helen Hill and I have recommended that the national statistical offices of the region commence a series of half-yearly employment surveys of a sample of both urban and rural households. The data should be collected and processed within three months — that is, June figures should be available by 30 September and December figures by 31 March. In addition to covering paid work in the ‘market economy’ the surveys should cover unpaid work in subsistence agriculture, in child care and in household duties and participation in education. The extent of participation in all major spheres of activity could be collected in terms of hours of work last week using what is known as the ‘stylised’ approach of direct questions (INSTRAW 1995b, p. 61):

> This is the most widely used approach to obtaining data on time allocated to specific activities. The questions require the respondent to recall the amount of time they allocate, or have allocated, to specified activities over a specified period such as a day, week or year.

The gender-disaggregated hours of work statistics derived from these work and employment surveys would correct the distorted view of the work that is usually presented from the census of population. The Census counts heads according to a priority ranking that puts paid work ahead of ‘village work’ and both of these ahead of child care, housework and education. The surveys would provide the governments and people of each of the Pacific countries with an invaluable picture of the use of human resources in their own countries. As a consequence the economic and social development discussions and policy decisions in each country would be based on much better information. For example, time allocation can be a key determinant of the health and education of children.

Unless there is an adequate awareness of the inter-relationships among alternative uses, specific policies may have counter-productive secondary effects. It is stated that UNICEF should:

> … actively advocate those policies and programme approaches that protect children and vulnerable groups in times of economic hardship. It is essential to ensure that any restructuring of the economy does not neglect the interests of children whose survival and development cannot be postponed without causing irreparable damage [emphasis in the original]. (INSTRAW 1995b, p. 103)

Once established, the continuing survey organisation could be used by the national statistical offices to collect a variety of other statistical information relevant to government policy and community interest such as health, nutrition, housing conditions, expenditure and income.

The countries have different population sizes and household numbers (ranging from Fiji with 141 000 households down to Tonga with 16 000 households). To achieve country estimates with the same reliability it would be necessary to cover approximately the same number of sample households, say 2000, in each country. Thus in Tonga the sampling fraction would be one in eight households, but in Fiji would be one in seventy. With the survey being every six months, it is suggested that a one-third sample rotation be adopted so that each selected sample household would be interviewed initially, again in six months time and finally six months later again. Each household is only in the survey for just over one year.
(b) A diary-based survey of the time spent by women and men

To provide a more comprehensive and more detailed picture of the economic contribution of women in the Pacific it will be necessary to use a diary-based survey. This would measure the time spent by women in various economic activities within the formal, informal and domestic sectors and would then use the methodology developed to value women’s contribution to gross economic product, both SNA and non-SNA activities.

Although the focus of this survey would be the time spent by women, the study should also examine the time spent by men and possibly by children below the age of 15 years. The village activity section of the 1983-84 Agricultural Census in Vanuatu covered the time use of all persons aged 12 years and over. The objective of the survey would be to provide benchmark estimates of the average hours per week spent by women and by men in each sector of economic activity. To enable these time inputs to be given appropriate economic values, the time use survey should also collect data on the main subsistence and household sector commodity and service outputs.

The survey in each country should be across representative samples of households in both urban and rural areas and across the seasons of the year. Pilot surveys would be needed to test survey methodologies and to train the field collection staff. The survey should involve the official statistical office in each country, which would need technical and financial support to conduct the survey.

The survey methodology for collecting time use data from representative samples of households in developed countries is now quite well established. Over the past five years a consensus about methodology has been developed between the national statistical offices of several countries.

Recently this has been refined by the countries of the European Union, who have conducted pilot surveys and agreed on common classifications in preparation for the harmonised survey of time use in Europe. Diary-based surveys of all persons in sample households aged 12 years and more reporting their activities for two diary days (one week day and one weekend day) has been used. Samples of at least 5000 households in each country were recommended. These surveys are almost identical in methodology to the 1992 survey of time use in Australia. Australia conducted its second nationwide time use survey in 1997 and New Zealand conducted its first in 1998.

A Pacific islands time use survey would be expected to build on these now quite well-established methods and apply them to the circumstances of the five countries. In the few urban areas, and in rural areas with high literacy levels, the usual method of a fieldwork interviewer distributing diaries to be completed by household respondents over the coming week would be applicable. In other areas it would be necessary for the field staff to collect time use information by direct interviews, covering recall of the previous day’s activities by respondents.

Cooperation between the five statistical offices should enable economies of scale to be achieved in coding, editing, tabulation, publication and preparation of unit record files for research. A central operations centre and processing facility could be
established to facilitate the successful conduct of the first national time use survey in
the Pacific islands. This could be best located within an existing regional organisation,
possibly the South Pacific Commission. The Regional Conference of Statisticians
would be expected to endorse the project. With appropriate support, it would be
possible for other countries in the region to participate.

A range of staff would need to be involved. Survey field staff would be needed in all
countries, both to pilot test the survey instruments and to do the actual collection of
household diaries. To capture seasonal variations in activity, especially in rural areas,
it is expected the survey would take place over 12 months. Sample households would
report on their activities during only one survey week. The editing and coding of data
would be done at a central processing centre to ensure that classifications of activities
are treated consistently.

A three-year time frame would be needed — the initial consultation with national
statistical offices and pilot studies in the first year, the collection of data in the second
year and coding, editing and preparation of publications in the third year.

(c) Household National Accounts

The time use survey, together with the estimates of subsistence and household
commodity and service outputs, would provide the main material required to estimate
the extended national accounts of household production. The Pacific island countries
could then make more comprehensive national accounts estimates of subsistence
production and should be able to implement the standards of the 1993 System of
National Accounts.

The timing of these additions and improvements to the national accounts of the
Pacific islands would necessarily depend on the resources and the work programs of
the national accounts sections in each statistical office of the region. Household
account estimates could start to be made in the third year of the program to collect and
process the time use data, but it is more likely that they would not begin until the
fourth year. By this stage, the methodology for putting together accounts for the
household economy should be well established by the international research
community.

(d) Implementation

All of the recommendations of put forward above need to be implemented if women’s
(and men’s) economic participation is to be measured in a policy-relevant way. The
recommended regular collections of data on work, employment and time use will not
only serve to illuminate immediate policy issues, but provide, through the provision of
unit record files to academic and postgraduate research students, a rich database of
material to fill the research gaps on women’s work identified in this report,
particularly in the service industries and in agriculture.

If the recommendations are implemented progressively over the next five years, the
five Pacific island countries could catch up statistically to the position Australia
reached 30 years ago in relation to gender statistics and statistics on work and
employment and to where Australia was 10 years ago in relation to surveys of time use. The Pacific island countries could finish on a par with Australia and ahead of most of the world in relation to national accounts of household production.

**Policy Uses of Better Statistics on Work and the Household Economy**

**Wider view of what is economic: Binary economies in each country**

_Recognition of the value and importance of developing accounts for household productive activities_

It has now been widely acknowledged that the present system of national accounts provides an incomplete picture of total economic activity. Several national statistical organisations are pro-actively exploring ways to improve their own national accounting systems by developing the SNA to include the household productive sector. The ultimate goal is to develop continuous quarterly national accounts for the household economy. The release of quarterly Household National Accounts (HNA) will mean that differences between demographically different types of households can be made in addition to comparisons between the market and household economies.

_Consensus about a general method for constructing the accounts for the household economy has been reached_

Some consensus has now been reached about the general method that should be used in the preparation of national accounts for the household economy. It is now agreed, amongst experts in the field and statistical organisations, that the construction of national accounts for the household economy should use the standard SNA approach to data collection. This means that the data/information in the household input-output tables must be collected from a wide range of sources. The household accounts cannot be constructed just from information from time use or household expenditure surveys. These accounts like the SNA for the market economy will use information from a wide range of sources. However, although this information may emerge from various sources each cell entry in the tables will be strictly defined.

_The uses of national accounts for the household economy should be widely discussed_

The discussion about enlarging the scope of the System of National Accounts (SNA) to include the household economy can now be focused on potential uses of the data, including research and policy issues.

_Outlining the uses_

The starting point for the discussion should be that the household economy is an economy, similar in magnitude to the market economy. Consequently, all the multi- various uses of the current SNA data to investigate the performance of the market economy would apply to the NHA data on household economy.

The provision of continuous annual and quarterly estimates of the activities of the household economy would enable the same types of uses, research and monitoring of performance, that apply to the market economy to be applied to the household
Possble lines of inquiry include:
- Developing a comprehensive list of the present uses of the SNA
- Considering whether these uses also apply to the household economy accounts
- Outlining the areas where demand for the SNA accounts occurs
- Examining whether NHA will provide uses in additional areas

Another important benefit from the provision of regular household accounts would be the ability to study the interactions between the two economies, household and market. This would provide a much better knowledge of the market economy itself because a more complete economic system would be examined.

It is a very long time since an economy consisted only of households. At the present time, each country of the world consists of twin economic systems; each country has a market system and a non-market system, a household economy. Although the market economy is now greatly developed, and exceeds the household economy in the production of certain types of goods and services, the household economy exceeds the market in others. In many developed countries the household economy absorbs more labour than the market. And, although the market economy, including the public sector, uses more physical capital than the household, household production is becoming more capital intensive. Consequently, it is unlikely that households, as economic producers, will disappear.

Research on the evolution, and cyclical interaction, of these twin systems in each country of the world is likely to provide new insights into the operation of the global economy. The world economy comprises a multinational system of binary economies similar to the binary star systems of the astronomical universe. Binary or double stars apparently behave differently to that of single stars. Similarly, it is likely to be found that an economic world populated by a finite number of binary economy countries behaves differently to that of a world populated only by single economy countries.

A limited amount of research on the interactions and evolution of our binary economy world has been undertaken. The provision of detailed Household National Accounts will enable a comprehensive research program to be started. We know what to do with the accounts.
Appendix A

Diagram and text from inside the front cover of:

The cover design dramatically captures the undervaluation of women’s economic contribution.
- Three-fourths of men’s work is in paid market activities, compared with only one-third of women’s work.
- As a result, men receive the lion’s share of income and recognition for their economic contribution — while most of women’s work remains unpaid, unrecognised and undervalued.

Appendix B Draft Structure of National Time Accounts

National Time Account (Country) (Year) (Millions hours per week)

<table>
<thead>
<tr>
<th>MARKET WORK</th>
<th>Boys</th>
<th>Girls</th>
<th>Men</th>
<th>Women</th>
<th>Men</th>
<th>Women</th>
<th>Males</th>
<th>Females</th>
<th>Persons</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agriculture</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mining</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Manufacturing</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Construction</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wholesale &amp; Retail</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Finance &amp; Business</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Community Services</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Entertainment etc</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other Industries</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>WORK TRAVEL</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TOTAL MARKET</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>HOUSEHOLD WORK</th>
<th>Boys</th>
<th>Girls</th>
<th>Men</th>
<th>Women</th>
<th>Men</th>
<th>Women</th>
<th>Males</th>
<th>Females</th>
<th>Persons</th>
</tr>
</thead>
<tbody>
<tr>
<td>Meal Preparation</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cleaning &amp; Laundry</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Shopping</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Child Care</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Repairs &amp; Maintenance</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gardening &amp; Pet Care</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other Household Chores</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>HOUSEHOLD TRAVEL</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TOTAL HOUSEHOLD</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>EDUCATION</th>
<th>Boys</th>
<th>Girls</th>
<th>Men</th>
<th>Women</th>
<th>Men</th>
<th>Women</th>
<th>Males</th>
<th>Females</th>
<th>Persons</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre School</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Primary</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Secondary</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tertiary</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Continuing</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>EDUCATION TRAVEL</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TOTAL EDUCATION</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>LEISURE</th>
<th>Boys</th>
<th>Girls</th>
<th>Men</th>
<th>Women</th>
<th>Men</th>
<th>Women</th>
<th>Males</th>
<th>Females</th>
<th>Persons</th>
</tr>
</thead>
<tbody>
<tr>
<td>Eating &amp; Drinking</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Entertainment, Friends</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Active Leisure</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TV, Radio, Stereo</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Reading</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other Passive</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>LEISURE TRAVEL</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TOTAL LEISURE</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>SLEEP &amp; PERSONAL CARE</th>
<th>Boys</th>
<th>Girls</th>
<th>Men</th>
<th>Women</th>
<th>Men</th>
<th>Women</th>
<th>Males</th>
<th>Females</th>
<th>Persons</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sleep</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Personal Care</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PERSONAL CARE TRAVEL</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TOTAL SLEEP &amp; PERSONAL CARE</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TOTAL HOURS</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note: The entries in the above table indicate the categories for which Australian data are available. The "aqaqa" entries indicate that annual and quarterly data on hours are available for the period since 1966. The "xxxxx" entries indicate that estimates...
Appendix C Report on Working Group Discussion on Time Use Surveys Expert Group
Meeting on Engendering Labor Force Statistics
31st March – 2nd April 1998, New York

1. Issues to be investigated through time use surveys

A. More complete information on which to prepare national accounts and on the roles of the household in the total economy
   - Improving data for core account
   - Data for satellite accounts
   - Illuminate characteristics of informal sector

B. Improved measures of labor market statistics, in particular better estimates of paid and unpaid work (within SNA)
   - To shed light on multiple job holding, nonstandard employment, productivity
   - As a basis for better planning for skills formation training and employment creation
   - As child labor

C. Support that people provide to their family, community and selves such as household maintenance and food preparation, child care, elder care, self health care, community support

D. Welfare and poverty dimensions through time spent by the poor in drudgery and subsistence activities
   - As a basis for better planning for skills formation training and employment creation

2. Important new developments in field

A. Countries are planning for the first time national pilot studies on time use: Benin, India, Korea, Nigeria, Philippines, South Africa

B. Harmonized European Time Use Study
   - Pilot studies carried out in 18 countries in 1996/7

C. Development of a trial international classification for activities in time-use statistics
3. Objectives and outreach

A. To increase understanding of how time-use statistics can be used to address policy concerns

B. To increase national time use studies, particularly in developing countries

C. To enhance the international comparability of time use statistics

4. Concrete activities and outputs

A. Exchange of experience concerning use and methods of national time use studies, by convening a seminar to review the experiences of developing countries and by facilitating the participation of statisticians working on time use studies in developing countries at international time use meetings

B. Preparation of a manual on methods and uses for time use surveys in developing countries

C. Further work on the development of an international classification of activities for time use statistics

D. Development of standards for data structure (key standard concerns retaining episode data, linked to personal and household data) and development of software which is directed specifically to time use

E. Convene an expert meeting on methods to link time use data to other data sources and prepare a manual on the topic

F. Improve access to data by developing and strengthening national and international databases, including the proper documentation

G. Develop training programs to improve analytic capacity among staff in CSO, in other agencies and among analysts in analysis procedures and data processing concepts.
### Glossary

<table>
<thead>
<tr>
<th>Term</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adults</td>
<td>Women and men aged 15 years or more</td>
</tr>
<tr>
<td>Children</td>
<td>Girls and boys aged less than 15 years.</td>
</tr>
<tr>
<td>Domestic sector</td>
<td>Synonymous with the household sector of the economy.</td>
</tr>
<tr>
<td>Economically active</td>
<td>All adults who undertake paid or unpaid work, who perform volunteer work or who participate in educational activities; all adults doing housework, child care or volunteer work are economically active.</td>
</tr>
<tr>
<td>Economically active (old definition)</td>
<td>All persons of either sex who furnish the supply of labour for the production of economic goods and services as defined by the United Nations systems of national accounts and balances.</td>
</tr>
<tr>
<td>Economically inactive</td>
<td>All adults who do not undertake paid or unpaid work, do not perform volunteer work or do not participate in educational activities; includes mainly adults who are aged, infirm, ill or disabled.</td>
</tr>
<tr>
<td>Economically inactive (old definition)</td>
<td>Comprises the following groups: a) students who are not gainfully employed or actively seeking employment; b) homemakers: persons of either sex who are engaged in household duties in their or relatives’ home responsible for the care of the home and children and who do not receive pay; c) income recipients: persons who receive income from property, investments, royalties or pensions; d) others: persons who receive public aid or private support; and others not falling into other categories such as children not attending school.</td>
</tr>
<tr>
<td>Educational activities</td>
<td>Activities that lead to an accumulation of knowledge or skills that are tradeable; includes full-time or part-time classes, lectures, laboratories, libraries, study, homework, examinations and travel related to these activities.</td>
</tr>
<tr>
<td>Formal sector</td>
<td>Synonymous with the market sector of the economy; alternatively, part of the market sector comprising corporate business and public enterprises formally organised to produce goods and services for sale.</td>
</tr>
<tr>
<td>Gross domestic product domestic</td>
<td>The value added by the economy (old definition) through all economic units operating within the borders of a country.</td>
</tr>
<tr>
<td>Gross economic product</td>
<td>The value added by the economy (new definition); equals the sum of gross household product and gross market product.</td>
</tr>
<tr>
<td>Gross household product</td>
<td>The value added by the household economy.</td>
</tr>
<tr>
<td>Gross market product</td>
<td>The value added by the economy (new definition) through all economic units operating within the borders of a country — GMP(D); or the value added by the economy (new definition) through economic units owned by the residents of a country wherever these units operate — GMP(N).</td>
</tr>
<tr>
<td>Gross national product</td>
<td>The value added by the economy (old definition) through economic units owned by the residents of a country wherever these units operate.</td>
</tr>
<tr>
<td>Household economy</td>
<td>The productive activities conducted by households using household capital and the unpaid labour of their own members to process goods and provide services for the use of their own or other households without payment.</td>
</tr>
</tbody>
</table>
Household input–output tables

Tables that present statistics for the household economy showing the use of labour, capital and intermediate commodities in the various types of productive activities that comprise the outputs of the household economy, such as meals, accommodation, laundry and child care; extended tables show the use of inputs in nonproductive activities such as recreation.

Households

A person living alone or two or more persons living together as a single domestic unit who make common provision for food and other essentials for living and occupy the whole or part of one dwelling unit.

Household National Accounts (HNA)

Accounts that show the economic operations of the household economy; these are separate from, but consistent with, the System of National Accounts for the market economy.

Household sector

A sector of the total economy comprising households that undertake the activity of food and meal preparation, household cleaning and laundry, shopping, caring for children and adults, volunteer services and personal development through study and education.

Informal sector

Synonymous with the subsistence sector of the economy; alternatively, part of the market sector comprising individuals and households informally organised to produce goods and services for sale.

Market sector

A sector of the total economy comprising business enterprises, public enterprises, nonprofit institutions and households that undertake the activity of producing goods and services for sale.

Men

Males aged 15 years or more.

Nonproductive activities

Activities that do not result in the production of goods or the delivery of services, includes personal recreation activities such as games, sports or socialising and basic personal maintenance activities such as sleeping, eating, drinking and bathing; although the time spent in these activities is not counted as productive time, the capital and equipment used is counted as productive capital.

Non-SNA activities

Additional activities within the new definition of the economy — unpaid household labour, volunteer work, educational time, and the services from household equipment and vehicles.

Paid work

Productive activities for which payment is received either in cash or in kind.

Productive activities

Activities that result in the production of goods or the delivery of services, including goods and services that are not sold, and goods and services that are self-provided; includes preparation of meals, care of children and adults and time spent in educational activities.

Satellite accounts

A set of statistical accounts of the productive activities of households (or of other aspects of a country, such as environmental resources) that are separate from, but consistent with, the main accounts of economic activity included within the System of National Accounts. See ‘System of National Accounts (SNA)’

SNA-activities

Activities within the old definition of the economy; excludes unpaid household labour, volunteer work, educational time, and the services from household equipment and vehicles.

Subsistence sector

A sector of the total economy comprising households that undertake the activity of produce and process primary products (such as fruit, vegetables,
chickens, eggs and fish) and other goods (such as baskets, mats and clothing) for use by their own or other households without payment in cash or kind.

System of National Accounts (SNA) The system for presenting statistics of the economic activities of countries as determined from time to time by the United Nations; the most recent revision of this system (1993) recommended that statistics of the productive activities of households (the household economy) should be prepared by national statistical offices as a set of ‘satellite’ accounts that are consistent with, but separate from, the core accounts.

The economy (old definition) The economic system for producing goods and services comprising the market sector, the public sector, the subsistence sector and the dwellings part of the household sector; excludes unpaid household labour, volunteer work, educational time and the services from household equipment and vehicles.

The economy (new definition) The economic system for producing goods and services comprising the market sector, the public sector, the subsistence sector and the complete household sector; includes unpaid household labour and the services from household equipment, vehicles and dwellings.

Unpaid work Productive activities for which no payment is received either in cash or in kind; includes time spent in educational activities.

Women Females aged 15 years or more.

Work Productive activities whether paid or unpaid; includes educational activities.
Bibliography


Ironmonger, Duncan and Hill, Helen 1999 Women’s Economic Participation in Five Pacific Island Countries: A study of Fiji, Solomon Islands, Vanuatu, Western Samoa and Tonga Canberra: Australian Agency for International Development (AusAID)
Office of the Status of Women, Department of the Prime Minister and Cabinet 1991, Selected Findings from Juggling Time: How Australian Families Use Time, Canberra.
Schafer, D. 1992, Concepts and plans for a satellite system on household production in Germany, Paper presented at the International Association for Research in Income and Wealth, General Conference, Flims, Switzerland, September.
—— and Schwartz, N. 1994a, Time use data and satellite system on household production: methodological aspects and experience in Germany, Paper presented at the International Association for Time Use Research XII World Congress, Bielefeld, Germany, June.


—— (nd), *Pacific Mainstreaming Experience*, UNIFEM Pacific, Suva.


Dr Duncan Ironmonger is Director of the Households Research Unit at the University of Melbourne, and is Principal Fellow and Associate Professor in the Department of Economics. He is a former deputy director of the Institute for Applied Economic and Social Research at the University of Melbourne and has a Master of Commerce from the University of Melbourne and a PhD in Economics from the University of Cambridge. He has a long history of research on the measurement and valuation of household work. In this field he has been a consultant to the official statistical offices in Australia, Canada, Norway, Sweden and Finland. He has also advised the United Nations Development Programme’s Human Development Report Office and the International Research and Training Institute for the Advancement of Women (INSTRAW).